INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

UMI

A Bell & Howell Information Company
300 North Zeeb Road, Ann Arbor MI 48106-1346 USA
313/761-4700 800/521-0600

MAKING SENSE OF TENSE:
TENSE, TIME REFERENCE, AND LINKING THEORY

Benjamin M. Shaer
Department of Linguistics
McGill University, Montréal
March 1996
revised version, December 1996

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfilment of the requirements of the degree of Doctor of Philosophy

© Benjamin M. Shaer 1996

National Library of Canada
Acquisitions and Bibliographic Services
395 Wellington Street
Ottawa ON K1A 0N4
Canada

Bibliothèque nationale du Canada
Acquisitions et services bibliographiques
395, rue Wellington
Ottawa ON K1A 0N4
Canada

Your file Votre reference

Our file Notre reference

The author has granted a non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of this thesis in microform, paper or electronic formats.

L'auteur a accordé une licence non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de cette thèse sous la forme de microfiche/film, de reproduction sur papier ou sur format électronique.

The author retains ownership of the copyright in this thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without the author's permission.

L'auteur conserve la propriété du droit d'auteur qui protège cette thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

0-612-30384-5

Canada

PAST, *n.* That part of eternity with some small fraction of which we have a slight and regrettable acquaintance. A moving line called the Present parts it from an imaginary period known as the Future. These two grand divisions of Eternity, of which the one is continually effacing the other, are entirely unlike. The one is dark with sorrow and disappointment, the other bright with prosperity and joy. The Past is the region of sobs, the Future is the realm of song. In the one crouches Memory, clad in sackcloth and ashes, mumbling penitential prayer; in the sunshine of the other Hope flies with a free wing, beckoning to temples of success and bowers of ease. Yet the Past is the Future of yesterday, the Future is the Past of to-morrow. They are one — the knowledge and the dream.

PRESENT, *n.* That part of eternity dividing the domain of disappointment from the realm of hope.

FUTURE, *n.* That period of time in which our affairs prosper, our friends are true and our happiness is assured.

— Ambrose Bierce, *The Devil's dictionary* (1911)

ABSTRACT

This study examines the forms and meanings of tensed and non-tensed clauses in English, and proposes an analysis of them that is 'Reichenbachian' in spirit and syntactic in orientation. The study considers tensed verb forms in simple sentences, focussing on 'present', 'future', and 'perfect' forms and their interaction with adverbials of temporal location; and those in complement, relative, and temporal clause constructions. It also considers three types of non-tensed verb forms — infinitives, gerunds, and 'bare infinitives' — in verb complements.

The study demonstrates that the interpretation of tensed and non-tensed forms can be described in terms of Reichenbach's (1947) temporal schemata, which express relations between 'S' ('speech time'), 'R' ('reference time'), and 'E' ('situation time'). However, its central claim is that the tensed forms themselves are 'temporally underspecified', encoding relations between 'S' and 'R', and leaving the relation between 'R' and 'E' and the location and duration of both of these intervals to be determined by lexical properties of the verb and its arguments, temporal adverbials, and context. Non-tensed verbs forms have a similar syntactic representation, differing primarily in not fully encoding a relation between 'S' and 'R'. This claim is cashed out in terms of two devices: a feature system that expresses tenses as particular values of the feature matrix [Anterior, Posterior]; and a device of 'tense linking', based on Higginbotham's (e.g. 1983) proposal for binding theory, which associates verbs with temporal adverbials or tensed Infl, and one (tensed or non-tensed) Infl with a higher one.

RÉSUMÉ

Cette étude s'intéresse au rôle des temps verbaux en anglais. Elle examine les formes et les significations des propositions conjuguées ou non, et en propose une analyse «Reichenbachienne» dans son esprit mais syntaxique das sa forme. On considère les formes verbales conjuguées dans les phrases simples, avec un accent sur les formes «present», «future», et «perfect» et leur interaction avec les locutions adverbiales de localisation temporelle. On étudie aussi les subordonnées complétives, relatives, et temporelles. Enfin, trois types de formes verbales non conjuguées sont examinées, les formes infinitives, gérondives, et «infinitives sans *to*» dans les compléments verbaux.

Cette étude montre que l'interprétation des formes conjuguées et non conjuguées peuvent être décrites en termes des structures temporelles de Reichenbach (1947), qui expriment des relations entre «S» («temps de l'énonciation»), «R» (temps de référence»), et «E» («temps de la situation»). Notre thèse centrale est cependant que les formes temporelles elles-mêmes sont temporellement sous-spécifiées, et qu'elles expriment essentiellement des relations entre «R» et «S», laissant la détermination des relations entre «R» et «E», ainsi que la détermination de la localisation et de la durée de ces deux intervalles, aux propriétés lexicales du verbe et de ses arguments, aux adverbes temporels, et au contexte. Les formes verbales non conjuguées ont une représentation syntaxique similaire, la différence consistant en ce qu'elles n'expriment pas pleinement de relation entre «R» et «S». Notre proposition est établie avec l'aide des deux dispositifs suivants: un système de traits qui caractérise les temps comme des valeurs particulières des traits [Antérieur, Postérieur]; et un système de «tense linking» (basé sur la proposition de Higginbotham (1983, entre autres) concernant la Théorie de Liage), et qui associe un verbe donné avec un adverbial temporel ou avec un nœud Infl «+ Tense», et un nœud Infl («+ Tense» ou «- Tense») avec un nœud Infl supérieur.

ACKNOWLEDGEMENTS

This dissertation has been rather a long time in the making. During this time, my life, for better or worse, has been mostly tense. But certainly both life and work would have been immeasurably poorer without the friendship and encouragement of many people in many places — particularly during these past three 'transatlantic years', which have divided my time between Germany and Canada. It seems fitting, then, that the list of people and places whose support I wish to acknowledge is also long.

First, I wish to thank my supervisor, Brendan Gillon, above all for his patience, but also for his good humour and good judgement, his expertise in matters semantic, and his scrupulous and no-nonsense reading of my drafts. Next, James McGilvray, for writing a book that has had a great influence on my own thinking about tense and reference, and for reading and discussing my drafts and and sharing his own manuscripts and insights with me; Norbert Hornstein, for being generous with his time during his visits to McGill over the years, and for leaving behind, on one of those visits, a copy of his manuscript of *As time goes by* — another book which has greatly influenced my thinking about tense; John Macnamara, whose Spring 1988 'Logic and cognition' seminar with Gonzalo and Marie Reyes first drew my attention to the issue of reference, and whose recent death deprives me and many others of a mentor and friend; Mark Baker, whose seminar on morphology gave me my first opportunity to explore the issue of temporal marking in language; Lisa Travis, who sparked my interest in the relation between linguistic form and linguistic meaning by innocently suggesting, once upon a time, that I write a term paper on 'sluicing'; and Michel Paradis, who first suggested that I study linguistics.

Thanks also go to the other members of the Linguistics Department faculty, both past and present — in particular, Glyne Piggott, who has been a great source of encouragement during my years at McGill, as well as my host in Leiden and GLOW companion; Irena Bellert, who first taught me semantics, and first drew my attention to a range of issues in the philosophy of language; Nicole Domingue, who patiently listened to graduate school complaints, and pulled obscure sources of Department funding out of a hat; Nigel Duffield, who has been a gracious proofreader of my rather poorly written German faxes; and Lise Vinette and Linda Suen, who have extended me a sizeable line of credit for photocopying and faxing over the past few years. I also wish to thank the Department for financial assistance, in the form of several teaching assistantships.

Thanks go next to the members of the Laboratory of Applied Cognitive Science — in particular, Sylvie Bosher, Robert Bracewell, Carl Fredericksen, Michael Hoover, and Stephen Witte during his tenure there — for providing an interesting place to work and discuss linguistics and other matters.

Then there are my many friends from the Department: Mengistu Amberber, Susan Bennett, José Bonneau, Cindy Brown, Ted Caldwell, Mark Campana, Jenny Dalalakis, Marc Fabiani, Joyce Garavito, Eithne Guilfoyle, Makiko and Yahiro Hirakawa, Edward Ikeda, Zofia Laubitz, David Lipscomb, Jane Macauley, Heather Matthew, John Matthews, Jonathan Mead, Dean Mellow, Amanda Miller, Alison Mitchell, Roberto Ong, Jennifer Ormston, Tom Patrick, Sharon Rose, Gerald Rosenau, Evelyn Styan, Martha Trahey, and Alan Vickers. Special thanks go to Shanley Allen, for providing crucial bibliographic help and much encouragement in the very dark days of winter and spring (and for deflecting some Department contempt away from me by also being very late with her dissertation); Kathy Burns, for her excellent Philosophy Department connections, for lifts down to Boston (and abetting outlet shopping in Burlington on the way back) and tour-guiding in Austin, and most of all for being an inspiring proponent of the take-no-crap attitude to lingusitics and life more generally; Henrietta Hung and Sam Rosenthall, for putting me up over the years in Cambridge and Amherst, respectively, and for facilitating my book-buying binges at WordsWorth, the Book Mill, and elsewhere; Alan Juffs, for passing along job announcements and sharing my prejudices about linguistics; Alan Libert, for rekindling my interest in classics, for sharing his psychologically interesting verse and amusingly cynical views on many matters, and for selling me a good part of his collection of obscure and crazy books; Leslie de Freitas, Anna Maclachlan, and Máire Noonan, for listening to years of my disagreeable chatter about the sorry state of our field, and respectively for the unauthorized biographies of John T. (surely now a collector's item) and Farrah F.-M., which have graced my workplaces for the past year and a half; for doing countless time-consuming and annoying (but at times life-preserving or at least life-enhancing) favours, and for giving me a copy of Watson and Crick's one-page *Nature* article (which has graced my workplaces for even longer than the biographies, but whose lesson I have yet to learn); and for giving me the hardsell about taking a job in a university town in Germany, of all places. The last two friends, along with Thomas E. Gardner (honourary linguist, perhaps the most thanked non-linguist in recent Department memory), are owed a special debt for making my three years of commuting between Göttingen and Montreal both possible and enjoyable.

I also wish to thank some current and former student denizens of the Department of Philosophy — Nicholas Adamson, Alex Barber, Andrew Burday, and Robert Kermode — for providing philosophers' views on language, and good eating and drinking company.

There are also many friends to thank from Montreal, Toronto, and college: Caroline Birks, for being a good travelling companion through Prague and Berlin, and for her many faxes to me in Göttingen, which gave me something to look forward to when climbing the stairs to the computer room; Jean-François and Bonnie Chénier, for giving my cat, Sascha, a wonderful home, for sending boxes of books to me from the States at 'M-bag' rates, and for their willingness to deposit this dissertation for me; Douglas Darrow, for humorous e-mail correspondence during much of my final dissertation-writing year, which helped to keep me (reasonably) sane; Richard Goldman, for (little does he remember!) first getting me interested in linguistics, way back in 1984; Keir Keightley, for visiting me in Göttingen at just the right time, and (narrowly) preventing a nervous breakdown; Heike Schimkat, for tutoring me in German during the summer, and thus allowing me to return to Germany to complete this dissertation; Lori Tureski, for passing on the wonderful words from Bierce that appear in the epigraph (I wish I had discovered them myself!); and Richard Whitehead, for being one of my first Canadian visitors in Göttingen, and providing me with my first good excuse to see Berlin, and also for giving me the run of his condominium in the McGill Ghetto for a hectic week and a half in the summer when I really needed to be downtown.

And there are the many people who formed my German connection. Most of all, I wish to thank Thomas J. Gardner, for amusing and informative discussion about linguistics and many other matters, and for offering me a position at Georg-August-Universität Göttingen, which allowed me to see my way out of graduate school debt, and also gave me the opportunity to mature somewhat, both as a person and as a linguist. Then there are my other colleagues in the English Department — in particular, my 'GLC' colleagues, John Coates (owed a special thanks for making me think carefully about (Canadian) 'sequence of tense' phenomena), Wolfgang Riebe, Benjamin Sandidge, Howard Shaw, and Joachim Tuschinsky; and Hartmut Czepluch, Richard Geiger, Hero Janßen, Reinhardt Küsgen, and Roland Torkar (whose own graveyard-shift working hours regularly coincided with my own, and made writing in the Department considerably more enjoyable).

Next on the list are the many good friends I have made among the students of the English Department and elsewhere: Karen Barkemeyer, Suheil Bishara, Patrick Brandt, Manfred Burgheim, Eva Dolezel, Kristina Dröge, Hanno Greib, Ingo Herzke, Elmar Jochem, Alexander Kaiser, Ines Reese, Adriane Rose, Katja Schmidt, Anna-Katrin Seebert, and Björn Sievers. Special thanks to Frank Ernemann, for storing my belongings in his car for a good few weeks, and driving them down to Stuttgart; Harald Fischer, for putting me up in his flat for long periods of time with little complaint, for storing my belongings, and for finding a good home for an unbelievably large and heavy Nazi-era wardrobe; Gordon Kose, for very graciously permitting me to commandeer his Macintosh™ for days at a time; Oliver Ludwig, for hosting me in Wiesbaden, and Martin Heck, Doreen Prasse and Sören Birke, for hosting me in Berlin; Christian Müller-Bäthe, for much-needed furniture-buying and furniture-moving help during my time in Göttingen; Jörg Rampacher, for his summer-time efforts to help me to find an apartment in Stuttgart, and for being an unbelievably faithful correspondent; and Matthias Roeser for bringing to my attention Joe Matt's *Peep show* comic series, which became the inspiration for many of my examples. Special thanks also to the people in my 'Tense and time' seminar — in particular, the regular and well-prepared attenders, Martin Köster, Malte Kreuzfeld, Tami Matsfield, and Ute Jacob — for giving me the opportunity to discuss many of the ideas that made their way into this study; to Frank-Uwe Martens for help with German and Russian, and Olga Prochorova, for help with Russian. And special thanks must go, finally, to my former *Mitbewohner*, Christian Lang and Henry Wegener, and *Mitbewohnerin*, Sandra Göckens, for putting up with my strange hours and my odd eating and dishwashing habits, for helping me to improve my German (such as it is), and for storing and/or buying a good deal of my furniture and other accumulations; and to my current *Mitbewohner*, Tobias Höll and Roland Reißer, and *Mitbewohnerin*, Ulrike Nater, for enduring what have become even stranger eating and sleeping habits (although my dishwashing has improved).

I also wish to thank the following people for sharing manuscripts on tense with me: Elizabeth Cowper, Mürvet Enç, Abdelkader Fassi Fehri, Teun Hoekstra, Wolfgang Klein, Eleonore Oversteegen, and Karen Zagona.

My doctoral studies have been supported by a doctoral fellowship from FCAR (Fonds pour la formation de chercheurs et l'aide à la rechereche). In addition, a good deal of the final draft has been written on a DAAD (Deutscher Akademischer Austauschsdienst) scholarship at the Institut für Maschinelle Sprachverarbeitung of the Universität Stuttgart. I wish to thank the people associated with

the Institut, in particular Hans Kamp, for permitting me to spend this academic year here, and my colleagues in the clouds at Herdweg 112 — Björn Aldag, Pascal Amsili, Franz Beil, Stephen Berman, Mariana Damova, Tim Fernando, Frank Keller, Peter Krause, Adam Przepiorkowski, Robert van Rooy, Antje Roßdeutscher, Daniel Rossi, and Carl Vogel — for much discussion and encouragement and many native speaker judgements. Particularly helpful have been Steve's and Carl's judgements for English, Pascal's for French, Adam's for Polish, and Mariana's for Bulgarian. I also wish to thank Viktor Frank and Christiane Kamm for ironing out some very serious Word™-related printing problems for me; and Josef van Genabith and Edgar Hoch for regularly letting me into the Institut office after hours so that I could use the fax machine.

I must, of course, also thank my mother, Estelle Shaer, and my brother, Michael Shaer, for emotional and practical support, particularly during my years in Germany, and for their (mostly) forbearing attitude toward my eccentricities; and my father, Harold Shaer, for his financial support of my academic endeavours over the years (not to be sneered at, this) and for being 'plugged in' to my intellectual aspirations all through this time.

Finally, I wish to thank the people to whom this dissertation is dedicated: Katrin Demme, for her lively and amusing company, writing, and artwork (her illustrated *Kurzgeschichte* „Penelope" is one more item that has graced my workplaces, providing me with inspiration) and her uncompromising attitude toward everything (I thought *I* was bad), for supplying me with brain-charging espressos at the Crêperie, and for making me feel like part of the human race again; Dagmar Powitz, my best friend in Göttingen, for her hour-long telephone calls, for Sunday afternoon pizza, and for counting on me and being someone I could count on; Donna Patrick, for years of friendship and moral support, for selling me her PowerBook™ at a fair price, for providing me with accommodations during a hellish summer of writing, and for delivering the penultimate draft of this dissertation to Montreal; and my friends at The Word, where I found many books, some even about linguistics, which have provided me with much inspiration.

TABLE OF CONTENTS

Chapter 1. Building a theory of tense: Goals, assumptions, proposals 11
1. Building a theory of tense 11
1.1. Assumptions and the data 11
1.2. Objectives and methodology 12
2. Some questions about terms 20
2.1. What is tense? 20
2.1.1. Traditional classifications 20
2.1.2. Notional characterizations of tense 22
2.1.3. Morphological and morphosyntactic characterizations of tense 25
2.1.4. Semantic characterizations of tense 30
2.1.4.1. Tenses as operators 31
2.1.4.1.1. Expressive power 32
2.1.4.1.2. Other non-parallels in the syntax of tenses and operators 34
2.1.4.2. Tenses as semantically inert: Vlach 1993 37
2.1.4.3. Tenses as configurations of 'S', 'R', and 'E': Reichenbach 1947 44
2.1.4.3.1. Characteristics of Reichenbach's system 45
2.1.4.3.2. Problems with the analysis 47
2.1.4.3.2.1. 'S', 'R', and 'E' 47
2.1.4.3.2.2. The 'compositionality' of tense forms 56
2.1.5. Syntactic characterizations of tense 60
2.1.5.1. 'SRE' analyses of tense 63
2.1.5.1.1. A 'linear' analysis: Hornstein 1990 63
2.1.5.1.2. A 'compositional' analysis of tense: Bouchard 1984 67
2.1.5.2. A feature analysis of tense Rigter 1986 73
2.1.5.3. An 'exploded' Infl analysis: Giorgi & Pianesi 1991 76
2.2. What is reference? 84
2.2.1. 'Meanings' and 'meaningfulness' 85
2.2.2. Kinds of reference 86
3. Towards a theory of tense 88

Chapter 2. A linking theory of tense: Analysing tenses in simple sentences 91
1. Some issues surrounding tenses in simple sentences 92
1.1. The status of *will* 99
1.2. 'Present' tense 105
1.2.1. 'Habituals' and 'progressives': First pass 107
1.2.2. The structure of 'habituals' 110
1.2.3. The meaning of the 'progressive' 120
1.2.4. 'Iteratives' and evidence 133
1.2.5. 'Futurates' 136
1.2.5.1. Derivational accounts 142
1.2.5.2. 'Hidden' structure 146
1.3. 'Perfect' forms 147
1.3.1. The interpretation of the 'present perfect' 148

1.3.1.2. 'Resultativeness' and 'current relevance' 149
1.3.1.3. 'Continuative' and 'indefinite' readings 153
1.3.2. The interpretation of the 'past perfect' 160
1.3.3. The meaning of 'perfect' forms 161
1.3.3. Puzzles of adverbial modification 164
1.3.3.1. The 'present perfect puzzle' 165
2. Tenses, adverbials, and temporal indeterminacy 170
3. The proposal 179
3.1. The system of features introduced 180
3.1.2. Tenses 181
3.1.2.1. 'Past', 'present', and 'future' 181
3.1.2.2. Modal auxiliaries 184
3.1.3. Temporal adverbials 189
3.2. The 'linking' mechanism 192
3.2.1. Linking conditions 197
3.3. Applying the analysis 202
3.3.1. 'Past', 'present', and 'future' 202
3.3.1.1. 'Matching' Infl-Adverbial combinations 203
3.3.1.2. 'Compatible' Infl-adverbial combinations 203
3.3.1.3. 'Mismatching' Infl-adverbial combinations 205
3.3.1.3.1. Acceptable 'mismatches' 205
3.3.1.2.2. Unacceptable 'mismatches' 206
3.3.2. 'Perfect' tenses: Handling unacceptability and ambiguity 207

Chapter 3. Extending the analysis: Tense linking in complex sentences 212
1. Tenses in embedded clauses 213
1.1. Complement clauses and 'sequence of tense' 213
1.2. Problems with the 'quotative analysis' 214
1.3. More recent derivational analyses 223
1.3.1. Issues for derivational analyses of SOT 226
1.3.1.1. 'Unshifted' tenses 227
1.3.1.1.1. 'Present' under 'past' 227
1.3.1.1.2. 'Past' under 'past' 235
1.3.1.1.3. Tenses under 'present' and 'future' 241
1.3.1.2. 'Non-SOT' languages 243
1.3.2. Implications for derivational analyses 246
1.3.2.1. Traditionally-oriented analyses: Comrie 1986, Baker 1989 247
1.3.2.2. 'Backshift' as 'merely morphological': Hornstein 1990 249
1.3.2.3. An 'interpretatively sensitive' account: Ogihara 1989 255
1.3.3. The problem of 'triggers' 261
1.4. Relative clauses 265
1.4.1. Differences between relative and complement clauses 266
1.4.1.1. Some recent accounts 272
1.4.1.2. The contribution of propositional attitude verbs 279
1.4.2. Locality conditions and relative clause types 283
2. Non-derivational analyses of tense in complex sentences 286
2.1. Lexical ambiguity: Rigter 1986 286

2.2. 'Orientation' and 'sharing': Smith 1978, 1981 293
2.3. Tenses as adverbs: Hornstein 1990 303
2.5. Tenses as referential expressions: Enç 1987; Zagona 1990 312
2.5.1. Enç 1987 315
2.5.2. Zagona 1990 318
2.5.3. Coindexation and the problem of identical intervals 324
3. A linking theory of tense interactions 332
4. Temporal clauses 338
4.1. Patterns 339
4.2. Toward an analysis of temporal clauses 341
5. Summary 345

Chapter 4. Extending the analysis further: Tense linking and non-finite constructions 347
1. The time reference of non-finite complements 348
1.1. '*To*-infinitives' 348
1.1.1. Basic patterns 348
1.1.2. The 'perfect infinitive' 354
1.2. Gerunds 355
1.2.1. Basic patterns 355
1.2.2. Comparison with TIs 358
1.2.3. Gerunds and NPs 365
1.3. Bare infinitives 366
1.3.1. Comparison with TIs and gerunds 367
1.3.2. Perceptual reports and gerund ditransitives 369
2. Toward an analysis of temporal differences in non-finite complements 370
2.1. Stowell 1982 371
2.2. Gerundial complements and the 'DP hypothesis' 377
2.3. Toward an analysis of TIs: Back to Reichenbach: 382
2.3.1. Rigter 1986 383
2.3.2. Hornstein 1990 386
3. A linking analysis of non-finite complements 392
3.1. TIs 392
3.2. BIs 397
4. Summary 398

Chapter 5. Summary and conclusions 399

References 405

CHAPTER 1

BUILDING A THEORY OF TENSE: GOALS, ASSUMPTIONS, PROPOSALS

> There may be many sound reasons for rejecting the idea explored in this paper in favor of some alternative, although I do not know of any. If there are, it would be worth taking the trouble to show this in detail, and make the alternative fully explicit, rather than assuming that something along the lines of earlier generative analyses (where there are any) can be accepted. It will be unfortunate if currently uncontroversial but ill thought-out analyses continue to be maintained on the basis of a default principle of pure conservatism.
>
> Pullum 1982: 210

1. BUILDING A THEORY OF TENSE

A significant part of linguistic research (like scientific research generally) has been the process of discovering that things are not as simple as they seem, and then of determining what organizing principles underlie this new complexity. This is particularly true given that linguistic theory seeks to explain natural language phenomena in terms of one or another set of basic assumptions, which often amount to simplifying assumptions, about language and languages. Thus, the process in question has commonly involved a choice between more or less fundamental deviations from such assumptions.

1.1. ASSUMPTIONS AND THE DATA

This dialectic between assumptions and data can easily be illustrated with respect to the phenomenon of tense. If we begin with the 'commonsense' view that 'present' tense refers to present time, 'past' tense to past time, and 'future' tense to future time, then we are able to explain the temporal interpretation of a vast number of sentences, such as those in (1). However, sentences such as those in (2) indicate that matters are not so straightforward, and that (at the very least) some modification of the 'commonsense' view will be necessary.

(1) a. The temperature is 35^0.
    b. Ozymandias was here.
    c. Joe will be here on Tuesday.

(2) a. Trish leaves tomorrow.

b. If I had a million dollars, I'd be rich. (Page & Robertson 1992)

c. (*When the bell rings*) That will be the milkman.

(Declerck 1991: 87, (145b))

The question that arises, then, is what form this modification should take, or indeed whether mere modification, rather than outright abandonment, of our original claim is sufficient to solve the problem that the latter sentences pose.

Of course, the kind of solution we offer depends largely on how we choose to characterize the problem that these sentences do pose. A recognition that they are instances in which 'present', 'past', and 'future' tenses do not refer, respectively, to present, past, and future situations can lead us in any number of different directions. One, adopted by many researchers, is to reject the relation between tense and time explicitly (see Declerck 1991: 77–79 for a review). Another is to subordinate this relation to that between temporal adverbials and time in the computation of temporal interpretations (e.g. Vlach 1993). A third, which we shall be taking here, is to modify rather than reject the 'commonsense' view, seeing it not as misguided but only as too restricted. More specifically, such a view is taken to be correct only for a narrowly defined domain, which encompasses the 'standard' readings of tenses, such as those given in (1). What is required, then, is a theory that describes how this domain can be embedded within a more broadly defined one, so that the specific meanings associated, for example, with 'past', 'present', and 'future' tenses in (1) can be seen to reflect only one possible set of meanings associated with these forms, other sets of which would include the meanings illustrated in (2). One kind of theory that fulfils these requirements takes tenses themselves to be indeterminate in meaning, and describes the meanings that they do bear on particular occasions as being secured only in concert with other grammatical elements and context. The development of just such a theory, the particular form of which will be that of a 'linking theory' of tenses, will be the primary goal of this work.

1.2. Objectives and methodology

Before we go into any more detail about the analysis to be proposed, we should make explicit what we want our theory of tense to tell us. It seems safe to say that its primary goal should be to spell out what tenses are, and how and what they contribute to temporal interpretation. This is hardly a trivial task, as we shall see in §2 below and throughout this study. This is because the task is not only one of observing and comparing various types of tensed and untensed clauses. It is also one of establishing which of the patterns that emerge from such examination may be attributed to the

properties of tenses themselves, and which to the properties of various linguistic and non-linguistic concomitants of tenses as they are actually employed; and of determining which 'level' of linguistic description — that of the word, the sentence, or the discourse — and from which linguistic perspective — phonological, morphological, syntactic or semantic — these properties of tense are best captured. We shall have more to say about how this might be accomplished below.

Our theory should, first of all, be able to account for certain salient properties of tenses. The first of these is their referential properties — that is, their ability to allow a sentence to refer to some object and some situation by locating them at some time (McGilvray 1995a). The sentence in (3), for example, refers to Joe and the situation of his living in Toronto, both of which the present tense of the verb locates at a time overlapping with the time of speech:

(3) Joe lives in Toronto.

Significantly, these referential properties of tenses are, as McGilvray argues in his (1991) study of tense and reference, 'world-independent'. That is, a tensed sentence is able to locate some entity at some time regardless of the 'reality' of the world that this entity inhabits, allowing us 'to refer to anything, anywhen' (McGilvray 1991: 3), and to 'encounter no difficulties in telling stories of fictional worlds... our sentences [not seeming] to differ in any structural respects... when they appear in fictional discourse' (ibid., 8). McGilvray illustrates this fact about tense and reference with the first line of Macbeth's 'Is this a dagger' soliloquy:

(4) Is this a dagger which I see before me? (Shakespeare, *Macbeth* II. i.33)

This sentence, he points out, 'appears in a piece of fiction, refers identifyingly to an illusion, and is a question' (ibid., 27) — all of which strongly suggest that a description of these properties should not appeal to worlds or truth.

Also salient are the anaphoric properties of tenses, by virtue of which the time indicated by a given tense depends upon a time already established by a temporal adverbial, as in (5a), or another tense, as in (5b):

(5) a. Last week, Joe did not visit Trish in the suburbs.
b. Trish told Joe that she was leaving him.

Interestingly, this anaphoric property of embedded tenses, whereby they depend on matrix tenses, bears a strong resemblance to this ability of infinitival forms (see e.g. Rigter 1986: 106–7).

(6) a. Joe expected Trish to call him.
b. Trish considered Joe to be a selfish bastard.

Thus, another challenge for an analysis of tense is to distinguish the contributions of tensed and non-tensed forms in such a way that the temporal contributions of the latter are still recognized.

A third salient property of tenses is their ability to interact with referentially ambiguous temporal adverbials in establishing a particular time (e.g. Smith 1981: 219–20; Kamp & Reyle 1993: 494). This is illustrated in (7), in which the referent of the temporal adverbial *at five o'clock* in each sentence can be seen to depend crucially upon the particular tense with which it coöccurs:

(7) a. The train left the station at five o'clock.
b. The train will leave the station at five o'clock..
c. The train leaves the station at five o'clock.

Interestingly, the sentences in (7) each have two quite distinct readings, a 'semelfactive' (or 'single event') reading in which the temporal adverbial indicates a particular five o'clock, and an 'habitual'[1] reading in which it indicates all of the times in question within the period during which the habitual activity takes place. The sentence in (7a) has a third reading in addition to these two: a 'futurate' reading — that is, one in which the tense is 'understood as referring to future time' (Huddleston 1977: 732)[2] — which is the 'past' tense analogue of the 'single event' reading available in (7c), according to which train's leaving is located at a time subsequent to the basic past time at which the train is located by the 'past' tense (what we shall be referring to later in this study as the 'reference time'). The availability of these various readings indicates another important property of tenses, which is most prevalent in morphologically impoverished languages like English: namely, the underspecified and highly context-dependent nature of their temporal contributions (e.g. Smith 1977b).

The properties of tense enumerated so far have all been semantic ones, attention to which has led many authors to view tense as an essentially semantic phenomenon, to which its syntactic and morphological realization (which varies in what appear to be semantically irrelevant ways from language to language and even within the same language) can provide limited insight (see e.g. McGilvray 1991: 41, 125, 131). But if

[1] This is one of a cluster of terms — which also includes 'frequentative', 'repetitive', and 'iterative' — that are used to describe 'situations' that involve some kind of repetition. For discussion of some of the 'situations' and terms in question, see e.g. Declerck 1991: 277–84.

[2] Huddleston (1977) applies this term only to 'present' tenses that have such a reading; however, since 'past' tenses seem to bear an analogous reading, I shall be applying this term to them too.

we believe that the form and interpretation of sentences are related to each other in theoretically significant ways — more specifically, that the former guides the latter (ibid., 171), so that the compositionality of meaning is, '[i]n effect... the compositionality of syntax' (McGilvray 1994: III.4) —, then it is important to determine what structural properties of tenses underwrite the interpretations that tenses receive. From this perspective, these properties are as basic to the characterization of tense as the semantic properties described above, and in fact provide a crucial source of evidence for the construction of an adequate semantic analysis of tense.

It is perhaps no coincidence, then, that these structural properties, as revealed in patterns like those illustrated below, are in many cases closely related to the semantic properties just described. That these patterns must, however, be acknowledged to have a syntactic substrate can be seen from comparison of English examples with their counterparts in other languages, which reveals syntactic differences with significant interpretative effects:

(8) ENGLISH COMPLEMENT CLAUSES

a. Trish said that she believed Joe
   i. once upon a time. [= 'anterior' reading]
   ii. even though he had lied before. [= 'simultaneous' reading]

a′. Trish said that she had believed Joe.

b. Trish will say that she believes Joe.

b′. Trish will say that she will believe Joe.

(9) ENGLISH TEMPORAL CLAUSES:

a. When Joe finally makes a decision, we will be able to leave.

a′. * When Joe will finally make a decision, we will be able to leave.

(10) ENGLISH ADVERBIAL COÖCCURRENCE PATTERNS:

a. Chester leaves tomorrow.

a′. Chester left tomorrow.

a″. * Chester has left yesterday.

b. Joe has lived in Toronto for a few years.

b′ Joe lives in Toronto (* for a few years).

(11) JAPANESE AND RUSSIAN COMPLEMENT CLAUSES:

a. John-wa Mary-ga byooki-da to it -ta
   John-TOP Mary-NOM be-sick-PRES that say PAST
   'John said that Mary is/was ill.' ['present' or 'simultaneous' reading]

a′. John-wa Mary-ga byooki-dat-ta to it -ta
John-TOP Mary-NOM be-sick-PAST that say PAST
'John said that Mary had been ill.' ['anterior' reading only]
(Ogihara 1989: 73, (2))

b. Tanja skazala, čto ona tancuet.
Tanja say-PAST that she dance-PRES
'Tanja said that she was dancing.'

b′. Vera skazala, čto ona pridet na sledujuščij den'.
Vera say-PAST that she come-FUT on the next day
'Vera said that she would come on the next day.'
(based on Comrie 1986: 275–76, (33), (38))

(12) FRENCH AND GREEK TEMPORAL CLAUSES:

a. Quand (Lorsque) vous voudrez me parler, je vous écouterai.
(Ollivier 1978: 157)
lit. 'When you will want to talk to me, I will listen to you.'

b. ótan θa ftásume s to spíti tis, θa vrúme
when FUT arrive-1PL at the+house her-GEN FUT found-1PL
ti lúla
the+Lula-ACC
lit. 'When we will arrive at her house, we will find Lula.'
(Joseph & Philippaki-Warburton 1987: 30, (89b))

(13) FRENCH AND GERMAN ADVERBIAL COÖCCURRENCE PATTERNS:

a. Je demeure depuis dix ans à Montréal.
a′. Ich wohne seit zehn Jahren in Montreal.
lit. 'I live since ten years in Montréal.'

b. Je suis arrivé hier.
b′. Ich bin gestern angekommen.
'I arrived yesterday.'

From (8) and (11), we can see that in English, one 'past'-tensed clause embedded in another can indicate two different times — one simultaneous (or overlapping) with the time indicated by the matrix clause, and one anterior to it — while in Russian and Japanese, only the 'anterior' reading is available. Similarly, from (9) and (12), we can

see that *when*-clauses cannot host 'future' tense forms in English, but can in French or Greek; and from (10) and (13), that the English 'present' and 'present perfect' display quite different adverbial coöccurrence patterns from their counterparts in French and German. Such cross-linguistic differences suggest that attention to the syntactic and morphological form of tenses will provide the necessary foundation for a linguistically sound theory of tense and temporal reference.

What I shall be arguing in this study, then, is that the best hope for such a theory is one that is 'syntax-driven' (Rigter 1986). This means that it proceeds on the assumption that 'a syntax guides a sentence's interpretation' (McGilvray 1991: 171), and looks to the syntax and morphology of tenses for clues to their semantic representation. In this way, the 'compositionality'[3] of the latter will be revealed as the true source of the 'compositionality' of tense meanings (see McGilvray 1994). The description of tense meanings to be offered in this study will make use of Reichenbach's (1947) distinction between 'point of speech', 'point of reference', and 'point of the event', but will be couched in terms of a level of semantic representation generally known as 'Logical Form' (LF) in generative linguistic research. This follows McGilvray's (1994) suggestion that '[w]hat fully determines the meaning of an expression is... its *syntax* in some broad sense of "syntax"', so that 'understanding the meanings of expressions' to be a matter of 'syntactic competence'. Unlike much recent work, however, the study will not be concerned with a truth-conditional interpretation of LF, but will again follow McGilvray (1991: 171) in rejecting the assumption that 'truth is central for interpretation'.[4]

It should be acknowledged here that various practical constraints will limit the scope of this investigation. These will prevent us from considering, for example, the rôle of tense in discourse, or the factors influencing a speaker's choice of one tense over another. These will likewise preclude a detailed investigation of two notions closely related to tense, namely, aspect and mood; and of tense systems in more than a single language, despite the desirability of doing so — particularly in a study seeking to address certain basic questions about the nature of tense. Such a narrowing of our 'hypothesis space' may still seem simply wrong-headed; yet there are, I believe, good methodological grounds for it. The most important of these, as Verkuyl (1993: xii) has

---

[3] I will be using the term 'compositionality' in this study not in the standard model-theoretic sense, but in a very general sense to indicate that the (syntactic or semantic) structure of an expression is the result of a systematic combination of its parts.

[4] This is not to say that truth is irrelevant to interpretation, but only that it may not have the privileged rôle assigned to it in many theories of interpretation. McGilvray has argued in recent work (e.g. 1991, 1994, 1995c) that a speaker-hearer's 'syntactic knowledge' (broadly defined to include knowledge associated with LF and the 'lexicon') plays an even greater rôle than 'truth', in specifying the meanings of sentences and their constituents. McGilvray suggests, moreover, that 'truth' as it figures in interpretation is not that generally assumed by philosophers and formal semanticists; rather, it is a kind of 'truth' that 'remains tied to time of speech' and to the evidence available at this time (McGilvray 1991: 298).

pointed out, is that when building a theory 'one should not start with the roof before the first floor is ready'. Despite the substantial body of research on tense that already exists, our understanding of this phenomenon is still quite primitive. So, if we believe that a theory of tense should be built 'from bottom to top', to insure that 'it can deal with basic things before it proceeds to sky high', then we should first see what 'need[s] to be done [on] the lower floors' before attending to the higher ones (ibid.).

This rule of thumb arguably applies both to the 'level' of linguistic description and to the range of languages to be investigated. Since, cross-linguistically, tense represents a system of temporal marking generally associated with the verb (whether this association is realized either through morphologically bound or free-standing elements, or both), we can profitably begin our study by describing and accounting for the features of this system, rather than by beginning say, with the broader discourse effects of tenses. This makes even more sense if, as Salkie (1989: 30–32) has argued, the latter effects can be understood in terms of sentence-level properties of tenses. From this perspective, then, an optimal theory of tense as a discourse phenomenon is one that is able to embed a theory of tense as a morphological, syntactic, and semantic phenomenon. What this suggests is a 'modular' approach to the analysis of tense in particular and language use in general, according to which language is a 'system of parallel, highly autonomous components, operating independently to specify the several organizational dimensions that expressions of natural languages clearly manifest' (Sadock 1991: 10). A consequence of such an approach is that the various 'components' of our ability to use language can be studied independently, permitting us to see the rôle of each 'component' more clearly.

Of course, a serious methodological objection to such an approach remains, given that it is more circumspect 'to consider the entire system' before 'deal[ing] with part of it' (Smith 1978: 55). This is simply that the piecemeal investigation of a complex phenomenon like tense runs a great risk of simply misrepresenting it. A compromise solution to this very real problem, which we shall be canvassing throughout this study, is to examine a large range of data with an eye to determining which patterns fall generally within the purview of linguistic explanation and then which ones fall more specifically within the purview of a theory of tense. Such an approach is hardly foolproof, depending crucially on the plausibility of characterizing each pattern observed in a particular way, and then of removing or not removing this pattern from consideration. However, it does address the problem, noted by Dahl (1992: 648, n. 2) and others, of the 'undue simplification of data' to which many studies of tense have fallen prey, as a result of examining too restricted a range of contexts (which do not include, for example, complex or adverbially modified sentences), or of attending insufficiently to the interaction of tense with other temporal markers, such as those of aspect.

The same reasoning can be applied to the range of languages which we shall be treating. The approach just proposed will require us to consider a range of issues about tense and its relation to other linguistic and non-linguistic notions, the complexity of which precludes the possibility of attending to more than a single language. For largely practical reasons, this language will be English. Again, this kind of limitation may seem unfortunate, especially since the great similarities and differences in temporal marking systems cross-linguistically, as highlighted in such surveys as Comrie 1985 and Dahl 1985, cast serious doubt on many of the 'universalist' claims made about tenses in the linguistics literature — in particular, those pertaining to the universality of tense as a category, which are often asserted without argument.[5] However, as Salkie (1989: 30) has pointed out, detailed analyses of single languages should be seen to complement, rather than to compete with cross-linguistic surveys, since the latter studies achieve their empirical range at the cost of a loss of detail. So a reasonable compromise for a study such as this one is to present claims about one language that are sensitive to the existence of cross-linguistic differences, and are thus 'embeddable' within a more general theory of temporal marking in language.

In fact, the view of tense to be defended in this study is one which is sensitive to just such differences. This is because it takes temporal interpretation to be a highly context-dependent process, to which tenses provide quite limited temporal information. As such, it is compatible with the observation that the inflectional systems of languages do differ significantly in the temporal distinctions that they encode, and suggests a means other than formal identity of temporal categories cross-linguistically to 'equalize' the expressive resources of languages with respect to temporal marking. Such a view of tense, in other words, reflects a more general view of linguistic competence, which we might call 'broad universalism'; on this view, observable differences in temporal marking cross-linguistically reflect real underlying differences, rather than merely the difference between overt and covert manifestations of the same phenomenon. While the precise treatment of other languages must remain a topic for future research, such a view appears flexible enough to account for the phenomenon of temporal marking across languages without either sacrificing the Chomskyan goal of uncovering the 'universal' properties of linguistic knowledge or appealing to empirically weak claims about the nature of these properties.

---

[5] Consider, in this context, Chomsky's (1993: 3) 'conjecture' that there is no cross-linguistic variation in the 'LF component' — a conjecture which many researchers have called into question (Norbert Hornstein, personal communication).

2. SOME QUESTIONS ABOUT TERMS

In order to proceed with our investigation of tense, it would be wise to take a closer look at two key terms in our discussion, since this should help us to see what exactly needs to be explained. The first of these, naturally enough, is 'tense' itself, about which there is a surprising amount of disagreement, as we shall see. The second of these must be 'reference' if, as McGilvray (1991: 5) claims, 'to speak of tense is to speak of reference'. About this term there is perhaps even greater disagreement. Indeed, because there is so little consensus in the linguistics and philosophy literature surrounding the proper understanding of these terms, it seems the duty for any study of temporal reference to seek to clarify the relevant issues and the points of disagreement that exist there. And, because these disagreements are arguably a major stumbling-block to the development of a truly adequate theory of tense, assessing and seeking to resolve them might lead us closer to such a theory.

2.1. WHAT IS TENSE?

We might start by trying to decide what a 'tense' is. This seems the more tractable task, since the term describes a phenomenon which is certainly better documented, better understood, and far less philosophically burdened than that described by 'reference'. Unfortunately, the definitional task that we face here is a considerable one. This is suggested, for example, by the 'total lack of consensus' in the linguistics literature 'as to the question of how many tenses there are in English' (Declerck 1991: 8). This, of course, is due to a lack of consensus as to the more basic question of what a tense is.

2.1.1. TRADITIONAL CLASSIFICATIONS

If we turn to English, we find that traditional inventories of tenses commonly distinguish eight basic, or 'simple', indicative forms: 'present', 'past', 'future', and 'conditional' (or 'future in the past'); 'present perfect' 'past perfect', 'future perfect', and 'conditional perfect'. When these are supplemented by their periphrastic counterparts, formed in combination with *be* and the 'present' participle (and known variously as 'continuous', 'progressive', and 'expanded' forms (see Jespersen 1931: §12.1(1) for discussion), the result is a total of sixteen forms.[6] These are illustrated below, in the first person singular:

[6] This is only one possibility: Jespersen cites studies suggesting various numbers of tenses. See Binnick 1991 for a discussion of various systems.

(14)

	SIMPLE	CONTINUOUS
PRESENT	love	am loving
PAST	loved	was loving
FUTURE	will love	will be loving
CONDITIONAL	would love	would be loving
PRESENT PERFECT	have loved	have been loving
PAST PERFECT	had loved	had been loving
FUTURE PERFECT	will have loved	will have been loving
CONDITIONAL PERFECT	would have loved	would have been loving

Three facts about this inventory are significant for our purposes. One is that certain salient distinctions between forms play no rôle in it. Two distinctions of particular interest are that between periphrastic and morphological expression of forms; and that between temporally 'simple' forms (the 'present', 'past', and 'future'), which seem only to relate the time of some situation to the time of speech, and temporally 'complex' forms (the 'conditional' and the 'perfects'), which seem to involve more than just these two times. Another significant fact is that two commonly used temporal markings associated with finite verbs, namely the '*going to*' and '*about to*' futurate forms, which appear with all of the tense forms listed, are missing from the inventory of tenses — as is the '*used to*' habitual past form. While these are all periphrastic forms constructed from 'present' or 'past' tenses, the fact that their meanings are hardly transparent, and that the inventory abounds in periphrastic forms, makes their absence somewhat surprising. Taken together, these facts bespeak a certain arbitrariness in the form of this classification, and the lack of any clear sense of what is and is not a tense. A third significant fact is that the classification of *would* forms as either 'conditional' or 'future in the past' obscures the disjunction of interpretations that they receive — that is, as indicating posteriority with respect to a past or to a present time. An awareness of this legacy of taxonomic imprecision may make our current difficulties in defining tense somewhat easier to understand — although it certainly gives us no help in resolving these difficulties.

As matters stand, the term 'tense' continues to be understood in various, and often incompatible, ways. Now there can be no doubt that tense is a complex notion, which has many linguistic dimensions. It is precisely this fact about tense that has created such a profusion of definitions in the first place, which might be seen analytically as bringing one or more of five different perspectives to bear on the phenomenon: (i) 'notional'; (ii) 'morphological'; (iii) 'morphosyntactic'; (iv) 'syntactic'; and (v) 'semantic'. While each perspective contributes a significant view of

tense, it is often not obvious how these different views may be integrated into a single treatment of the phenomenon. What we get instead are different inventories of the English tenses, and different conclusions about the rôle of tenses in linguistic knowledge and use. One might still argue that 'tense' is like the term 'word' as described by DiSciullo and Williams (1987), and applies to different entities in different linguistic domains. But this argument is not very convincing without a demonstration of principles analogous to those offered by DiSciullo and Williams that would govern these different applications of the term in question. Such a demonstration is unlikely, since what we arguably have on our hands is not a number of related linguistic entities but rather a single, albeit complex, one, whose complexity derives from its status as an inflectional category, given that '"inflection" is a domain of grammar in which morphological and syntactic considerations overlap to a significant extent' (Anderson 1992: 102).

2.1.2. NOTIONAL CHARACTERIZATIONS OF TENSE

Notional characterizations of tense are arguably the basis of any attempt to understand the phenomenon, since they typically make the closest contact with our 'commonsense' view, seeking to give it both greater precision and greater generality. Characterizations of this type most commonly seek to elaborate a view of tense as 'grammaticalised expression of location in time' (Comrie 1985: 9). (Such a view takes tense, in other words, as an expression which is 'integrat[ed] into the grammatical system of a language', as distinguished from a lexicalized expression, which is 'integrat[ed] into the lexicon of the language' (ibid., 10); and whose function is that of locating some situation with respect to some temporal interval, as distinguished from that of describing the 'internal temporal contour' of a situation, which is fulfilled by aspect.) This involves the claim that tense is a 'deictic category', which relates situations to some reference time.

It is in deciding what counts as a 'reference time' (which we may think of intuitively as the time that a sentence 'focusses on') that such characterizations run into their greatest difficulties. While the canonical reference time is taken to be the time of utterance (e.g. Lyons 1977: 682; Comrie 1985: 10), there are instances in which tenses are not directly related, or not related at all, to this time. For example, the embedded tense in (15) does not relate Bill's trying to bribe John to the time of utterance but rather to the time of John's saying:

(15) John will say that Bill was trying to bribe him.

And, as Lyons (1977: 681) argues, the 'present' tense in sentences like (16), which describe 'gnomic truths', is non-deictic, inasmuch as such sentences have nothing 'to do with present time':

(16) It never rains but it pours.

While the latter use of tenses might be regarded as exceptional, and thus requiring special explanation, the former certainly cannot be, since it represents a typical effect of syntactic embedding. So the difficulty in defining 'reference point' is simply this one: that the definition must be broad enough to account for the behaviour of tensed verb forms in (at least) their standard uses, but restrictive enough to differentiate between these forms and other, 'untensed', verb forms, such as infinitivals, gerunds, and participles.

Attempts to balance these two demands have often invoked a distinction between 'absolute' and 'relative' tenses, which have been variously defined, according to the type of balance struck between these demands. Comrie (1985: 36, 56), to take one example, defines 'absolute' tenses as those that 'take the present moment as their deictic centre'; and 'relative' tenses as those whose reference point 'is some point in time given by the context, not necessarily the present moment.' Happily, this definition encompasses such uses of tensed forms as that given in (15), which would thus be characterized as having 'relative time reference' (ibid., 36).[7] Unhappily, however, it gives no principled way to distinguish tensed verb forms used in this way from those forms generally regarded as untensed — namely, infinitivals, participles, and gerunds, as just noted — given that the latter always have 'relative time reference'. In fact, Comrie implicitly denies the validity of this distinction, by describing non-finite verb forms interchangeably as relative tenses or as having relative time reference, and by illustrating his discussion of relative tense in English exclusively with participles (ibid., 57–60). Declerck (1991: 7), to take another example, defines 'absolute' and 'relative' tenses in a quite similar way, taking the former to 'relat[e] the situation directly to the zero-point' — that is, the moment of utterance — and the latter to 'relat[e] the situation to a reference time which is itself related to the zero-point (either directly or via other reference times).' But his account departs from Comrie's in its claim that '[n]onfinite verb forms... express a single temporal relation, viz. they relate the situation to some other time, which may or may not be the temporal zero-point' (ibid.). This claim is Declerck's attempt to achieve the desired distinction between tensed and nontensed verb forms by having all and only tensed forms, whether 'absolute' or 'relative', relate a situation to a reference time. It is not obvious, however, that such a claim can be

[7]Although Comrie himself does not discuss these cases.

sustained, since non-finite forms also appear to relate a situation to a reference point. Consider the sentences in (17), given in Comrie's discussion:

(17) a. The passengers *awaiting* flight 26 proceeded to departure gate 5.
b. The passengers who *were awaiting* flight 26 proceeded to gate 5.
(Comrie 1985: 57)

The formal difference between these sentences is quite clear: the subordinate clause of the former contains a non-finite verb form, that of the latter a finite form. However, there is no obvious difference in interpretation: in both, the situation of awaiting is related to the situation of proceeding to gate 5, which is in turn related to the moment of utterance. Of course, the finite form permits a greater range of interpretations, since its well-formedness does not depend on its being subordinated to a higher verb. But a notional characterization alone cannot capture these essentially structural differences.

It seems, then, that attempts to distinguish between tensed and nontensed verb forms on the basis of notional criteria alone have ultimately been unsatisfactory. On the one hand, those like Comrie's, according to which even non-finite forms count as a kind of tense, capture certain important similarities between the behaviour of finite and non-finite forms, but at the cost of depriving the notion of 'tense' of much of its conceptual sharpness. Since it expands the notion of 'tense' to include many more forms, tenses are, for instance, no longer associated with finite clauses only, nor restricted to appearing only once per clause (ignoring coördinate structures). On the other hand, those like Declerck's, according to which non-finite forms are explicitly excluded from the inventory of tensed forms, uphold a robust and linguistically significant difference, but at the cost of having to stipulate this difference.[8] What all of these considerations suggest, then, is that a notional characterization of tense, while necessary, indeed crucial, for our understanding of the phenomenon (and whose vocabulary, as we shall see, is extremely useful for descriptive purposes), cannot by itself make strong enough predictions regarding what does and does not constitute a tense to ground a theory of the phenomenon, and must be buttressed by structural criteria.

These must be sought in other characterizations of tense — although success here will, as we shall see, also prove elusive. As noted above, these characterizations fall into four categories — 'morphological', 'morphosyntactic', 'syntactic', and 'semantic' —, the former two offering more surface and the latter two more abstract descriptions of the phenomenon.

[8] Although it should be noted that Declerk's characterization of tense is not essentially a notional one, so that this criticism does not apply to his analysis generally.

2.1.3. MORPHOLOGICAL AND MORPHOSYNTACTIC CHARACTERIZATIONS OF TENSE

Morphological and morphosyntactic characterizations of tense have arguably served a mainly classificatory function — that of enumerating the number and type of tenses in a given language —, the difference between them consisting in what feature of tenses they each take to be criterial. For the former type, among which we find the descriptions of Jespersen (1931: 3) and Quirk *et al.* (1985: §4.3), the criterion is morphological; that is, this type treats tense 'strictly as a category realized by verb inflection' (ibid.). According to such a criterion, English has only two tenses, 'past' and 'present' — or, pursuing the morphological argument further, 'past' and 'non-past', since the present tense does seem to be the 'unmarked' member of the pair (ibid.). This morphological view of tense, in fact, has much to recommend it, since it takes the structure of tenses very seriously, and thus serves to highlight a number of facts about this structure. These include the status of morphologically expressed tensed verb forms as words and periphrastically expressed forms as phrases, as noted by Jespersen (1931: §1.4); and the considerable differences in this structure exhibited by even closely related languages like English and French, the particular realization of tense in a given language being related to its basic inflectional character. Moreover, the attention which it gives to the morphology of tensed forms can also lead to real insights into the behaviour of some of these forms. For example, the much-discussed incompatibility of the English 'present perfect' with definite past-time adverbials may, according to this view, be attributed largely to its status as a 'present' tense form (see e.g. Salkie 1989: 7–8) — a point to which we shall return in chapter 2.

However, despite the fruitfulness of this approach, its reduction of tense to the single dimension of morphology is ultimately too limiting both conceptually and empirically to provide a satisfying account of the phenomenon. This emerges perhaps most clearly from consideration of the claim regarding the English '*will* future' that has commonly been offered within this approach. This claim — which follows directly from the claim that the English tense system is structured according to an inflectionally expressed distinction between past and non-past, and the observation that *will* is a free-standing (auxiliary) verb form — is that *will* is itself a 'non-past' verb form, and *would* is its 'past' counterpart.[9] Of course, such a characterization of these forms accords with

[9] Another possibility consistent with this approach is that *will* is simply not tensed, so that the temporal meaning that we routinely associate with this form is derived from its basically modal meaning. Such possibility, however, is not very appealing, since (i) it overlooks substantial cross-linguistic evidence that the modal meanings of 'future' forms are derived from temporal meanings, rather than the converse (see chapter 2); and (ii) it begs the question of why the syntactic behaviour of sentences containing *will* (or other modal auxiliaries) is in all relevant respects identical to that of tensed sentences, 'show[ing] the finite properties of requiring a subject, and requiring that it be nominative' (Warner 1993: 25). To answer this question, one could resort to the claim that the finite character of *will* derives solely from its agreement features. This claim is not inconceivable; but given the impoverished agreement of the modal auxiliaries, it is not a very satisfying one.

their etymological relation to the main verb *will*; and since the other modal auxiliaries have a similar etymology and (with the exception of *must* and *need*, which have no 'past' forms in contemporary English) display the same morphological pattern, it provides a useful description of the entire modal auxiliary system. For example, it allows for a ready explanation of the following alternations:

(18) a. The plan *will* succeed.
a'. I felt sure that the plan *would* succeed.
b. *Will* you help me?
b'. I wondered if he *would* help me.
c. *Shall* I open the window?
c'. She asked me if she *should* open the window.
d. You *can/may* do as you wish.
d'. She said we *could/might* do as we wished.
e. The king *can* do no wrong.
e'. It was seriously argued that the king *could* do no wrong.

(Quirk *et al.* 1985: §4.60)

Such explanatory virtues have led to the adoption of this analysis by a range of scholars, encompassing those with rather different theoretical bents, including Chomsky (1957: 40), Smith (1978), Gazdar, Pullum and Sag (1982), Ogihara (1989), Hornstein (1990), and Binnick (1991).

But the neatness of the past/non-past pattern given in (18) is deceptive. As Warner (1993: 9) observes, the 'preterite' forms of modal auxiliaries 'are distributed very differently from those of verbs', and their ability to express past time 'is uncommon and typically restricted' — extending beyond indirect discourse contexts only for *would* and *could*, and not for *might* and *should* (Quirk *et al.* 1985: §4.61; Warner 1993: 25):

(19) a. Few of the tourists *could* speak English.
b. We tried to borrow a boat, but no one *would* lend us one.

(Quirk *et al.* 1985: §4.61, (a)–(b))

(20) a. * John *might* have a cookie yesterday.
(cf. John was allowed to have a cookie.)
b. * We *should* be leaving on Monday.
[= past of 'We shall be leaving on Monday.']

Moreover, one of the 'past tense' uses of *would* — that of 'habitual activity' — is not closely paralleled by any use of *will*. The nearest use of the latter, that of habit, carries a suggestion 'that the habitual activity is typical of the speaker', but this suggestion is not necessarily associated with *would* (Palmer 1988: 140):

(21) a. We *would* go for long walks in the park. (Palmer 1988: 140)
b. We *will* go for long walks in the park.

As for *might* and *should*, the former is in fact more generally used as 'a somewhat more tentative... variant of *may*' (Quirk *et al.* 1985: §4.53); and the latter— which Jespersen (1931) had already described as 'virtually a present tense' (§9.5(5)) — to convey a sense of necessity or obligation or 'tentative inference' (Quirk *et al.* 1985: §4.56). These observations are illustrated below:

(22) a. There *might* be some complaints.
b. *Might* I ask whether you are using the typewriter?
c. You *might* as well tell the truth (as continue to tell lies).
(Quirk *et al.* 1985: §4.53, (3), (7), (10))

(23) a. You *should* do as he says.
b. The floor *should* be washed at least once a week.
c. The mountains *should* be visible from here.
(based on Quirk *et al.* 1985: §4.56, (5), (6), (3))

But the most common occurrences of all the 'preterite' forms of the modal auxiliaries are in various 'hypothetical, tentative or polite expressions where contextual support is not always required' (Warner 1993: 9). Thus, we find *would* and *could* in, for example, expressions of polite requests, tentative wishes, and imagined situations (Quirk *et al.* 1985: §4.63; Jespersen 1931: §§9.5(1), 19.3(4), 19.6(1)):

(24) a. *Would* you lend me a dollar? (Quirk *et al.* 1985: §4.63, (b))
b. I *would* like to hear more.
c. I wish he *would* die soon. (Jespersen 1931: §§19.6(1), 19.3(4))

(25) a. *Could* I see your driving license? (Quirk *et al.* 1985: §4.63, (b))
b. You *could* not be put in prison for speaking against industry, but you can be sent to Coventry for speaking like a fool. (Jespersen 1931: §9.5(1))

With respect to the frequency of such uses, the modal 'preterite' forms stand in marked contrast to the preterites of main verbs, which 'are freely used of past time, but typically restricted in their hypothetical, tentative and polite uses' (Warner 1993: 9). This, and the fact of 'steadily diminishing past-tense uses' (ibid., 25) of the modal forms diachronically strongly suggests that the class of auxiliaries is morphosyntactically distinct from that of main verbs (ibid., 36), 'retaining elements of structure but having "drifted off" from a motivating rule' (ibid., 41). Thus, attempts to equate the temporal marking of modals with that of main verbs appear to be misguided.[10] (The question that naturally arises is what kind of temporal marking, if any, modals do bear — to which we shall offer a tentative answer in chapter 2.)

Given the reanalysis of modal auxiliaries that Warner describes, their morphological form is better seen as a recapitulation of their history than as a reliable indication of their current morphosyntactic status or interpretation. And this, of course, reveals the central problem of a morphological approach to tenses: that by taking morphology 'as criterial' (Declerck 1991: 9) in distinguishing tenses, it runs the risk of overstating the importance of general synchronic and diachronic factors that have conspired to produce particular morphological forms, but which are orthogonal to the description of tense itself. In doing so, it runs the complementary risk of understating significant cross-linguistic similarities that are obscured by such morphological differences. As we have just seen, the fact that English modals derive from main verb forms and have inherited their 'past'/'non-past' morphology is made central to a morphological account of the English tense system, even though this 'past'/'non-past' distinction seems little more than the relic of a once-productive system.

We can see the nature of this problem even more clearly if we consider what are identified as 'future' tense forms in French. These forms are illustrated in (26):

(26) je chanterai, 'I will sing'
tu chanteras, 'you (sing.) will sing'
il/elle/on chantera, 'he/she/one will sing'
nous chanterons, 'we will sing'
vous chanterez, 'you (pl.) will sing'
ils/elles chanteront, 'they (masc./fem.) will sing'

These forms are fully integrated into the system of verbal inflection, and would thus be described as tenses even on a morphological account. Historically, however, they derive from what were two independent verb forms in Latin, an infinitive and the present form of *habere* 'to have', which coalesced into a single form, 'the new stem

[10] A similar point is made in McGilvray 1991: 45, *q.v.*

reflecting the old infinitive and the new ending a reduced form of *habeo*'; which was then subject to morphological reanalysis, whereby 'the erstwhile infinitive marker *-r-* came to be viewed as part of the ending' (Fleischman 1982: 71).[11] These three stages are shown in (27):

(27)

cantere		habeo		
chanter		—ai		
chant	—e	—r	—ai	
stem	conj marker	future tense marker	person-number marker	(based on Fleischman 1982: 71)

This suggests that much of the difference between Romance and Germanic 'futures' might be fairly superficial — the by-product of differences in the word order of their parent languages, which respectively did and did not condition a process of agglutination. Whether or not such an analysis is plausible, it raises an important point: namely, that our account of tense forms should not force us to restate differences between temporal marking systems that can be captured more perspicuously in other terms, and prevent us from expressing (or even seeing) significant similarities beneath these superficial differences. Unfortunately, morphological characterizations of tense do just this, since they lack the conceptual resources to 'factor out' such differences and to state more abstract linguistic generalizations.[12] If a goal of linguistic inquiry is to discover principles of broad validity, then the parochialism of morphological accounts of tense should be sufficient reason to reject them.

A third characterization of tense, which might be called 'morphosyntactic', is largely immune to the foregoing criticisms, but has very significant problems of its own. Essentially a reaffirmation of the traditional classification of tenses, this characterization has recently been given a spirited defence by Declerck (1991), who claims as its strong point (and as a distinct advantage over the rival just described) its broader conception of how tenses may be realized. Since it posits that 'tenses may be formally marked by auxiliaries as well as by inflectional morphemes' (ibid., 9), it is able to capture just the sorts of generalizations about tense forms within languages as

[11] Reichenbach (1947: 298) makes similar remarks, based on Brunot 1899: 434.

[12] Indeed, raising such morphological differences to the criterion for identifying tense forms would exaggerate the significance of the difference between morphological and periphrastic expression that we find in many languages. Dahl 1985 reports a number of languages where the 'past' is marked morphologically but the 'future' is marked periphrastically, including Hungarian, German, Swedish, and Wolof; and one language — Arabic — where the 'future' is marked morphologically and the 'imperfective past' form periphrastically (Salkie 1989: 17).

well as between languages that were unavailable on the morphological approach. However, while this approach recognizes that tenses may be expressed by different grammatical means, its actual classification of tense forms is based largely on functional similarities between verb forms. This failure to incorporate any formal criteria into the classification beyond those that allow the identification of verbs means that the approach suffers from all of the weaknesses already noted for traditional classifications of tense.

The seriousness of these weaknesses can be demonstrated in Declerck's (ibid.) discussion of the number of tenses in English and French. He claims that 'there is no basis for concluding that these languages make use of only two tenses', namely 'past' and 'non-past'; rather, they should be thought of as having two *sets* of tenses corresponding to this distinction. However, it is far from obvious that we should think of the 'present perfect', for example, as simply a member of the set of 'present' tenses, rather than a complex form constructed from a 'present'-tensed verb that selects a VP headed by a past participle. Likewise for other 'complex tenses' such as 'progressive' forms and the 'disputed' tense forms *be going to* and *used to*, which were mentioned earlier. In other words, a 'morphosyntactic' approach like Declerck's misses a *syntactic* generalization needed to distinguish natural classes of tense forms: namely, that tenses have internal structure, and that this structure provides a more solid foundation for a theory of tense than functional similarities and differences alone.

2.1.4. SEMANTIC CHARACTERIZATIONS OF TENSE

Of course, it is not obvious what kind of structure is relevant to an explanation of tense. Two radically different possibilities suggest themselves. One, which we shall be discussing in §2.1.5, is a broadly 'syntactic' characterization of tense, whose goals are to describe tenses in terms of abstract syntactic and morphosyntactic structures posited to underlie their surface forms; and to attribute differences in the behaviour or meaning of tenses primarily to differences in these abstract structures. The other, which we shall be discussing here, is a 'semantic' characterization, which is interested in 'syntactic structure' of a very different kind — not that of a particular 'formal representation of the object-language', as in the former approach, but that of a semantic 'translation language' in which 'rules for interpreting [elements] are stated' (Stalnaker 1973: 611). The goal of this approach, then, is to describe 'the meaning or content of a complex expression [as] a function of the meaning or content of the parts' (ibid., 612). This commonly involves abstracting away from the actual syntax and morphology of the object-language, or representing the object-language 'opportunistically', to '[suit] the needs of the interpretation procedure' being developed, rather than motivating it independently through syntactic and morphological analysis (Kamp & Reyle 1993: 24).

In what follows, we shall be examining three quite different approaches to the semantic characterization of tense: (i) the Priorean treatment of tenses as sentential operators; (ii) Vlach's (1993) claim that tenses serve only to determine temporal adverbials (and as such have no semantic representation); and (iii) the 'Reichenbachian' treatment of tenses as relations between 'the point of speech', 'the point of reference', and 'the point of the event'. What unites all of these is an essentially methodological decision (although informed by particular theoretical inclinations) about where to go about looking for answers. This decision has led them away from the syntactic and morphological properties of tenses. Their search for formal devices has led them to the syntax of logic and other formalisms 'unlikely to tell us much about the syntactic form of sentences' (McGilvray 1991: 349–50); and their search for data has led to intuitions about the meanings of expressions which are not obviously linguistic, but appear instead to reflect the interaction of linguistic, conceptual, and real-world knowledge. All of this has had undesirable conceptual and empirical consequences, as we shall see.

2.1.4.1. Tenses as operators

While it has become a commonplace in studies of tense to begin with a critique of the 'sentential operator' account based on Prior 1967 (see e.g. Dowty 1982; Enç 1986; Oversteegen 1989; Hornstein 1990; Giorgi & Pianesi 1991; McGilvray 1991; Kamp & Reyle 1993), a summary of the arguments against this account is nevertheless still instructive, both because it highlights many of the desiderata of any comprehensive theory of tense; and because so many of the lessons to be drawn from these arguments go unheeded, even in the very studies that present them. Perhaps the most important of these lessons — and not only for theories of tense — is that the possibility, explored by many proponents, of devising ad hoc solutions to repair basic structural defects in the operator account has revealed not its resilience but rather its lack of viability.

The problems faced by a linguistic account of tenses as operators are arguably of the kind that arise whenever a device is assigned a task for which it is not well suited. This account is, of course, borrowed from tense logic, which introduced tense operators into standard systems of predicate or propositional logic. For example, operators corresponding to 'past' and 'future' tenses, respectively, are introduced into standard predicate logic by one or more applications of the following recursive rules:

(28) a. If ϕ is a formula, then $P\phi$ is a formula.
b. If ϕ is a formula, then $F\phi$ is a formula.

That is, by taking a basic formula like 'q' to represent a present-tense sentence like *Hans is a logician*, this system can represent 'past'- and 'future'-tense versions of this

sentence as 'Pq' and 'Fq', respectively. And, by applying the rule forming 'past' tenses to these two formulae, as shown below, it can produce 'PPq' and 'FPq', which represent 'past perfect' and 'future perfect' versions of our sentence, respectively:

(29) a. If Pϕ is a formula, then PPϕ is a formula.
b. If Fϕ is a formula, then PFϕ is a formula.

Despite the apparent simplicity and descriptive power of tense logic — and despite its utility in 'deal[ing] with time-related inference in natural languages' and other non-linguistic issues surrounding the use of tenses (McGilvray 1991: 16) — closer inspection reveals it to be of little use for linguistic theories of tense. This is because operators turn out to be very poor models of tenses, their syntactic properties so different that they can provide virtually no insight into tense structure, distribution, or interpretation.

2.1.4.1.1. EXPRESSIVE POWER

Arguably the most glaring of these differences is the unrestricted iterability of operators, which permit the generation of 'n-ary tenses such as PFFPPPq' (McGilvray 1991: 14). Of course, such formulae 'have no direct natural language counterparts', since 'a tense is always associated with a verb and verbs cannot just be piled one on top of the other' (Kamp & Reyle 1993: 493–94). Indeed, 'piling up' verbs in this way produces forms that are not merely ungrammatical but simply uninterpretable, as (30) shows:

(30) a. * Harry was is was was will be happy.
b. * Harry was was was was was happy. (McGilvray 1991: 51)

Even worse is the lack of any appreciable difference between such minimal pairs as that in (31) (ibid.):

(31) a. * Harry will be was happy.
b. * Harry was will be happy. (ibid.)

These facts, as McGilvray (ibid.) suggests, can only be seen as a great embarrassment for the operator account, which predicts not only that these sentences should all be well-formed, but that we should be able to give 'sensible interpretations' to them — (30b), for example, 'should be interpretable with at least six time intervals'; and the pair of sentences in (31) should be distinguishable in terms of differences in the ordering of operators.

It should be emphasized that the problems identified here are fundamental and not simply ones of 'execution', which can be solved by restricting the iterability of operators. In fact, there are many reasons why such a stipulation will not work. The most obvious is that the resultant systems 'turn out to be extremely limited in what they can express' (Kamp & Reyle 1993: 497). This gives us a sense of the true nature of the problem, which is, as McGilvray (1991: 51) argues, that 'iteration gets the structure of tenses wrong'. What McGilvray means by this is that the property of iteration follows from a particular way of viewing tense: namely, as 'a relationship between two temporal intervals, one the time of speech (i_S) and the other... the time of the event or situation (i_E)' (ibid., 12). While these two intervals are apparently sufficient for representing simple tenses like the 'past' and 'future', more complex forms like the pluperfect clearly require the introduction of a third interval (in this case, one that lies between i_S and i_E). This is precisely what is accomplished by iteration, which constructs these complex forms out of simple tenses. Thus, the 'past perfect', as noted above, is analysed as the iteration of a 'simple past' — that is, as 'PPq' — and paraphrased accordingly as '"There is some time where [q] is true that is before the time where [Pq] is true (which is before now)"' (ibid., 49). The difficulty with this analysis of the 'past perfect' is the analysis of this third interval. If simple tenses are i_S-i_E relations, as the operator account claims, then this interval must the time of some event. But, as McGilvray argues, this 'must be a very special event' — one quite different from that associated with a simple tense. And in order 'to make sense of iterating a simple tense', this interval must also 'count as a time of speech'. Thus, this third interval becomes the locus of a 'speaking-assertion', at which iterated tenses must 'place a virtual person or "interpreter" assigning truth values'. That all of this apparatus has no clear independent motivation, and is required only to make sense of the claim that tense is a relation between i_S and i_E, strongly suggests that the basic structure it serves to reinforce is unrelated to that of natural language tenses (ibid., 15).

In this light, the observation that 'perfect' tenses do not have the forms that follow directly from the operator account — namely, those given in (32) — is not merely a coincidence but a direct consequence of the observation that these tenses are not properly analysed as, respectively, the 'present', 'past', and 'future' of a 'past':

(32) a. * Harry was is happy.
b. * Harry was was happy. (ibid., 51)
c. * Harry will be was happy.

Claiming, then, that the actual surface forms of these tenses are unrelated to their interpretation, and can be derived simply by devising the appropriate 'spell-out' rules,

would do little to blunt this criticism, since it fails to address the question why such rules should be necessary in the first place.

The inappropriateness of the syntax assigned to tenses by the operator account is demonstrated further by the interpretations of tenses that standard versions of tense logic are unable to express. As Kamp and Reyle (1993: 491) note, no formula generated by this system can translate the sentence given in (33), for example:

(33) Bill has been watching little Alice ever since Mary left.
(Kamp & Reyle 1993: 491, (5.13))

The fact that additional operators have been proposed expressly to translate such a reading (see ibid., 491) only emphasizes the fact that the expressive resources of tense logic are simply not well matched to those of natural language tenses. Moreover, the introduction of such ad hoc operators to overcome the system's structural defects 'has, from a linguistic point of view, been none to the good', since it 'has encouraged the tendency to ignore how *devious* these representations are'. As such, it 'has stood in the way of our seeing more clearly what the particular mechanisms are which natural languages exploit in order to convey the quite complex temporal information that it is within their power to express' (ibid., 492–93).

2.1.4.1.2. Other non-parallels in the syntax of tenses and operators

This point assumes even more importance once we turn our attention to some of the more interesting syntactic and semantic properties of tenses, including those related to anaphora and scope, and to the 'synergistic' effect of the interaction between tenses and other temporal elements.[13] Here we find that operators have virtually no means at their disposal to mimic these properties.

Perhaps the best-known of these is the ability of tenses (as mentioned earlier) to be used 'anaphorically' — that is, to 'pick up' a time established in an earlier clause. This property is identified in Partee 1973b, where it is illustrated with the following sentences:

(34) a. Sheila had a party last Friday and Sam got drunk.
b. When Susan walked in, Peter left. (Partee 1973b: 605, (10)–(11))

[13] Another property of tenses noted by Kamp and Reyle (1993: 497) that distinguishes them from the operators of standard tense logic is that of their 'indexicality' — that is, the dependence of their interpretation on the context of utterance. However, since this property, as they point out, can be incorporated into the semantics of tense logics 'without much difficulty', we shall take it merely as a problem of execution, rather than a significant weakness of the operator account, and not consider it further.

In these sentences, the 'past' tenses expressing the time of Sam's getting drunk and the time of Peter's leaving have as their respective 'antecedents' the past tense expressing the time of Sheila's party and the *when*-clause expressing the time of Susan's walking in. Note that the notion of 'anaphoric relation' being invoked here is rather looser than that of simple identity between antecedent and anaphor, as we find with NPs; and encompasses such relations as inclusion, as in (34a), and even contiguity, as in (34b). This ability to enter into a wide range of temporal dependency relations appears to be a very general property of tenses (as we shall see in the following chapters). It is also a property of tenses which sentential operators do not reflect, and cannot be made to reflect through any modification of tense logics that still leaves 'the original spirit of these logics intact' (Kamp & Reyle 1993: 498).

Closely related to this 'anaphoric' property of tenses is their ability to interact with other temporal elements, particularly adverbials, in determining the time of the situation described by a given sentence. The latter elements, in 'referring to or quantifying over times', serve as 'constraints on those times.' This is another aspect of the behaviour of tenses which tense logics are not able to capture, since 'they have no direct means for representing explicit reference to times' (ibid.).

Nor can sentential operators capture the non-scopal interactions of tenses with other elements, as many studies have observed. Perhaps their most damning failure in this respect concerns the interaction of tenses with adverbials and other tenses. Apropos this aspect of tense behaviour, we just noted above that tenses combine with adverbials and other elements to secure temporal interpretations. However, as Dowty (1982: 23) points out, this insight simply cannot be expressed in Priorean terms. That is, if we treated both tenses and temporal adverbs as operators, as tense logic would suggest, then neither of the two orderings available to them could correctly represent the interpretation of a sentence like *John left yesterday*. This is illustrated below (where *yesterday* is translated as the operator 'Y', which combines with a formula to produce 'Yϕ', read as 'ϕ is true yesterday'):

(35) John left yesterday.

a. PY [John leaves]

b. YP [John leaves] (ibid., (3a–b))

As we can see, both of the translations in (35) make the time of John's leaving 'too far in the past' (ibid., 24): (35a) makes it the day before some time in the past, while (35b) makes it some time in the past prior to yesterday.[14]

Finally, if tenses were accurately represented as operators, then they would give rise only to the scopal ambiguities that result from their taking wide or narrow scope with respect to another operator. However, they do not, as Enç (1986: 406–08) has demonstrated with the following sentences:

(36) a. All rich men were obnoxious children.
b. Every member of our investment club will buy a house.

Each of these sentences has not only the two readings predicted by the operator account — namely, that with the subject in the scope of the tense, and that with the tense in the scope of the subject —, but also one that requires the universal quantifier to range over the subject at more than one time simultaneously. This reading involves an assertion about every man who is currently rich or was formerly rich, in the case of (36a); and about present, past, or future members of the club, in the case of (36b).[15]

The foregoing considerations all point to the same conclusion: namely, that sentential operators are poor models for tenses. This conclusion holds as much for those who seek a 'purely semantic explanation of tenses' (Stalnaker 1973: 612) as for those who are more concerned with their formal syntactic representation, the two goals we contrasted earlier. This is because operators are simply unsuited to the task of translating tenses in a semantic 'translation language', given that they predict many

---

[14] Hornstein (1990: 144) makes a similar point regarding interactions between tenses. This is that if tenses really were operators, they should always be able to take wide scope with respect to other tenses, and thus to appear in structures like the following one:

(i) Pres_y [P_x [... at x... [... at y... [Fut_z [... at z...]]]]] (ibid., (47))

However, sentences like that in (ii) suggest that they cannot:

(ii) * John said that Harry believes that Fred would be here. (ibid., 144)

This sentence is unacceptable if *would* has the value of a 'future in the past', and indicates a time posterior that indicated by *said*. One response to Hornstein's criticism might be that tense operators are no more than a device for modelling the interpretations that tenses do receive, and should not be understood to make a prediction about their interpretations (Brendan Gillon, personal communication). But if this is so, we are still entitled to ask how useful a device they are if, on the one hand, they cannot readily model the interpretations that tenses do have and, on the other, suggest interpretations that tenses do not have.

[15] A converse difficulty with an operator account of tense arises in the context of its treatment of relative clause constructions like that in (i):

(i) Mary saw the unicorn that walked. (Ladusaw 1977, cited in Declerck 1991: 5, (5))

In such constructions, the operator account predicts that the relative clause is temporally ambiguous rather than temporally indeterminate. We shall be discussing this issue in greater detail in chapter 3.

interpretations that are not attested and are unable to represent many that are; and require an appeal to ad hoc theoretical entities to preserve their simple i_S-i_E structure through iteration. The sorry performance of operators in their semantic tasks argues *a fortiori* against assigning them the task of representing tenses in the syntax, as some recent analyes (e.g. Stowell 1982; Pollock 1989; Guéron & Hoekstra 1994) have done, since even as syntactic devices they must still be interpreted, and thus inevitably subjected to the same interpretative weight that they could not bear in their 'translation language' incarnation.

The failure of the operator account also highlights a weakness inherent in its approach to tense, which may be seen essentially as a search to find a simple procedure to map the formulae of a 'translation language' onto interpretations. As such, this approach gives primacy to the syntax of the 'translation language', rather than to that of the natural language which is presumably the true object of study. By ignoring the latter entirely, or simply assigning it a form that provides a neat mapping from object-language to 'translation language', such an approach not only risks overlooking the contributions that detailed syntactic analysis can make to the study of meaning, but also precludes the possibility that the relation between object-language and interpretations is other than that which is assumed — a serious problem, as we shall see.

2.1.4.2. TENSES AS SEMANTICALLY INERT: VLACH 1993

This methodological weakness is also at the heart of other semantic approaches to tense. One of these is the approach outlined in Vlach 1993, according to which 'tense is a sort of agreement phenomenon' (ibid., 246). Vlach is not the first to make such a claim; he cites Anderson 1973 and Cresswell 1973 as antecedents (although a similar claim has also been made more recently in Richards 1982). But Vlach is the first to revive it in the context of current research on tense; and his decision to do so, given its highly radical character, might be sufficient for it to warrant serious attention. Vlach's central claim is that 'there is no compositional semantics of tense', temporal semantics being 'the semantics of temporal adverbials' (Vlach 1993: 232). He motivates this claim by considering sentences like those in (37):

(37) a. Allen had a party last night.
b. Betsy had a good time at the party.
c. Betsy had a good time. (based on ibid., 247, (17)–(18))

As he notes, 'there is little or no difference' between (37b) and (37c), if each is understood to refer to the situation described in (37a), except that the former explicitly identifies the party in question as 'the occasion of Betsy's good time' by means of the

PP *at the party* — an adverbial which is not 'purely temporal', but which nevertheless 'fixes the time as the time of some discourse eventuality' — while the latter does so only implicitly. Given that the two sentences do describe the same situation, they must, according to Vlach, have the same semantic representation.

The kind of representation that Vlach assumes is an 'event representation' (ER) based on the work of Parsons (e.g. 1990) and others. His ER for the sentences in (37b–c) is given below (where 'Type' indicates 'the type of the event', 'E' 'the event reported', 'Experiencer' the rôle played by Betsy, 'Location' the location of the event, identified in terms of 'p_1',which refers to the party of the previous sentence) (ibid., 247):

(38) Type (*E*, Have-a-good-time-event)
& Experiencer (*E*, Betsy)
& Location (*E*, p_1) (ibid., (19))

The fact that his analysis makes use of such representations is central to his claims about tense, since ERs do not contain any 'context-related elements', the information borne by these elements being translated into 'non-context-dependent' terms. It follows that nothing in these ERs 'corresponds directly' to tenses, since these are translated into temporal adverbials (TAs) (ibid., 233–34), and have 'no representation at the ER level' (ibid., 248). Thus, the correspondence between (37b) and (37c) is captured through the appearance in their ER not of a past tense, but of a TA, which is explicitly marked in the former and 'understood' (that is, without any 'surface representation') in the latter (ibid., 234, 247). The tense itself 'contributes nothing' to the ER beyond helping 'to determine which adverbial is to be understood' (ibid., 247).

Vlach describes this function of tense in terms of the following 'convention' of English:

(39) In a sentence about the present (the top level TA is present), use the present tense, and in a sentence about the past (the top level TA is past), use the past tense. (ibid., (20))

On this account, then, temporal interpretation involves a process of determining a particular TA. This process, carried out by tense, ensures that a TA is 'a past adverbial if the tense is past, and a present adverbial if the tense is present' (ibid., 248).

Vlach's proposal, in other words, is that the contribution that tense makes to temporal interpretation is exhaustively described in terms of conventions of their use alone. No account of this contribution can be couched in terms of their meanings, since

they have none (ibid.).[16] What Vlach is suggesting, then, is that there is no theoretically interesting relation — at least in the domain of tenses — between surface form and meaning, or between meaning and use. The status of tenses as syntactically obligatory elements wins them only a supporting rôle in temporal interpretation; and the conventions governing their use do not follow from their meanings, so that we use the 'present' tense not because it denotes a present time, but because it is conventionally associated with present time, in accordance with (39).

This conventional association between tenses and times is claimed by Vlach as a real virtue of his approach, since it provides 'an intuitive account' of various puzzles of tense behaviour. Despite his claims, however, none of the puzzles he cites is given a satisfying explanation in these terms. By his own admission, (39) 'ignores at least various futurate usages (*when I leave*) and a number of clearly special uses of tense, such as the historical present and the use of the past tense in counterfactual conditionals' (ibid., 248). In fact, (39) has a rather limited empirical range, and various of the generalizations that Vlach offers are spurious ones. However, even where Vlach's generalizations are more robust, his account of them in terms of (39) gives us little insight into the complex nature of the interaction between tenses and TAs.

Vlach demonstrates the limited explanatory power of (39) in his remarks about the coöccurrence patterns of TAs with the 'present perfect'. He remarks that such questions have nothing 'to do with the meaning of the present perfect, but [relate] only to when it is used.' Thus, a 'perfectly coherent ER' could be constructed for a sentence like that in (40), the sentence's unacceptability being attributable only to its violation of 'the convention that certain adverbials are used with the present perfect and others are used with the past' (Vlach 1993: 270).

(40) * Max has been here yesterday.

But since this explanation does not relate the meaning of the 'present perfect' to its use, it has nothing to say about why this posited convention takes the form it does.

Vlach's remarks about counterfactual conditionals are similarly unsatisfying. He claims that '[n]obody would try to account for the meaning of the past tense' in sentences like that in (41):

(41) I would be a lot more comfortable if Max sat down. (ibid., 248)

Instead, we should try 'to account for the meaning of the counterfactual conditional, and all that is needed with respect to the past tense in such contexts is a specification of

[16] This might lead us to ask what 'meaning' is; we shall be attempting an answer to this question, following McGilvray, in §2.2.1 below.

its syntactic usage' (ibid., 248–49). But Vlach gives no reason to dismiss the possibility — which is the very one that we shall be exploring in this study — that an account of the syntax of the 'past' tense can elucidate its meaning and the contexts of its use.

A rather more involved example of the limitations of (39) appears in a claim that Vlach makes about 'past'-tensed sentences. According to him, such sentences are unacceptable when they contain present adverbials or [when] no past adverbial can be understood' because no ER can be constructed from them. Since 'the concept of truth applies directly' to such representations, the sentences that correspond to them cannot bear truth values (ibid., 249). There is much that is problematic about this explanation — not the least of which is its equation of interpretability with the ability to bear truth values, as we shall see in §2.2.1 below. More relevant to us here is the question of just what Vlach means by 'present adverbial', since this question bears directly upon his claim. While there seem to be two plausible interpretations of this expression, on neither one can Vlach's claim find much support.

If Vlach has in mind such adverbials (among others) as *now* and *today*, which commonly refer to the present, then the generalization that he offers is counterexemplified by past and future sentences like the following ones:

(42) a. Mary left today.
b. Mary will leave today.

(43) a. Joe was now too old to become a trapeze artist.
b. Joe will now be too old to become a trapeze artist.

(Such 'mismatches' between tenses and temporal adverbials are, in fact, a common result of their interaction, as we shall see in chapter 2, and thus constitute systematic exceptions to (39).)

Since on this interpretation Vlach's claim about 'present adverbials' has so little empirical substance, it is possible that he intends something quite different by this notion: namely, an adverbial that is interpreted on an occasion as referring to the present time. In this case, however, his account provides no clue as to how a tense might 'determine' the appropriate adverbial.

Discussion of this process at various points in Vlach's article suggests that he takes the process to be a relatively unproblematic matter of a tense's 'selecting' an adverbial with the right features. This is certainly suggested by his remarks about the 'present' tense (ibid., 249), given below, and by the examples with which he illustrates these remarks, given in (44):

> The present tense selects for a present adverbial, which must be either a punctual adverbial meaning at the present moment (usually understood) or a durative adverbial whose time includes the present moment.

(44) a. Max is here at this moment.
b. Max is here today. (ibid., 250, (22)–(23))

Of course, we have just seen that the adverbial *today* in (44b) may coöccur with 'present', 'past', or 'future' tenses, and is thus deeply problematic for the very claim that Vlach is using this adverbial to illustrate.

Vlach does recognize a problem for his claim, in the ability of 'present'-tensed sentences with *today* to bear a 'futurate' reading; but instructs us simply to ignore this reading (ibid., 250). This might be warranted if such a reading were exceptional, but in fact it is typical of durative 'deictic' TAs like *this morning* that are commonly used to denote intervals encompassing the time of speech. And it is no less typical of these other 'present adverbials' to appear in 'past'- and 'future'-tensed sentences; so that the rôle of the tense cannot be seen as one of simply 'selecting' a TA specified for a given time. Nor can it be seen as one of 'determining' the temporal reference of a TA, if this means no more than imposing a particular temporal interpretation on the TA, since tense and TA appear in many instances to collaborate (along with context) in securing a sentence's temporal reference. This seems to be the only plausible explanation of the 'futurate' reading of sentences like (44b),[17] which is determined neither by the tense nor by the TA alone.

Similar arguments apply to many uses of the TAs identified by Smith (1981: 219–20) as the 'clock/calendar' (CC) class, such as *on Tuesday* or *at five o'clock*, whose temporal reference is indeterminate. One such use is illustrated in (45):

(45) John left on Tuesday.

On the 'standard' past reading of (45), the TA *on Tuesday* refers to an interval — namely, some contextually-salient Tuesday — in the past. But on a 'futurate' reading, this TA may refer either to a Tuesday in the past or to one in the future.

(46) a. = 'The event of John's leaving was on Tuesday.'
b. = 'John was scheduled to leave on Tuesday.'

---

[17] Another possibility would involve positing homophonous present- and future-denoting forms of *be* (and various other verbs), but this does not seem very plausible, since *be* already has 'future' forms, and the 'present' tense forms of *be* are not typically ambiguous between present and future readings, as we would expect them to be on such an analysis.

The temporally indeterminate nature of the TA thus makes available two different readings of the tense, each of which in turn constrains the range of readings available for the TA. Here we again see how tenses and TAs may collaborate in establishing temporal reference. (We shall consider such examples in greater detail in chapter 2.)

The limitations of (39) thus constitute a serious problem for Vlach's approach to temporal interpretation. Perhaps even more serious, however, are those problems associated with his postulation of 'understood' adverbials. The idea behind these adverbials is straightforward enough: they are simply a way of expressing the observation that 'the sentence requires' information of a particular kind, which is available 'despite the absence' of an explicit adverbial (ibid., 252). Of course, the claim that these adverbials exist at some level of representation is only one way of expressing this observation — and one which suffers from numerous technical difficulties.

This can be seen in Vlach's discussion of the 'understood' TA corresponding to *at the party*, which serves to illustrate his basic claim about such adverbials. The sentences which he discusses, given in (37), are repeated below:

(47) a. Allen had a party last night.
b. Betsy had a good time at the party.
c. Betsy had a good time.

Interestingly, *at the party* is not a TA at all in any standard sense;[18] and to the extent that it can be argued to serve as one, it does so by virtue of the fact that the NP *the party* describes a situation with a particular temporal location which has already been established in the discourse. It is not obvious, however, that this adverbial, whether in its 'explicit' or 'understood' form, should be seen as the true source of the temporal reference of (47b–c), as Vlach claims.

He does so on the basis of the observation that *at the party* 'is something like the most salient adverbial around, and it is a past adverbial, and the past tense requires a past adverbial' (ibid., 248). Even if we grant that this adverbial somehow functions as a TA for the reasons given above, we might still suspect that it does so only because the true TA *last night* is 'understood' in both (47b) and (47c), and it is this adverbial which actually specifies the time of both the party and the occasion of Betsy's having a good time. What lends support to this contention is that (47c) seems at best marginally acceptable as the continuation of a discourse that begins with (47a), requiring the addition of the pro-form *there* — and, significantly, not *then* — to be judged

[18] That is, it does not serve, generally speaking, to specify a time but rather to specify a location for the situation of 'having a good time'. Vlach himself notes that *at the party* is not a 'purely temporal' adverbial (ibid., 247), and describes its temporal properties as in the text above.

acceptable. This is shown in (48), which gives my revised judgement for (47c), repeated as (48c):

(48) a. Allen had a party last night.
b. Betsy had a good time.
c. ?? Betsy had a good time then.
d. Betsy had a good time there.

This would be a very curious fact if *at the party* were really functioning as a TA and not as a locative adverbial, as it is most plausibly analysed.

However, since *at the party* does provide information about Betsy's having a good time that *last night* does not, we are forced to consider how many 'understood' adverbials should be involved in specifying the contextual information necessary for temporal and aspectual interpretation. Vlach himself notes that information about the frequency of a situation must be 'understood' if we are to arrive at a sensible interpretation of sentences like that in (49b):

(49) a. Mary slept for a week.
b. Mary slept in the attic for a week. (Vlach 1993: 252, (24)–(25))

He suggests that the 'understood adverbial' in (49b) 'would be something like *whenever she slept*, or possibly *for a typical sleeping distribution*' (ibid., 252). Note that he does not mention information about the manner or duration of sleeping which is arguably no less part of interpreting such sentences, since the most likely interpretation of a sentence like (49a) would involve the assumption, say, that Mary slept considerably more soundly than usual. Vlach's strategy of encoding such contextual information in the form of adverbials thus appears to give priority to certain kinds of 'adverbial' information over others. Yet in the process of doing so, he overlooks the vast range of linguistically unexpressed contextual information that contributes to interpretation, thereby blurring a useful distinction between linguistic expressions and the non-linguistic information supplied by context, as 'filtered' through our conceptual and real-world knowledge. (We shall be investigating the problems associated with 'hidden structure' further in chapter 2.)

Admittedly, Vlach's proposal is very attractive from the standpoint of computational simplicity, since temporal interpretation is secured uniformly on the basis of TAs. Yet it is not obvious that temporal interpretation *is* such a straightforward matter. In this context, consider Vlach's claim that 'tense is not in general the bearer of temporal anaphora on the simple grounds that temporal anaphora exists where there is no tense' (ibid., 249). He gives the following example:

(50) We can't get very far today. In fact, I don't expect to get past Texarkana.
(ibid., (21))

Here, the infinitival clause *to get past Texarkana* is 'anaphorically related' to the TA adverbial *today*, which demonstrates that tense is not necessary for temporal anaphora. But this is arguably the strongest conclusion warranted by these facts; that is, they do not, *pace* Vlach, rule out the possibility that tense bears such anaphora, but only that they are the sole elements that bear it. (Of course, since *to get to Texarkana* is a full clause, the possibility that it shares some of the temporal properties of other full clauses — in particular, finite ones — should not come as such a surprise. We shall be investigating such similarities between finite and non-finite clauses in chapter 4.)

If computational simplicity is the sole motivation for, and the sole benefit of, according TAs a semantic status more basic than tenses and for postulating 'understood' adverbials, then it is not clear what these claims can contribute to our understanding of the nature of temporal interpretation in general and the relation between tenses and TAs in particular. Indeed, Vlach's analysis seems to raise more questions than it answers. The most serious of these is also perhaps the most obvious one that such an analysis raises: namely, why languages would employ a syntactically obligatory category in such a peripheral capacity, and a syntactically optional category in such a central one. Since the effect of such a division of labour would be a systematic obscuring of the relation between temporal form and temporal function, it becomes unclear how or why languages would develop or maintain tense systems at all. Given such a limited function, they would seem unlikely contenders for the central syntactic rôle that many researchers have assigned to them, and more likely to be the victims of morphological simplification, much like, for example, the case markers of languages with relatively fixed word order. It seems, then, that what ultimately undermines this approach is precisely what undermines many other 'interpretation-driven' approaches: that it offers no satisfying means to relate the form and function of tenses, and derives no insights from the obvious relation that form and function do display.[19]

2.1.4.3. TENSES AS CONFIGURATIONS OF 'S', 'R', AND 'E': REICHENBACH 1947

The above criticism is no less true of a semantic characterization of tense which has proven to be the most influential of any modern approach: that outlined in Reichenbach 1947, and elaborated in many subsequent studies. What we shall see, however, is that, in contrast to the approaches outlined in the two previous sections, that taken by

[19] For further discussion of the difficulties associated with the postulation of 'hidden' adverbials, see Heny 1982: 133–38.

Reichenbach is sound enough to serve as the basis for a more adequate theory of tense, which rectifies many of the problems to be outlined below.

2.1.4.3.1. CHARACTERISTICS OF REICHENBACH'S SYSTEM

Reichenbach (1947) argues that tense forms in English and other languages describe various combinations of relations holding between three times: the 'point of speech', the 'point of the event', and the 'point of reference', which he symbolizes respectively as 'S', 'E', and 'R' (Reichenbach 1947: 288, 290). These points combine according to rules that permit each to appear only once in each tense form, and to be related to the other two only in terms of precedence or simultaneity, which he symbolizes respectively as '-' and ','. These three points are clearly illustrated in the sentence below, Reichenbach's original example, since they are each assigned distinct values in the 'past perfect' form which it contains:

(51) Peter had gone. (ibid.)

As Reichenbach observes, 'the point of the event is the time when Peter went', and 'the point of reference is a time between this point and the point of speech', its precise determination 'given by the context of speech' (ibid., 288).

This distinction between 'R' and 'E' is arguably Reichenbach's greatest contribution to our understanding of tense, since it provides a means to distinguish tense forms that otherwise pick out the same times. Perhaps the best-known example is the difference between the 'present perfect' and the 'simple past':

(52) a. Peter has gone to the store.
b. Peter went to the store.

While both sentences describe the past situation of Peter going to the store, in the former this situation is seen, as Reichenbach (1947: 289) says, 'not from a reference point that is situated also in the past, but from a point of reference which coincides with the point of speech.' This creates an effect — to be discussed in more detail in chapter 2 — which has been described in various terms, including that of asserting the situation's 'current relevance', or the existence of an 'extended now' (see e.g. Declerck 1991: 319ff. for a review). The introduction of 'R' into the analysis of the two tense forms in question allows us to attribute the difference in their interpretation to a difference in the relation of 'R' to 'S' and 'E'. Accordingly, Reichenbach assigns to the 'present perfect' and 'simple past', respectively, the structures 'E-R,S' and 'E,R-S'; these may be glossed, respectively, as 'point of event precedes point of reference, which is

simultaneous with point of speech', and 'point of event is simultaneous with point of reference, which precedes point of speech'.

While Reichenbach does not treat infinitives, Hornstein (1990: 146), McGilvray (1991: 78) and others have argued that his formalism readily lends itself to this task, if infinitives are taken to specify the relation between 'R' and 'E', and not that between 'R' and 'S'. The plausibility of such an assumption is suggested by the sentences in (53):

(53) a.

Joe { believes / believed / will believe } that honesty is the best policy.

b.

Joe { believes / believed / will believe } honesty to be the best policy.

The 'present'-tensed complement in (53a) is able to establish a direct relation to the time of speech regardless of the tense of its matrix clause. In contrast, the infinitival complement in (53b) is unable to establish such a relation, so that its temporal interpretation is dependent on that of the matrix clause, and varies with the tense of that clause. (We shall be devoting more attention to infinitivals in chapter 4.)

The full range of permissible combinations of 'S', 'R', and 'E' specified in Reichenbach's system is given below, together with both the traditional names and Reichenbach's own names for the English tense forms to which they correspond:

(54) REICHENBACH'S FORMALISM

Structure	*Name*	*Traditional name*
E-R-S	Anterior past	Past perfect
E,R-S	Simple past	Past
R-E-S		
R-E,S	Posterior past	
R-S-E		
E-R,S	Anterior present	Present perfect
S,R,E	Simple present	Present
R,S-E	Posterior present	
E-S-R		
S,E-R	Anterior future	Future perfect

S-E-R			
S-E,R	Simple future	Future	
S-R-E	Posterior future		(Reichenbach 1947: 297)

2.1.4.3.2. PROBLEMS WITH THE ANALYSIS

Despite the elegance of this system, closer inspection reveals many weaknesses. These have been identified in various discussions of Reichenbach 1947, many of which have sought to correct and elaborate upon his (somewhat sketchy) original formulation.

o

2.1.4.3.2.1. 'S', 'R', AND 'E'

In fact, many of these weaknesses are best seen as problems of execution, the solutions to which Reichenbach had already adumbrated. Among these is his strictly linear ordering of 'S', 'R', and 'E'. As many authors have noted, this has the unfortunate consequence of overgenerating 'SRE' structures corresponding to the 'future perfect' and the 'conditional' (or 'future in the past') (what Reichenbach calls 'anterior future' and 'posterior past', respectively); and thus of claiming ambiguity for these forms when there appears to be only indeterminacy. This problem is described by Declerck (1991: 256) as it pertains to the 'conditional' forms such as that in (55):

(55) John said he would do it. (Declerck 1991: 256)

Declerck notes that the 'conditional' describes the time of the situation of John's doing it as posterior to the time of the 'situation' of John's saying, which is itself prior to the time of speech. Significantly, however, this tense form 'does not express a direct relation' between the situation time of the *that*-clause and the time of speech. That is, it does not specify 'whether John has already done it, is actually doing it right now, or is still to do it'. And Reichenbach's analysis of the 'conditional' as given in (54) has no means to capture this indeterminacy, since it 'places all the relevant times on the same line', each ordered with respect to two other times (ibid.).

As it happens, this problem is recognized in Reichenbach's original analysis, which sketches a solution given more detail in such studies as Comrie 1985 and McGilvray 1991. The basic problem, as Reichenbach sees it, is that 'the possibilities of ordering the three time points are not exhausted', so that of thirteen possible 'grammatical tenses', only six are realized in English. He proposes to solve this by considering only the possible relations between 'S' and 'R' and 'R' and 'E', in computing what he calls the 'fundamental forms'. (The position of 'E' with respect to 'S' is, he states, 'usually irrelevant', and thus does not figure in this computation.) The

former set of relations, 'S, R', 'R-S', and 'S-R', Reichenbach calls 'present', 'past', and 'future', respectively; the latter, 'E-R', 'R,E', and 'R-E', he calls 'anterior', 'simple', and 'posterior', respectively. These remarks place Reichenbach's original view of the relation between 'S' and 'E' very close to that of authors like McGilvray (1991) who make explicit claims about its derivative nature.[20]

Other modifications have been proposed which, though not suggested by Reichenbach, are both in the spirit of his original system and easily implemented. These concern the interpretation of 'S', 'R', and 'E', and serve to make his claims about them more general and thus more empirically adequate. Among these is his claim that 'S', 'R', and 'E' are temporal points; this is explicitly rejected in many recent 'Reichenbachian' analyses, which take them to denote intervals (e.g. Partee 1984; Rigter 1986; McGilvray 1991).

Another is his description of 'S' as relating to the time of speech only — a description which, as many authors have noted, does not generalize to tenses in embedded clauses. Declerck (1991: 252–53) describes this problem by means of the following pair of sentences:

(56) a. John had left before his wife arrived.
b. (Do not leave too early, or) the newspapers will write that you had left before your wife arrived. (Declerck 1991: 252, (2))

Declerck argues that if we wish to assign the same temporal structure to the 'past' tense in both sentences, 'we must conclude that the temporal relations expressed by a tense form' can be computed either from the time of speech or from other 'basic' time interval. In other words, what is essential to the definition of 'S' is not that it denotes the time of speech, but that it bears a particular relation to 'R' in each tense, whether this tense is in a matrix clause, in which case 'S' does denote the time of speech, or in an embedded clause, in which case 'S' may denote this time or one established by the matrix tense — namely, either 'E' or 'R'.[21] For this reason, Declerck dubs this interval the 'TO_1' — that is, the first 'time of orientation' — in a tense's structure. Rigter (1986) refers to it as 'the present... of the discourse domain'.

Similarly, Reichenbach describes 'E' as the time of the event, which seems to exclude other aspectual types. Many recent studies have thus rejected this terminological choice, and chosen instead to speak of 'situations' (e.g. Declerck 1991; McGilvray 1991), or 'eventualities' (e.g. Partee 1984). (In this study, we shall use 'situation' as the general term for the various aspectual types.)

---

[20] And are arguably closer to the spirit of Reichenbach 1947 than studies such as Hornstein 1990, which preserve the linearity of 'S', 'R', and 'E' given in (52) above.

[21] These two possibilities will be discussed in chapter 3.

There are, however, other far more complex issues surrounding the interpretation of 'E', which are more than problems of execution. One raised by Declerck (1991: 267) concerns the difference between the time of a 'situation' picked out by a tensed sentence and the full time of a 'situation' as it actually takes place. This difference can be brought out in a sentence like that in (57):

(57) Five minutes ago John was eating in the kitchen. (Declerck 1991: 267)

As Declerck notes, a sentence like (57) does not make a claim about 'the time interval that John was actually eating in the kitchen', but only about some smaller interval included in this 'situation'. That is, the sentence does not actually refer to what Declerck calls the 'full situation' of John's being in the kitchen, since it is not judged false if John is still eating in the kitchen at time of speech, or was already eating there 'before the time indicated by *five minutes ago*'. These possibilities are, in fact, simply left unspecified (ibid.).[22] Reichenbach's description of 'E', however, does not make explicit this distinction between 'situations referred to' and 'actual situations', even though such a distinction plays a critical rôle in isolating the contribution of context to temporal interpretation from that of tense and adverbials, as we shall see in chapter 2.

There are greater difficulties still surrounding the interpretation of Reichenbach's 'R'. As we have already noted, 'R' is the linchpin of his analysis; Reichenbach's remarks about it, however, are brief, leaving its nature largely unexplained. Given the importance of these remarks, it might be useful to quote them, and the illustrations that accompany them, at some length:

> From a sentence like 'Peter had gone' we see that the time order expressed in the tense does not concern one event, but two events, whose positions are determined with respect to the point of speech. We shall call these time points the point of the event and the point of reference. In the example the point of the event is the time when Peter went; the point of reference is a time between this point and the point of speech. In an individual sentence like the one given it is not clear which time point is used as the point of reference. This determination is rather given by the context of speech. In a story, for instance, the series of events recounted determines the point of reference which in this case is in the past, seen from the point of speech; some individual events lying outside this point are then referred, not directly to the point of speech, but to this point of reference determined by the story. The following example, take from W. Somerset Maugham's *Of Human Bondage*, may make these time relations clear:

[22] A similar point is made by Klein (1992: 535–38, 1994: §1.2).

But Philip ceased to think of her a moment after he had settled down in his carrage. He thought only of the future. He had written to Mrs. Otter, the *massière* to whom Hayward had given him an introduction, and had in his pocket an invitation to tea on the following day.

The series of events recounted here in the simple past determine the point of reference as lying before the point of speech. Some individual events, like the settling down in the carriage, the writing of the letter, and the giving of the introduction, precede the point of reference and are therefore related in the past perfect.

Another illustration for these time relations may be given by a historical narrative, a quotation from Macaulay:

In 1678 the whole face of things had changed... eighteen years of misgovernment had made the... majority desirous to obtain security for their liberties at any risk. The fury of their returning loyalty had spent itself in its first outbreak. In a very few months they had hanged and half-hanged, quartered and emboweled, enough to satisfy them. The Roundhead party seemed to be not merely overcome, but too much broken and scattered ever to rally again. Then commenced the reflux of public opinion. The nation began to find out to what a man it had intrusted without conditions all its dearest interests, on what a man it had lavished its fondest affection.

The point of reference is here the year 1678. Events of this year are related in the simple past, such as the commencing of the reflux of public opinion, and the beginning of the discovery concerning the character of the king. The events preceding this time point are given in the past perfect, such as the change in the face of things, the outbreaks of cruelty, the nation's trust in the king. (Reichenbach 1947: 288–89)

From these remarks, we can gather that 'R' is some 'reference' time, which may be specified in a sentence or determined by context; but they do as much to obscure its nature as to shed light on it. In fact, as many researchers have argued, these remarks conflate two rather different notions: those of 'time referred to' and 'time referred from'.[23] The former (which Declerck (1991: 251) has called the 'time established') is given in Reichenbach's example from Macaulay, and may indicate a time that functions as a constant 'point of reference' for an entire sequence of sentences. The latter (which Declerck (ibid.) has called the 'time of orientation') is given in his 'past perfect' examples, and indicates the time '*from which* the described eventuality is seen as past'

[23] For example, Declerk (1991: 250) points out that these correspond to different definitions of 'R' in the literature — exemplified, respectively, in Guenthner's (1977: 83) definition of 'R' as 'the point of perspective from which an event is viewed'; and Comrie's (1985: 14) definition as the time 'with reference to which we... locate situations in time' by an adverbial or context.

(Kamp & Reyle 1993: 595).[24] A crucial difference between the two notions, as suggested by the remarks just given, is that the former may be involved in the organization of a discourse, serving to locate this discourse in time; while the latter is involved in temporal relations at the level of the sentence, serving the function that Reichenbach described for 'R' in the interpretation of the 'past perfect' and other tense forms. Strong support for this distinction emerges when we consider contrasts like that given in (58):

(58) a. Yesterday, Mary came to Chris's office at seven. But Chris had left at six. (Klein 1992: 544, (40))

b. * At seven, Chris had left at six.

Since 'R' in both sentences is presumably seven o'clock,[25] the difference in acceptability that we observe here seems rather mysterious. However, the distinction just described provides a straightforward means of accounting for this difference: namely, that the 'past perfect' form in (58b) but not (58a) has both an 'established time' and a specific 'E', which (for reasons we shall be exploring in chapter 2) leads to unacceptability.[26] Since we shall restricting ourselves in this study to an examination of temporal relations in the sentential domain, this distinction will play only an indirect rôle in our discussion; and we shall be taking 'R' to indicate 'time of orientation'. A recognition of this distinction will nevertheless be instrumental in the solution of puzzles like that exemplified in (58), for which Reichenbach's original system does not offer the necessary tools.

Such puzzles, in fact, point to another problematic aspect of Reichenbach's analysis: namely, the intertwining of his claims about 'R' with those about adverbials. The heart of the difficulty is his claim that temporal adverbials specify 'R'; he illustrates this claim with the adverbial *yesterday* in the following sentences:

(59) a. I met him yesterday.

---

[24] Kamp and Reyle (1993: 593ff.) also distinguish two notions of 'reference point', although their distinction is couched in somewhat different terms.

[25] I say 'presumably', because my assumption that the PP *at six* identifies 'E', the time of Chris's leaving, contradicts Reichenbach's own claim that temporal adverbials always identify 'R'. I say more about this claim in the text above.

[26] It might be argued that the unacceptability of (58b) is due simply to some restriction against PPs of the same type being clause-mates. However, this will simply not work, as shown quite strikingly in (ia), which gives a far more acceptable version of the same sentence, with a 'past progressive' (and the PPs reversed); and (ib), in which the two PPs are read as a 'complex adverbial':

(i) a. At six, Chris was leaving at seven.
b. In 1996, Joe would have time in April, and in 1997, he would have time in May.

This suggests that the answer to this puzzle lies in the properties of the tenses themselves — as we shall see in chapter 2.

b. I had met him yesterday. (Reichenbach 1947: 294)

According to him, *yesterday* specifies 'R' in both of these sentences. In (59a) it does happen to specify 'E' also, since here 'E' and 'R' coincide; but in (59b) these two points do not coincide, and '[w]hat was yesterday is the reference point, and the meeting may have occurred the day before yesterday' (ibid.). But many researchers (e.g. Declerck 1991: 230) have observed that sentences like that in (59b) are actually ambiguous between the reading given, on which the adverbial specifies 'R', and one on which the adverbial specifies 'E', here the time of meeting. The latter reading for 'past perfects' is even more salient in the following sentence:

(60) This morning mother wanted me to go and see grandfather, but I told her it was not necessary because I had seen him yesterday.
(based on Declerck 1991: 230, (3))

Given the foregoing observations, which have been confirmed in a number of studies (e.g. Hornstein 1977, 1990; Smith 1978; Dinsmore 1982; Salkie 1989, McGilvray 1991), Reichenbach's claim that temporal adverbials specify 'R' cannot be sustained. In fact, the studies just cited, though each 'Reichenbachian' in spirit, have abandoned this problematic claim.

It is noteworthy, however, that the attempts of many of these 'Reichenbachian' studies to reconcile Reichenbach's topology of tenses with the actual distribution and interpretation of adverbials have not been fully satisfying. The basic strategy behind these attempts, which we shall be examining in greater detail in chapter 2, is to allow adverbials to specify either 'E' or 'R'. The difficulties arise in those instances in which one or the other reading (or both) is unavailable, as in these sentences:

(61) a. John leaves on Tuesday. [only 'E' reading available]
b. * John has finished yesterday.
[no acceptable reading; 'E' reading should be available]
c. * In 1972, Harry had joined the navy in 1960.
[no acceptable reading; 'R' reading should be available for *in 1972*]

In fact, the inability of either Reichenbach's original analysis or of those based on it to account for such examples hints at much deeper problems, which arguably stem from the fact that, despite 'touch[ing] upon the role played by time adverbials', it is essentially 'a theory of tense rather than a more general theory of time reference' (Declerck 1991: 255).

Two more problems related to the interaction of tenses and adverbials also deserve comment. One concerns the incompatibility associated with sentences such as that in (61a) between the 'Reichenbachian' temporal schemata assigned to the tenses in these sentences and the readings that these sentences actually receive. More specifically, the sentence in (61a) contains a 'present' tense, which, as already noted, would be assigned the 'Reichenbachian' schema 'S,R,E'. However, this schema does not reflect the sentence's actual interpretation, which places the 'situation' of leaving in the future. While this sort of incompatibility between tense schemata and interpretations has been illustrated with the 'present' tense, it also occurs with 'past' and 'future' tenses, and thus constitutes a quite general problem for Reichenbach's treatment. Efforts to accommodate these cases within standard 'SRE' schemata have included the positing of various devices to 'transform' these schemata (Hornstein 1977, 1990), or to supplement them with 'hidden' structure (Smith 1978; McGilvray 1991). None of these efforts, however, has proved satisfactory, suggesting that more radical revision to Reichenbach's (1947) formalism may be required.

Another problem, as pointed out by Declerck (1991: 268), concerns the difference that commonly exists between the interval indicated by a temporal adverbial and that occupied by the situation indicated by the verb and its arguments. Thus, in the sentence below, the time of Bill's leaving cannot coincide with the time indicated by *yesterday*, given the punctual nature of the action of leaving:

(62) Bill left yesterday. (Declerck 1991: 268)

This sort of problem can arguably be solved only by making the following two revisions in Reichenbach's analysis: (i) the addition of a temporal relation of inclusion to those simultaneity, anteriority, and posteriority already present in the system (which would be a natural consequence of the already common treatment of 'S', 'R', and 'E' as intervals rather than points of time); and (ii) an expansion of the inventory of times represented in Reichenbach's schemata to include the interval indicated by adverbials such as *yesterday* in (62). Such revisions seem necessary to capture what appear to be grammatically relevant times and relations that are not part of Reichenbach's description (ibid., 253).

Another problematic claim that Reichenbach makes about 'R' pertains to 'sequence of tense' (SOT) phenomena. These phenomena, as commonly understood, consist of 'interclausal dependencies in the choice of tense markings' (Dahl 1992: 649),[27] which in English take the form of 'past' tenses appearing under embedding past

[27] Although, as Dahl (1992: 649) notes, the term 'SOT' is also used to cover another kind of relation: namely, the dependency 'between the temporal interpretations of different clauses in a sentence.' We shall be treating this in greater detail in chapter 3.

tenses in 'indirect speech' and other contexts. According to Reichenbach, SOT phenomena may be explained in terms of what he calls the 'permanence of the reference point' (Reichenbach 1947: 293). The idea is simply that in a complex sentence, 'R' is the same for all clauses, regardless of its relation to 'S' and 'E' in each of these clauses. Reichenbach illustrates this claim with the following examples:

(63) a. I had mailed the letter when John came and told me the news (ibid.)

b. 1st clause: E_1 — R_1 — S
2nd clause: R_2, E_2 — S
3rd clause: R_3, E_3 — S (ibid., (1))

(64) a. I have not decided which train I shall take. (ibid.)

b. 1st clause: E_1 — S, R_1
2nd clause: S, R_2 — E_2 (ibid., (2))

(65) a. I did not know that you would be here. (ibid.)

b. 1st clause: R_1, E_1 — S
2nd clause: R_2 — S, E_2 (ibid., (3))

As the accompanying diagrams show, the claim that 'R' remains the same across clauses accords with the interpretations of the three sentences given. In (63), my mailing the letter occurs prior to John's arrival, which occurs (more or less) at the same time as his telling me the news. Similarly, in (64), the 'situation' of my not yet having decided is located prior to my taking the train; and in (65), my not knowing is located prior to your appearance.[28]

Unfortunately, as Ogihara (1989: 169–70) points out, this account will not survive in the face of more complex examples, such as this one:

---

[28] However, Ogihara notes that Reichenbach's assignment of the structure 'E_2, R, S' to the embedded clause — which is arguably the only reading available to it, given the presence of *here* — does not follow from the contribution of *would* in this clause, since other instances of *would*, like that in (i), require only that 'E' be subsequent to 'R', remaining completely silent about the relation between 'E' and 'S':

(i) John said that Mary would buy a car,
a. and she did.
b. but she didn't.
c. but I don't know if she has yet. (based on Ogihara 1989: 169, n. 47)

This is precisely the point that was made earlier about the derivative nature of the relation between 'E' and 'S'.

(66) John decided a week ago that in ten days he would say to his mother at breakfast that they were having their last meal together.

(based on Abusch 1988: 2, (6))

The interpretation of this sentence predicted by Reichenbach's 'permanence of the reference point' claim is the one schematized in (67):

(67)

1st clause:	R_1, E_1	—	S		
2nd clause:	R_2 —	E_2 —	S		
3rd clause:	R_3, E_3	—	S	(based on Ogihara 1989: 169, (113))	

Here 'R' is described as remaining constant across the three clauses. While this derives the attested readings for the first and second clauses, indicating that John's decision is prior to his saying, it is at odds with that for the third, indicating that his decision coincides with, rather than being prior to, his having his last meal with his mother.[29] What is required to derive the desired reading, as Ogihara argues, is an association of 'R_3' with 'E_2':

(68)

1st clause:	R_1, E_1		— S	
2nd clause:	R_2 —	E_2		
3rd clause:		R_3, E_3	(based on Ogihara 1989: 169, (114))[30]	

In this case, the 'Rs' of the first two clauses coincide, so that there seems to be no way to derive the desired reading while still preserving Reichenbach's claim about the 'permanance of the reference point'.

The foregoing discussion of Reichenbach's (1947) system thus reveals two main weaknesses in his claims about the semantic structure of tenses. One is that the system, which is primarily an analysis of tenses rather than of temporal reference more generally, is not rich enough to provide an adequate description of the interaction of tenses with temporal adverbials and other tenses. The other is that Reichenbach

---

[29] Another problem with this schema is that the representation of *would say* in the second clause corresponds to a reading in which the time of saying precedes the speech time. See the following note.

[30] Following Ogihara, I have left 'S' unspecified in the second and third clauses. This is because 'S' cannot be positioned in the structure of these clauses in any way that both accords with the interpretation of the sentence and with the structures that Reichenbach has assigned to the 'conditional' and 'past' forms (given the claim that 'S', 'R', and 'E' are linearly ordered with respect to one another). Since the times of saying and eating are given as subsequent to the time of speech, the structure for *would* in the second clause would have to be 'S-R-E', which Reichenbach assigns to the 'posterior future'; and that for the 'past' tense in the third clause would have to be 'S-R,E', which Reichenbach assigns to the 'simple future'. This provides further evidence against the linear ordering of 'S', 'R', and 'E'.

overstates the rôle of 'R' in tense construal; this fact, once identified, brings the structural weaknesses of his system into sharper relief. None of the weaknesses we have seen is serious enough to cast doubt on the basic approach to tense that Reichenbach has outlined; but they do indicate that a substantial reformulation of this approach will be necessary if we wish to press it into service to address the questions about tense and time reference that we outlined earlier.

2.1.4.3.2.2. THE 'COMPOSITIONALITY' OF TENSE FORMS

Another, very different kind of shortcoming in Reichenbach's account, from the perspective of linguistic research, is that it proposes a formalized 'translation language' for the analysis of tenses that makes no explicit connection to the morphosyntax of tense. As such, it provides no obvious means to relate the forms and meanings of tenses; and thus no clue about the syntactic status of 'S', 'R', and 'E', or about how the connection between the syntax and semantics of complex forms is computed.

A clear statement of the problems associated with this approach to tense is given by Bouchard (1984).[31] The basic problem, as he sees it, is that 'although we are given explicit definitions of basic tenses, we are not given any procedure to recognize the effective realization of these basic tenses in the syntax of the grammar' (ibid., 92–93). That is, Reichenbach's account does not explain 'why is it that the particular tense structures' he posits 'are expressed by particular combinations of auxiliary verbs, participles, and infinitive verbs' (ibid., 93).[32]

Bouchard illustrates this point with the 'future perfect' and the 'simple past' and 'present perfect', which bring the problem he has identified into sharp relief. While the 'future perfect' takes the form of 'the future auxiliary verb *will*, followed by the infinitive auxiliary verb *have*, followed by a past participle', nothing in Reichenbach's system explains why 'S-E-R is realized in such a manner' (ibid., 93). Similarly, while the contrast in the interpretation of the 'simple past' and 'present perfect' 'corresponds to a difference in tense structure' — namely, 'E,R-S' for the former and 'E-S,R' for the latter — 'these combinations of verbs and affixes could possibly be assigned just the opposite tense structures, with V+PAST being E-S,R and AUX+PRESENT+past participle being E,R-S' (ibid., 95–96).

It is certainly no coincidence that Bouchard's examples involve 'perfect' forms, since, strikingly, the formal similarities between the different 'perfects' — 'present', 'past', 'future', and 'conditional' — find no analogue, and thus no explanation, in

---

[31] His comments are directed both at Reichenbach 1947 and at Hornstein 1977, which follows Reichenbach's system very closely. We shall have more to say about Hornstein's (e.g. 1977, 1990) analysis of tense below and in chapter 2.

[32] The same point is made in Cowper 1991, *q.v.*

'Reichenbachian' structure.[33] This fact about the 'perfect' forms has been noted by others. For example, Vlach (1993: 276) remarks that 'the sentences [Reichenbach] classifies as past (present) perfect are disjoint from the sentences he classifies as past (present). Whatever follows from the pastness (presentness) of past (present) perfect sentences does not, in Reichenbach's scheme, follow from the fact that they are past (present), but must be stated separately.'

Reichenbach's treatment of the 'perfect' forms raises further linguistic questions. Since it provides no 'compositional' account of their meanings, we are left to ask how these meanings might be distributed between the auxiliary *have* and the 'past' participle which are their constituents (a matter about which we shall have more to say in §2.1.5). This inattention to the internal syntax of the 'perfects' (and of the other complex forms) is paralleled by an inattention to the morphology of the past participle with which they are formed. Significantly, this form appears not only in 'perfect' constructions, but in a range of others, including passive, absolute, predicative and attributive constructions, as illustrated in (69):

(69) a. Charles has fried the eggs.
b. The eggs were fried in butter.
c. With the eggs fried, Charles could make the coffee.
d. The eggs are fried, not scrambled.
e. Charles likes his eggs fried.
f. Charles likes fried eggs.

Now it is unlikely that the participial forms in all of these sentences can be assigned the same syntactic representations, given their quite varied functions; however, their meanings are so closely related — each describing something like a change of state — that it seems only plausible to posit a formal relation between them (see e.g. Gazdar, Pullum & Sag 1982: 596–600 for an attempt to do so by means of overlapping sets of features). But if the basic meaning shared by these forms does not involve temporal location, it becomes less obvious that this is the basic meaning of the 'perfect' participle either — especially since it is a straightforward enough matter to derive this temporal meaning from the aspectual one just suggested. Of course, since Reichenbach has sought only to provide temporal schemata for tense systems, his analysis can be accused at worst of missing a generalization about the 'past' participle, rather than of

[33] This problem is especially acute as regards the 'conditional' forms. Since Reichenbach does not offer an analysis of the 'conditional perfect', we cannot address his claim explicitly. However, as many authors have noted (see e.g. Declerck 1991: 383–84), this form appears to require two 'reference' times; thus, the problem that it poses is not merely that it bears no relation to the temporal structures that Reichenbach assigns to the 'conditional' — namely, 'R-E-S', 'R-S,E', and 'R-S-E' (Reichenbach 1947: 297) — but that it has no obvious treatment in his system. We shall be returning to this issue in chapter 2.

mischaracterizing it. Nevertheless, the fact that no plausible means is available to relate items that are close in meaning and identical in morphological form remains an undesirable consequence of this analysis. Moreover, a number of 'compositional' interpretations of Reichenbach's (1947) system, a prominent example of which is Bouchard's (1984) study, have made an explicit connection between the 'past' participle and the relation of anteriority. Thus, in attempting to solve the problems just outlined by relating 'Reichenbachian' tense schemata to syntactic structures, such studies create new problems which Reichenbach's own analysis was able to avoid.

In fact, attempts like Bouchard's to translate such schemata directly into syntactic terms have been far from successful, as we shall see in §2.1.5. This raises the question of how closely related these schemata really are to the syntax and morphology of tenses, and thus what kind of information about tenses they should properly be seen to express. It is, of course, a distinct possibility that Reichenbach's schemata can only be understood as generalizations about the meaning, and only indirectly about the form, of tenses; and that to do otherwise is simply to misconstrue their purpose. This interpretation, which seems close to the spirit of Reichenbach's original proposal, is offered by McGilvray (1991). He takes Reichenbach's tense schemata as part of a description of the 'semantic structure' of sentences, which represents one dimension of a speaker's grammatical (or, as McGilvray calls it, 'broadly syntactic') competence — and which in its basic conception resembles the level of 'Logical Form' (LF) associated with Chomskyan theory.[34] McGilvray argues that the level of syntax proper is not the one to which descriptions of tense should apply, because in many instances 'syntax and morphology alone' do not 'provide the relevant information... on which tense structure to assign' (McGilvray 1991: 41). In other words, the morphology and syntax of tense do not fully specify the location of the three temporal intervals on the basis of which tenses are constructed.

This point is made clear in McGilvray's reformulation of Reichenbach 1947, in which he identifies the temporal elements 'S', 'R', and 'E' not with temporal intervals alone, but also with particular entities respectively associated with these intervals. As such, this reformulation enlists tense in a description of a speaker's basic 'referential competence', which, for McGilvray, associates different intervals with different sorts of entities. The 'time of speech' ('i_S') is thus associated with 'a speaker and a sentence produced'; the 'reference time' ('i_R') with 'the thing or things described by the sentence' and a 'perceiver-describer', 'represented as exercising his or her referential competence with the sentence in question'; and the 'situation time' ('i_E') with a

[34] Although not in its technical implementation, since LF, according to most descriptions, is a level of syntax with standard phrase-structural properties, and McGilvray gives his 'tense structures' a set-theoretic description, as noted in the text.

situation. This permits a set-theoretic description of 'S', 'R', and 'E' as in (70a), and of the 'SR' and 'RE' relationships as in (70b):

(70) McGILVRAY'S (1991) FORMALISM

a. $S = \langle p, t, i_S \rangle$ p is a speaker or 'storyteller'
$R = \langle \psi, c, i_R \rangle$ t is a token or an utterance
$E = \langle \emptyset, t, i_E \rangle$ c is a class of things or individuals
$\emptyset$ is a situation
ψ is a 'perceiver-describer'
i_S, i_R, and i_E are intervals of time

b. $SR = \{\langle p, t, i_S \rangle, \langle \psi, c, i_R \rangle\}$
$RE = \{\langle \psi, c, i_R \rangle, \langle \emptyset, t, i_E \rangle\}$ (McGilvray 1991: 20)

We shall not dwell here on McGilvray's notation or the theory of reference that underwrites it, leaving this for our discussion of reference in §2.2 below. Instead, let us consider in more detail the view of tense that he canvasses. As we have just seen, this view takes 'syntax and morphology alone' to underdetermine tense structure in many instances. We might illustrate this point with the following sentences:

(71) The Smiths' house will one day be grand.

Such a sentence may serve to indicate two quite different temporal relations: a 'genuine' future (i.e. 'S-R,E'), if *one day* indicates 'reference time'; and a 'posterior' or 'immediate' present (i.e. 'S,R-E'), if it indicates 'situation time'.[35] The decision between them depends on the temporal location of the individual (in this case, the Smiths' house) picked out by the sentence. This, as we have just seen, is because McGilvray places this individual, or 'c', at 'reference time'. He suggests that the decision in question may be determined by speech context; so that, for example, if the speaker is standing in front of the Smiths' house, which is currently rather small, then his or her utterance, as given in (71), would be assigned the structure 'S,R-E', according to which ψ's companion is the Smiths' house at i_S. Contrariwise, the utterer of (71) may locate the Smiths' house, not yet even built, at a 'reference time' specified by *one day*, and thus produce a sentence with the temporal structure 'S-R,E'. In other words, the temporal structure assigned to this sentence depends crucially on where the speaker locates the individual to which he or she is referring. If this individual is present at i_S, then the speaker is likely to locate it at an i_R coincident with i_S; otherwise,

[35] Note that Reichenbach's linear ordering of 'S', 'R', and 'E' is being used here only for the sake of convenience.

the speaker is likely to locate this individual at an i_R coincident with the i_E indicated by the adverbial.

McGilvray's point regarding the indeterminate nature of the temporal information supplied by syntax and morphology is well taken; and will, in fact, be at the heart of the approach to tense adopted in this work, which will be exploring the temporally 'underspecified' nature of tenses. However, what is missing in McGilvray's remarks is an indication of the kind and degee of temporal information that syntax and morphology do provide. If we wish to understand how language pairs form and meaning in the domain of tense, then we must determine the contributions of syntax and morphology to the construction of temporal representations such as those that McGilvray proposes. Thus, the task of developing an explicit account of these contributions — which will demonstrate their centrality to the phenomenon of tense — still remains.

2.1.5. SYNTACTIC CHARACTERIZATIONS OF TENSE

What this requires, then, is a syntactic characterization of tense, which locates the source of the interpretations that tenses receive in the specific formal features that they possess. In recent years, many such characterizations have been offered within the framework of generative grammar. Most of these can be traced to Chomsky's (1957: 39) analysis of the English auxiliary system, as given in (72):

(72)

$$\text{Aux} \rightarrow \text{Tns(Modal)}(\textit{have} + \textit{en})(\textit{be} + \textit{ing})(\textit{be} + \textit{en})$$

$$\text{Tns} \rightarrow \left\{ \begin{matrix} \text{Past} \\ \text{Present} \end{matrix} \right\}$$

$$\text{Modal} \rightarrow \left\{ \begin{matrix} \textit{can} \\ \textit{may} \\ \textit{must} \\ \textit{shall} \\ \textit{will} \end{matrix} \right\}$$

Of course, Chomsky's original formulation has undergone a number of revisions over the years. Among the most substantial has been one proposed by Chomsky himself (Chomsky 1981: 18–19, 54), which involves the collapsing of the categories 'Aux', 'Tns', and 'Modal' into the single category 'Infl(ection)', posited as the head of the clause, in conjunction with a reformulation of 'Tns' as the binary-valued feature [Tense] dominated by Infl. With this proposal, an explicit connection is established between the value of the [Tense] feature and the finiteness of a clause: a positive specification of this feature (which is in turn associated with a positive or negative

specification of the feature [Past] and with features for person and number agreement) characterizes finite clauses;[36] and a negative specification characterizes infinitival clauses, with the element *to* identified as a marker of [- Tense] Infl (e.g. Chomsky 1986a: 25) (The importance of this connection between tense and finiteness will emerge as our study proceeds.) Another substantial reconception of the auxiliary system has come with the advent of the 'exploded' Infl model, first proposed by Pollock (1989) and adapted to a vast range of languages. According to this model, each inflectional category of a verb is a distinct functional head, to which verbs adjoin by moving through a tree via successive-cyclic head-to-head movement (see e.g. Janda & Kathman 1992 for a description). In concert with these larger structural changes has been an assimilation of the auxiliary verbs *have* and *be* to the category Verb, their peculiar properties being attributed to their 'non-thematic' status, and thus their inability to assign θ-rôles (see e.g. Guéron & Hoekstra 1988: 40, 73).

It should be noted that these syntactic characterizations of tense have been applied to the analysis of primarily formal rather than interpretative phenomena pertaining to tense. For example, much of the research that assumed Chomsky's (1981) model of Infl was concerned with the relation of tense to Case assignment and binding patterns such as those illustrated below:

(73) a. That Dan believes in miracles is a surprise.
b. *(For) Dan to believe in miracles is a surprise.

(74) a. * $John_i$ believes him_i to be clever.
b. $John_i$ believes that he_i is clever. (Lasnik 1989: 20, (73)–74))

Similarly, much of the research that assumes an 'exploded' Infl model has sought to account for facts about word or morpheme order. Pollock's original proposal, for example, was motivated by the observation of various word order differences between French and English, such as those in (75):

(75) a. * John kisses often Mary.
b. Jean embrasse souvent Marie. (Pollock 1989: 367, (4))

Many of the studies based on Pollock's 'exploded' Infl model have adapted it to rather different ends, having seen it as a means of describing the ordering of inflectional morphemes on a verb, particularly in languages with rich inflectional morphology. As a

[36] Since finite verbs in English are assumed to bear both tense and agreement features, it seems fair to ask whether their finiteness is due to the former, the latter, or both. However, the 'inflected infinitive' of European Portuguese, described in Raposo 1987 and elsewhere, suggests that it may be tense, rather than agreement, that plays the greater rôle in distinguishing clause types.

result, '[m]any intricate facts of a growing range of languages' (Ackema, Neeleman & Weerman 1992: 17) have been described in terms of the claim that each of the categories expressed by verbal inflection is the head of a distinct functional projection. One example of such an analysis is Rivero's (1990) study of the morphosyntax of the verb in Modern Greek and Albanian, for which she posits a phrase structure like that given in (76), with morphemes for agreement, tense, aspect, and voice heading distinct projections:

(76) a. plíθikan
wash/3PL.PAST.PERFECTIVE.NONACTIVE
'they were washed; they washed themselves'

b. $[_{AgrP}$ [3PL] $[_{TnsP}$ [+ PST] $[_{AspP}$ [+ PRFCTVE] $[_{VoiceP}$ [- ACT $[_{VP}$ [plen-]]]]]]]
(Joseph & Smirniotopolous 1993: 389, (1))

It should be noted that generative research on tense has tended to focus on such gross structural properties of inflectional systems, rather than on subtler properties more closely associated with their interpretation. This is perhaps no surprise, given that most of this research has adopted the simple feature system for tense described above, which, in fact, is not well suited to a finer analysis. The limitations of this feature system as a descriptive tool can be brought out clearly with a few examples. Since the system exploits only two basic oppositions — between tensed and non-tensed, and between past and non-past — it offers no means to distinguish various negatively specified forms. Thus, the infinitival complement types illustrated in (77), which were discussed in §1.2 above (and are repeated from (6)), are both specified as non-tensed, despite their quite distinct temporal properties. These properties are reflected in the fact that the complements of the matrix verbs in (77a) and (77b) respectively describe 'situations' concurrent with and posterior to the 'situations' described by their matrix clauses:

(77) a. Trish considered Joe to be a selfish bastard.
b. Trish expected Joe to be a selfish bastard.

Likewise, the only specification available for *will* forms is that of 'non-past' — a specification which, in effect, denies that these forms constitute a distinct 'future' tense in English. There are, however, good reasons to reject this claim, as we have already seen in §2.1.3.[37] Moreover, the claim that *will* forms are 'non-past' implies that *would*

[37] Such a characterization is, of course, even less compelling for languages like French that have morphological 'future' forms.

forms are 'past'; yet this claim, as we have also seen, is clearly counterexemplified by such uses of *would* as those in (78) (repeated from (24)):

(78) a. *Would* you lend me a dollar?
b. I *would* like to hear more.
c. I wish he *would* die soon.

These shortcomings in the standard syntactic analysis of tense have, in fact, been addressed in a number of recent studies that have been more directly concerned with the interpretation of tenses. These studies have explored various possibilities for increasing the empirical range and analytical power of the treatment of tense within a generative framework. We shall be discussing many of these studies throughout the rest of this work. However, what shall be of most interest to us in the following sections are the various attempts that have been made to recast Reichenbach's (1947) analysis in syntactic terms. These include such studies as Hornstein 1990, which attempts to incorporate both Reichenbach's primitives and his linear ordering of these primitives into the syntax; Bouchard 1984, which preserves Reichenbach's primitives but embeds them in a more 'compositional' account of tenses; Rigter 1986, which translates Reichenbach's primitives into relational terms by means a detailed feature system for tense; and Giorgi & Pianesi 1991, which likewise translates these primitives into relational terms, but within the 'exploded' Infl model described above. We shall be reviewing each of these approaches in turn.

2.1.5.1. 'SRE' ANALYSES OF TENSE

One line of syntactic research into tense has sought to overcome the limitations of standard analyses, as described above, by granting a syntactic status to the primitives of Reichenbach's temporal schemata. These studies, which we might therefore call 'SRE' analyses, have taken various forms; we shall be examining two of them, Hornstein 1990 and Bouchard 1984, below.

2.1.5.1.1. A 'LINEAR' ANALYSIS: HORNSTEIN 1990

One way in which Reichenbach's (1947) analysis has been exploited in syntactic research, as represented by Hornstein's (1990) study of tense, has been the importing of his formalism into the syntax with essentially no modification. In other words, Hornstein takes Reichenbach's 'S', 'R', and 'E' and the ordering relations by which they are associated to constitute syntactic primitives. He justifies this move by assuming as a 'central tenet' that 'the tense system constitutes an independent linguistic level, with

its own set of primitives, its own syntactic rules of combination, and its own rules of interpretation' (Hornstein 1990: 9). Hornstein thus takes the linear ordering of 'S', 'R', and 'E' as his point of departure, and posits rules that make reference to this ordering.

Such rules serve to account for the interaction of tenses with adverbials and other tenses. Hornstein's claim is that these more complex structures are simply derived by the application of these rules to 'basic tense structures' (BTSs) — which are just Reichenbach's tense structures, as given in (54) —, resulting in 'derived tense structures' (DTSs). Such derivations 'must preserve certain aspects of basic tense structure' (ibid., 15) which are spelled out in (79) below:

(79) CONSTRAINT ON DTS (CDTS): DTS must preserve BTS.
   a. BTS is preserved if and only if:
      i. no points are associated in DTS that are not associated in BTS;
      ii. the linear order of points in DTS is the same as that in BTS.
   b. X associates with Y $=_{def}$ X is separated from Y by a comma.

(based on Hornstein 1990: 15, (12)–(13))

One such rule, as illustrated in (80), derives an adverbially modified tense structure from an unmodified one, following Hornstein's claim that 'adverbial modification is a process that linearly rearranges R and E points in accordance with the meaning of particular adverbs' (ibid., 16):

(80) a. John is leaving ——tomorrow——> John is leaving tomorrow

S,R,E ——tomorrow——> S — R,E
|
tomorrow

b. * John left ——tomorrow——> John left tomorrow[38]

S,R-E ——tomorrow——> S — R,E
|
tomorrow

(based on ibid., 17, 19, (19a), (24))

[38] In fact, this sentence, contary to Hornstein's prediction, is quite acceptable on a 'futurate' interpretation. We shall discuss these constructions, and the difficulties associated with derivational accounts such as Hornstein's, in chapter 2.

In accordance with the CDTS, the 'DTS' in (80a) is licit, because it neither creates any new association of points nor alters the linear order of the 'BTS' from which it was derived; whereas that in (80b) is illicit, because it does create a new association of points: namely, that between 'R' and 'E'.

We shall have more to say about the nature of these rules and the predictions that they make when we consider them again in chapters 2 and 3. For now we might dwell on the rôle played by the linear ordering of 'S', 'R', and 'E' in Hornstein's system. The true significance of this rôle can only be seen once we recognize that this system must distinguish tense structures with respect to their ordering of 'S', 'R', and 'E' not only when these elements are in a 'precedence' relation, but even when they are in a 'simultaneity' relation; so that the members of each pair below are taken to have distinct structures (Dahl 1992: 646):

(81) a. E-R-S
b. R-E-S

(82) a. S,R,E
b. R,S,E

The reason for distinguishing the two structures in (82) can be seen from consideration of the CDTS: only the structure in (82a) will produce a well-formed 'DTS' when modified by *tomorrow*, since the order of elements in the structure of (82b) would not be preserved under modification:

(83) a. S,R,E ————> S-R,E
b. * R,S,E ————> S-R,E

Significantly, Hornstein does not claim that the two structures in (82) have distinct interpretations — both are interpreted as 'present' — but only that they play different syntactic rôles.

This raises a host of questions about Hornstein's analysis, the 'pungent syntactic aroma' (ibid., 5) that he claims for it, and the relation between syntax and interpretation that he argues for. These are all related, in turn, to his assumption that tense constitutes an autonomous system requiring description in distinct terms, and that a standard 'Reichenbachian' topology is better suited to this description than one more consistent with the principles of generative grammar, with its emphasis on hierarchical structure.

Interestingly, Hornstein argues that 'Reichenbachian' structures can be related to tense morphemes in a quite straightforward fashion, as shown below:

(84) a. i. present morpheme: associate S and R: S,R
ii. past morpheme: R removed to left of S: R-S
iii. future morpheme: R removed to the right of S: S-R

b. i. + *have*: E removed to left of R: E-R
ii. - *have*: E and R associated: E,R or R,E (ibid., 111–12, (42))

If such a mapping is plausible, as it seems to be (with certain qualifications, which we shall be discussing below), then Hornstein's claim for an autonomous tense system becomes rather less compelling. Hornstein does not pursue the possibility of couching his tense rules directly in terms of tense morphemes, rather in terms of 'Reichenbachian' schemata. In fact, he takes the opposite tack, providing (rather ad hoc) additional mapping rules, as given in (85), to ensure that tense morphemes provide unique orderings of 'S', 'R', and 'E':

(85) a. In a given BTS, if linear order is not intrinsically determined, assume that the linear order of RE is identical to the linear order of SR...

b. Morphemes unambiguously determine unique mappings...
(ibid., 113, (43))

By proposing tense rules that are sensitive to interpretatively vacuous differences in the linear ordering of 'S', 'R', and 'E', Hornstein commits himself to the claim that 'within the domain of tense, just as in other parts of natural language, semantic interpretation underdetermines syntactic structure' (ibid., 5). However, he gives no detailed justification of this claim, nor any suggestion of the other phenomena he has in mind that might lend it support.[39] Moreover, since Hornstein alludes in various places to Chomsky's 'Principle of Full Interpretation' (see e.g. ibid, 6), which requires that 'every element of PF and LF... receive an appropriate interpretation' (Chomsky 1986b: 98), it is a fair question how Hornstein would ensure that interpretatively vacuous differences in tense structure are actually made so in the derivation to LF. Doing so, it seems, would necessitate the positing of syntactic operations designed solely to eliminate these differences by LF.

What casts even more doubt on Hornstein's claim about the relation between syntax and semantics is that much of his theory-internal motivation for this claim is open to question. As Dahl (1992: 647) argues, we can counter Hornstein's claim that the differences between the structures in (82a) and (82b) have no interpretative reflex

[39] Hornstein's attempt to justify a distinct status for tense is, in fact, highly reminiscent of Bromberger and Halle's (1991) assertion of a distinct syntax for phonological representations.

by, for example, interpreting the 'comma operator... as the identity relation in a BTS' and as the asymmetrical 'less than or equal to' (or 'earlier than or contemporaneous with') in a DTS, thus making 'the order of the operands... significant.'[40] Given these considerations, there seems little reason to accept Hornstein's position.[41] This all the more so once we recognize that it is an empirical question how syntactic structure is related to interpretation in a given domain:

> ...some parts of the semantics map fairly nicely into syntax — though still with all sorts of marked exceptions — but other parts of the semantics receive comparatively unsystematic syntactic realization. (Jackendoff 1990: 3)

The only reasonable *a priori* stance is to assume simplicity, and thus the simplest mapping consistent with the data.

Indeed, Hornstein's claim about the relation between syntax and interpretation is perhaps best seen as part of an attempt to reconcile the two quite incompatible approaches to tense described earlier: an 'interpretation-driven' approach, which seeks to develop a 'translation language' in order to elucidate the meanings of tense forms, and whose syntax bears at most an indirect relation to that of the object language; and a 'syntax-driven' approach, which seeks to develop a formal representation of the object language, in order to elucidate its syntactic properties. Hornstein wishes to provide a syntactic analysis of tense, but in his efforts to do so, he ties his analysis to Reichenbach's formalism, which (as we have seen) was not intended to mirror the syntax and morphology of tense. He is thus forced to resort to various stipulations in order to resolve the inevitable discrepancies between them. And of course, because his analysis follows Reichenbach's so closely, it has inherited many of its problems — in particular, those related to the 'compositionality' of tenses, as raised by Bouchard and others.[42]

2.1.5.1.2. A 'COMPOSITIONAL' ANALYSIS OF TENSE: BOUCHARD 1984

An analysis that addresses this issue of 'compositionality', and avoids many of the problems that hobble Hornstein's analysis, is one offered in Bouchard 1984. Bouchard

---

[40] Hornstein (1990: 215, n. 23) does have a response to this reinterpretation of the 'comma operator', which is that it would make 'tenses such as the simple past, the future, and the present... ambiguous.' We shall return briefly to this issue in chapter 2.

[41] Another is his claim that 'R' does not always have an 'interpretive reflex' (Hornstein 1990: 13). However, Reichenbach's own discussion of 'R' does not really support this contention, since his point is that positing 'R' in simple tenses makes it possible to describe the intepretative contrast between tenses like the 'simple past' and the 'present perfect', which would otherwise seem to express the same temporal relation. On this, see Reichenbach 1947: 289–90.

[42] In fact, Bouchard's criticisms were aimed not only at Reichenbach 1947 but also at Hornstein 1977, which shares many of its basic features with Hornstein 1990.

argues that tenses are associated with lexical 'temporal structures' composed of 'Reichenbachian' primitives, and that syntactically complex tense forms like the perfect are associated with complex 'tense structures', which have a hierarchical organization which mirrors their selectional properties. Unfortunately, Bouchard's attempt to give Reichenbach's (1947) schemata a syntactic status, and a fully 'compositional' structure, are not fully satisfying; and the difficulties that account faces cast further doubt on the plausibility of incorporating these schemata into syntactic analysis.

To see this more clearly, we might first examine Bouchard's analysis more closely. As just noted, it makes explicit use of Reichenbach's schemata, much as Hornstein's analysis does, identifying three 'basic tenses' — namely, 'present', 'past', and 'future', as given in (86) — and proposing that other tense forms are 'derived from these by tense rules' (Bouchard 1984: 89):

(86) BASIC TENSES:

a. simple present: S,R,E
b. simple past: E,R-S
c. simple future: S-R,E (ibid., 93, (13))

These 'tense rules' create hierarchical 'tense structures' that mirror the selectional relations that hold between the elements of complex tenses.[43] Bouchard demonstrates this with the complex 'tense structure' of the French '*passé composé*', exemplified in (87). In such a tense form, according to his claim, a 'present'-tensed auxiliary form 'selects' a 'past' participle form:

(87) Elle a chanté. (Bouchard 1984: 94, (14))

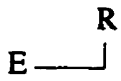
Thus, the 'tense structure' associated with this tense must represent the temporal contribution of the 'present'-tensed form as 'higher' than that of the participial form, in order to correspond to the forms' respective levels of syntactic embedding. Bouchard achieves this by positing for the 'past' participle the lexical temporal structure given in (88), which organizes 'Reichenbachian' primitives hierarchically:

---

[43] The relation of 'selection' is governed by the Projection Principle, as given in (i), based on Chomsky 1981 (Bouchard 1984: 96):

(i) PROJECTION PRINCIPLE
α selects β in γ iff α selects β in γ at every syntactic level.
(α selects β in γ if α subcategorizes or θ-marks β in γ.)

(88) PAST PARTICIPLE:



(based on ibid., 94, (18))

What this representation indicates is that 'the embedded event [E] of the past participle precedes the reference point R of the higher verb' (ibid., 94). Given the additional assumption that auxiliary verbs are not specified for 'E', the 'temporal structure' of the 'present'-tensed auxiliary form combines with that of the 'past' participle form to produce the representation in (89):

(89) a. Elle a chanté.
'She sang.'

b. LEVEL I: S,R
LEVEL II: E

(based on ibid., 97, 98, (22), (24))

In similar fashion, the 'temporal structure' of the the 'future'-tensed auxiliary form combines with that of the 'past' participle form to produce the '*futur anterieur*' structure given in (90):

(90) a. J'aurai fini.
'I shall have finished.'

b. LEVEL I: S__R
LEVEL II: E

(based on ibid., 94, 95, (14), (20))

Bouchard's proposal thus presents an interesting solution to the puzzle of computability discussed above, by providing an explicit account of how complex 'tense structures' are constructed from more basic ones. Moreover, by claiming that these structures have a hierarchical organization, Bouchard avoids many of the problems that we observed in Hornstein 1990 which were largely artefacts of its 'linear' approach.

Yet Bouchard's attempt to make 'Reichenbachian' tense structures part of a representation of the object language, while an improvement over Hornstein's, is still not convincing. Like Hornstein, Bouchard simply retains Reichenbach's primitives, overlooking the possibility that these may be given direct syntactic expression, by means of such devices as functional features, which are already available in the 'Government and Binding' framework that he assumes. In that case, the dominance relations of 'tense structures' could be described directly in phrase structural terms, and no further stipulations about their organizational principles would be required. Indeed, since Bouchard's proposal gives no particular justification for enriching the vocabulary of syntactic theory as he does, to include these 'tense structures' and their

'Reichenbachian' syntax, it begs the question whether any such mediation of syntax proper and temporal interpretation is required to establish a plausible connection between them.

Even the one real achievement of Bouchard's proposal — namely, its ability to give a 'compositional' 'Reichenbachian' account of complex tense forms — is not without its drawbacks, which can be seen as a direct consequence of interpreting Reichenbach's schemata in this way. These shortcomings emerge in Bouchard's treatment of forms like the English 'present perfect' and its French counterpart, the '*passé composé*'. While the interpretations of the English form are accurately described in terms of the 'Reichenbachian' schema 'E-R,S', as discussed in §2.1.4.3, those of the French form, which are those of a 'perfective past', generally without 'continuing relevance', are not. However, because these tenses have the same 'auxiliary + participle' structure, it is not obvious how a 'compositional' account of the latter can derive its 'past' tense meaning from its 'present' tense and 'past' participle constituents, without modifying Reichenbach's analysis of the 'present' tense in this instance.[44] (We shall have more to say about this in chapter 2.)

Similar considerations apply to Bouchard's treatment of the 'past' participle more generally. Bouchard argues, on the basis of sentences like those in (91), that it is the participle — rather than the auxiliary form, as many authors have claimed[45] — that is responsible for the 'anterior', or 'E-R', meaning of 'perfect' forms:

(91) a. Le chat parti, les souris dansent.
'With the cat gone, the mice dance.'

b. Une fois parti, je ne reviendrai plus.
'Once gone, I wouldn't return.'

c. Une fois la mère partie, ils firent la vaisselle.
'Once their mother was gone, they did the dishes.'

(based on Bouchard 1984: 94, (17))

Since the participial clause in each of these sentences serves, in the absence of an auxiliary form, to indicate a precedence relation between the 'situation' that it describes and the 'situation' described by the main clause, much as a 'present perfect' form indicates a precedence relation between some 'situation' and the time of speech, the 'anterior' meaning of each can be attributed most plausibly to the participial form which

[44] In fact, this problem does have a straightforward solution, which we shall outline briefly in chapter 2, if we claim that the French 'present' tense is really temporally indeterminate.

[45] Among these are Smith (1978: 46); Hornstein (1990); Baker (1989: 448), and — as we shall see below — Rigter (1986).

they share. (This point has also been reiterated in more recent studies such as Cowper 1991 and Giorgi & Pianesi 1991, the latter of which we shall be discussing below).

It is not entirely clear, however, that the temporal locating function of the 'past' participle in above sentences is not a secondary one, derived from a more basic aspectual function of signalling the completion of the event described by the verb.[46] Given these doubts, a lexical representation of the 'past' participle of 'perfect' forms that adverts to the 'E-R' relation becomes considerably less compelling. This point was already made in §2.1.4.3.2.2, when we noted the broad range of constructions in which the English 'past' participle appears, and the implausibility of characterizing all of these constructions in terms of temporal location. These constructions thus highlight a problem for Bouchard and others who have interpreted Reichenbach's schemata in 'compositional' terms. This is simply that these schemata, which represent temporal interpretations rather than morphosyntactic configurations, are compatible with different morphosyntactic realizations, such as those of 'perfective' aspect and 'past' tense, whose temporal interpretations may be indistinguishable. Of course, since Reichenbach (and Hornstein, for that matter) was concerned neither with lexical structure nor with ensuring computability of meaning, it was not necessary for him to solve this problem. Yet for syntactic analyses of tenses that are concerned with these issues, it is difficult to avoid.

This problem has manifested itself in various forms. For example, Giorgi and Pianesi (1991: 195, n. 12) identify a productive class of adjectives in Italian, exemplified in (92), that have the same morphology as 'past' participles, and appear to be formed by concatenation with a [+ V, +N] suffix:

(92)	fortun-ato	'lucky'	fortuna	'luck'	
	disgrazi-ato	'unfortunate'	dizgrazia	'misfortune'	
	barb-uto	'bearded'	barba	'beard'	
	capell-uto	'hairy'	capello	'hair'	(ibid.)

Giorgi and Pianesi raise the question whether these adjectives encode the same temporal information — namely, 'E-R' — that they claim for 'past' participles. Yet they pursue this question no further, and do not consider the possibility that both classes of lexical items encode basically non-temporal notions.

A similar problem for a 'temporal' analysis of the 'past' participle, which pertains to the form and interpretation of passives, is recognized by Cowper (1991). As Cowper notes, the claim that the 'past' participle expresses an anteriority relation predicts,

---

[46] This very point is made by Salkie (1989: 16): 'It seems that in French the past participle of a verb like *partir* carries the sense of "completion" which can combine with the present tense of the copula to yield the meaning of past time.'

contrary to fact, that the sentence in (93a), for example, is temporally equivalent to that in (93b) rather than to that in (93c):

(93) a. The cookies were eaten.
b. Someone had eaten the cookies.
c. Someone ate the cookies. (Cowper 1991: 60–61)

It is thus at odds with our understanding of passive clauses as 'temporally identical to their active counterparts' (ibid., 61). Cowper proposes the following solution to this problem. She begins by positing that the participial morpheme *-en* is underspecified with respect to its subcategorizational properties, requiring only that its complement be of category V; as such, it may select either a minimal or a maximal projection of V. Next, she posits that 'V^0 has no temporal referent, while VP does', following di Sciullo and Williams' (1987) claim that maximal projections but not heads are able to refer. This allows Cowper to claim that '*-en* cannot behave as a temporal connector when it is directly adjoined to V'; and thus to establish the relevant difference between the two occurrences of this morpheme (ibid., 62). It should be noted, however, that di Sciullo and Williams' claim about the reference of heads has been shown by various reseachers to be empirically inadequate. The basis of this claim is di Sciullo and Williams' observation that sentences like those in (94) display a clear contrast, the second but not the first being self-contradictory:

(94) a. John is a Nixon admirer in every sense except that he does not admire Nixon.
b. John admires Nixon in every sense except that he does not admire Nixon.

Di Sciullo and Williams attribute this difference to the inability of the X^0 constituents in noun compounds to have independent reference. However, as Gillon (in press: §8) has argued, the relevant difference between the two sentences in (94) is not the non-referentiality of the X^0-level constituents, but rather the properties of the *-er* suffix that figures in the former but not the latter sentence. That this is the true source of the contrast can be seen from the following sentences, where the same contrast emerges even though neither sentence contains a compound:

(95) a. John is a writer in every sense except that he does not write.
b. John writes in every sense except that he does not write.
(Gillon in press: §8, (43.1), (43.2))

Given this difficulty with one of its key assumptions, Cowper's analysis of the 'past' participle cannot be taken to solve the problem for 'temporal' analyses of the 'past' participle to which she has drawn our attention. A simpler solution to the problem, then, would be a 'non-temporal' analysis of this form, which we shall accordingly be proposing in chapter 2.

2.1.5.2. A FEATURE ANALYSIS OF TENSE: RIGTER 1986

Many of the difficulties that we have just seen in Bouchard's and Hornstein's descriptions of tense appear to follow from their attempts to exploit a formalism, that of Reichenbach 1947, whose syntax offers little insight into the syntax of natural language tenses. Their strategy for incorporating such a formalism into their analyses is essentially to claim a syntactic reality for it, in the form of distinct representations with 'Reichenbachian' primitives and rules of combination. As such, the temporal values of complex or modified tense forms are not presented simply as a function of the temporal values of the relevant constituents in a tree structure (following conventions widely adopted in syntactic, semantic, and morphological analysis), but rather as involving computations in a separate component of the grammar. In other words, the temporal values of complex or modified tenses are related only indirectly to those of simple tenses, since a system of 'Reichenbachian' 'tense structures' mediates between them. Unfortunately, neither Hornstein nor Bouchard gives any independent conceptual or empirical motivation for introducing this additional machinery, which not only creates elements with obscure grammatical properties, but represents a vast enrichment of the theory that they assume, by permitting two radically different sorts of syntactic organization in a single grammar. Their strategy thus seems rather an undesirable one.

More than this, this application of Reichenbach's schemata to ends quite different from those for which it was originally intended raises the question whether such a move is warranted. In fact, our earlier discussion of this issue in §2.1.4.3.2.2 above, which emphasized the underspecified nature of the temporal information contributed by tenses, cast considerable doubt upon it.

A much sounder application of Reichenbach 1947 to syntactic analysis has been offered by Rigter (1986), who translates Reichenbach's schemata into more fully syntactic terms, and incorporates the above insight about the temporally underspecified nature of tenses in doing so. Rigter's claim is that 'S', 'R', and 'E' are realized not as syntactic primitives, but rather in relational terms, as part of the lexical entries of tenses and verbs.[47] The entries that Rigter posits, which are given in (96), provide the syntactic information necessary for the construction of temporal representations (which

[47] Such an interpretation of Reichenbach's primitives is also argued by Cowper (1991), who offers a similar feature analysis.

Rigter describes in terms of 'Discourse Representation Structures', the partial models of 'Discourse Representation Theory', making use of a 'Reichenbachian' vocabulary).

(96) RIGTER'S (1986) SYSTEM OF TEMPORAL FEATURES

a. +Past domain-shift tense:

+PAST, $INFL^0$: [— V] must be inserted iff $S^{\alpha-1} > E^{\alpha-1} = S^{\alpha}$

[↑ = S] $INFL^1$

b. -Past domain tense:

-PAST, $INFL^0$: [— V]

[↑ = S ≤ R] $INFL^1$

c. +Past domain tense:

+PAST, $INFL^0$: [— V] cannot be inserted if $S^{\alpha-1} > E^{\alpha-1} = S^{\alpha}$

[↑ = S > R] $INFL^1$

d. Auxiliary of the perfect:

HAVE, V^0 [— V]

$\{[\uparrow > \downarrow]\}$ V^1

$[\uparrow \geq \downarrow]$

e. Chronological specification of verbs:

V^0:

[↑ = T] (Rigter 1986: 108–9, (29)–(33))

These entries, which provide both subcategorizational and temporal information, are interpreted as follows (with '=' and '>' being Rigter's versions of ',' and '-', respectively, and 'α-1' indicating 'the domain that directly embeds α'; ibid., 109).[48] The symbol '↑', associated with all of these entries, 'is an instruction to find the right-hand term of the nearest c-commanding chronology indicator' (ibid., 109). In the entries for tenses, this symbol serves in the encoding of 'SR' relations. Thus, the entry for a [- Past] tense is a signal to construct a temporal representation in which 'S' is simultaneous with or precedes 'R'. Similarly, the entries for the two [+ Past] tenses that Rigter posits are signals to construct temporal representations in which 'S' either precedes 'R' (in the case of the 'domain' tense) or is simultaneous with 'R' (in the case of the 'domain-shift' tense) in the domain represented by the IP of which the tense is the head. (In other words, the 'domain' tense cannot, while the 'domain-shift' must,

[48] I have replaced Rigter's symbols 'P', 'F', and 'T', with their standard 'Reichenbachian' counterparts: 'S', 'R', and 'E', respectively.

appear in contexts in which an embedded 'S', or 'S^{α}', has been shifted back with respect to an embedding 'S', or '$S^{\alpha-1}$'). In the entries for auxiliary and main verbs, this symbol serves in the encoding of 'RE' relations. Thus, the entry for main verbs is a signal to construct a temporal representation in which 'E' is simultaneous with the nearest c-commanding chronology indicator; and that for auxiliary *have*, which contains the symbol '↓' — 'an instruction to find the right-hand term of the chronological specification of the verb that is thematically governed by HAVE' (ibid.) — is a signal to construct a temporal representation in which 'E' precedes or precedes and continues into the interval given by nearest c-commanding chronology indicator.

The operation of these 'construction rules' can be seen in (97), where (c) is the temporal representation of the sentence given in (a) (the subscripts that it contains indicating level of embedding), and assigned a labelled bracketing in (b):

(97) a. He thinks that Jane had been angry.

b. $[_{IP}$ I $[$- PAST$]$ $[_{VP}$ he [think [that $[_{IP}$ I $[$+ PAST$]$ $[_{VP}$ Jane have [be $[_{AP}$ angry$]]]]]]]$
$[\uparrow = S > R]$ $[\uparrow = E]$ $[\uparrow = S]$ $[\uparrow > \downarrow]$ $[\uparrow = E]$

c. $\uparrow = S_a > R_a = E_a = S_{aa} > E_{aa}$

The temporal representation in (97b) reveals a significant feature of this analysis, alluded to above, which distinguishes it from those of Hornstein and Bouchard: this is its claim that the syntax may not provide all of the information necessary to construct a complete temporal representation. More specifically, 'past domain-shift' tenses do not introduce 'R' (as can be seen from (97b)), which is thus left indeterminate or supplied by inference. Such a claim is consistent with a view of tenses already endorsed in this study: namely, one according to which tenses underdetermine temporal interpretations.

There are, nevertheless, certain difficulties with Rigter's analysis, which argue against adopting more than its general form. Two difficulties in particular stand out. One involves Rigter's positing of two different entries for [+ Past] forms[49] and of disjunctive specifications in the entries for the [- Past] tense and auxiliary *have*, with the associated claim that these forms are ambiguous. The other involves his (no doubt simplifying) assumption that the temporal specifications of tenses and verbs are the sole syntactic input to the construction of temporal representations. Since temporal adverbials, as we have already seen, play an important rôle in temporal interpretation — influencing the availability of certain interpretations, and even 'add[ing] meaning that was not there before', as Hornstein (1977: 524–25) has suggested —, these difficulties are arguably related. That is, attention to the rôle of adverbials in temporal interpretation leads us to suspect that the range of interpretations available to tense forms is due not to

[49] We shall be discussing this problem in more detail in chapter 3.

their disjunctive lexical specifications, but to the close interaction between tenses and adverbials (and context) in the computation of temporal interpretations. This is certainly suggested by the 'futurate' and 'present moment' readings of the following two 'present'-tensed sentences, since these two readings can be plausibly attributed only to the respective presence and absence of a temporal adverbial:

(98) a. The train is leaving at five o'clock.
b. The train is leaving!

What this calls for, as I shall be arguing in the following chapters, is a feature analysis of tenses that makes their temporal contributions considerably less determined than Rigter suggests. Such an analysis will permit the temporal values of tenses to vary significantly, thus accounting straightforwardly for the range of uses that tenses are observed to have.

2.1.5.3. An 'exploded' Infl analysis: Giorgi & Pianesi 1991

However, before we are able to endorse a feature analysis of tense as the basis for such an analysis, we must address the challenge issued to such analyses by the 'exploded' Infl model of the verbal system, which assigns a hierarchical syntactic structure to inflectional categories. In §2.1.5, we gave a brief description of this model, which takes its place within a general movement away from feature analyses toward more principled structured representations (e.g. Pustejovsky 1991: 47). Here we shall be examining the model in a more specific form — namely, that of the 'Reichenbachian' analysis outlined in Giorgi & Pianesi 1991 — with a view to determining what insights such an approach might offer for the study of tense and temporal interpretation. What we shall find, though, is that this model, even in the sophisticated version which Giorgi and Pianesi present — which interprets it in terms of 'abstract' inflectional morphemes, and resists the proliferation of null heads —, leads to simplistic claims about inflectional morphology and the representation of temporal categories.

These difficulties certainly undermine Giorgi and Pianesi's analysis, as a careful examination of it reveals. Their basic claim is that temporal relations are syntactically expressed by two categories (which they call simply 'T1' and 'T2'), which correspond, respectively, to the 'SR' and 'RE' relations described in Reichenbach 1947. This basic claim derives its empirical force from two supplementary claims that they make. One is that the appearance of these two categories is governed by a 'Biunique Mapping Principle' (BMP), given in (99):

(99) BIUNIQUE MAPPING PRINCIPLE (BMP):
Temporal morphemes and T-relations are in biunique correspondence.
(ibid., 191, (4))

This principle ensures that one or both of these temporal categories is present in a phrase marker if and only if a temporal morpheme is actually present (although this morpheme may be 'abstract', and thus be given one of any number of morphophonological realizations); and that 'different tenses correspond to different syntactic structures' (ibid., 192). The other claim is that languages syntactically encode only relations of precedence, and not those of simultaneity, between 'S' and 'R' and 'R' and 'E'; so that the projections of 'T1' and 'T2' can never contain null heads.[50] Giorgi and Pianesi suggest that this property follows from the status of 'T1' and 'T2' as lexical categories,[51] which can be inserted 'only if there is... semantic content to express', such content being seen as 'incompatible with [null] heads'. In contrast, functional heads such as Agr, which 'are independently required by the principles of grammar', must always be represented in a phrase marker (ibid., 197–98). This distinction between lexical and functional heads serves to account, for example, for the morphological form of Latin and Italian 'present' and 'present perfect' tenses, as illustrated below:

(100) a. ITALIAN:
mangio
mangi-o
eat-AGR
'I eat'

b. LATIN:
laudo
laud-o
praise-AGR
'I praise' (based on ibid., 198, 202, (7), (10))

[50] This means that 'T1' and 'T2' will be realized by the same verb form in Latin, for example, only in the case of 'past perfect', 'future perfect', 'posterior past', and 'posterior future' forms, where neither the relation of 'S' to 'R' nor that of 'R' to 'E' is that of simultaneity. (For examples, see Giorgi and Pianesi's (1991: 211–12) inventory of Latin tense forms.)

[51] This status, they claim, is due to their ability to assign 'T-rôles'; for discussion of this, see Giorgi & Pianesi 1991: 194.

(101) a. ITALIAN:
Ho mangiato
avere-o mangi-at-o
have-AGR1 eat-T2-AGR2
'I have eaten'

b. LATIN:
laudavit
lauda-vit
praise-T2-AGR
'he/she/it has praised' (based on ibid., 200, 204, (8), (11))

That is, Giorgi and Pianesi claim that the 'present' forms consist only of verbal stems and markers for person and number agreement, and that neither 'T1' nor 'T2' figures in their representation. Since the absence of both temporal categories 'characterizes [present tenses] uniquely', these forms are unambiguous from the standpoint of temporal representation, and can be assigned a 'present' interpretation in a straightforward fashion. Similarly, present perfect forms consist only of verbal stems, agreement markers, and 'T2', which expresses the relation 'E-R', which are also sufficient to account for their temporal interpretation (ibid., 198, 203)

There are, however, at least two serious difficulties with this analysis. One concerns the issue of cross-linguistic variation in the interpretation of formally similar tenses. Thus, 'present' tenses in even closely related languages do not have the same range of interpretations, as has been observed in various studies (e.g. Enç 1987: 649; Salkie 1989: 15). In German, for example, it can appear in all of the following contexts, only the first of which is grammatical in English:

(102) a. Ich wohne in Deutschland.
'I live in Germany.'

b. Ich wohne seit drei Jahren in Deutschland.
'I have been living in Germany for three years.'

b'. Ich bleibe noch ein Jahr in Deutschland.
'I shall be staying in Germany for another year.'

Such a range of readings suggests a treatment of the German 'present' tense different from that offered by Reichenbach for its English counterpart.[52] It thus calls into question both the cross-linguistic application of this treatment in general, and its application in the form proposed by Giorgi and Pianesi in particular, which, by disassociating the temporal value of the 'present' tense from any morphosyntactic substrate, has no obvious means to accommodate such parametric variation.

An analogous problem in their treatment of the Latin 'present perfect' (which is essentially the one that arose in Bouchard's analysis) has more direct consequences for their analysis, since it leads to incorrect predictions about the language under consideration. While Giorgi and Pianesi (ibid., 203, n. 23) note that descriptive grammars gloss this form as a 'present perfect' or a 'simple past', they elect to 'ignore the double value of the perfect', suggesting that it is 'more related to aspectual characteristics than to pure temporal representation'; and characterize it only as expressing the temporal relations 'E-R' and 'S,R', as dictated by their analysis. Giorgi and Pianesi's efforts to remove one reading of this form from consideration should, however, make us suspicious. This is because the distinction between the 'present perfect' and the 'simple past', which turns on the placement of 'R', is arguably the cornerstone of Reichenbach's analysis; and the fact that a particular tense form permits two different placements of 'R' seems central to its characterization, rather than an ancillary property.

This inability of Giorgi and Pianesi's analysis to capture this 'double value' of the Latin 'perfect' form — the same 'double value' that we also find in French and German, for example — means that it cannot accommodate another case of parametric variation between tense forms in English and other languages. Of course, these remarks simply reiterate our earlier conclusions about Bouchard's 'compositional' approach to Reichenbach 1947, which Giorgi and Pianesi have followed in their own analysis. In other words, their reformulation of this approach in terms of an 'exploded' Infl does not alter the fact that its resources are simply insufficient to account for the patterns observed. Ironically, Giorgi and Pianesi's appeal to the aspectual properties of Latin verbal inflection in explaining away the appearance of a second meaning for the 'perfect' may, in fact, be the key to the analysis of this form, if it is essentially a marker of perfectivity, rather than of temporal location — a possibility which Salkie (1989: 16) has suggested for the French '*passé composé*', and which we brought up earlier in our discussion of the 'past' participle. Such an analysis is even more compelling when we recognize that a 'perfective'/'imperfective' distinction is basic to the organization of the Latin verbal system (see e.g. Matthews 1972: 396), as it is to the French verbal system. (We shall be taking up these questions again in chapter 2.)

---

[52] Some suggestions for this will be offered in chapter 2.

These last remarks highlight the other serious difficulty of Giorgi and Pianesi's analysis, which concerns the realization of morphosyntactic categories in which they are not in a one-to-one correspondence with the formatives that realize them.[53] Latin and Italian, the two languages that Giorgi and Pianesi examine, furnish many examples of this phenomenon, which has been given extensive discussion in Matthews' (1972) study of Latin verb conjugations. One example of this sort of mismatch, which centres on the marking of 'perfective', should suffice to highlight the relevant issues. Matthews observes the appearance of the segment *-is-* in 2nd person perfect forms like that below:

(103) re:ksisti:
reg-s-is-ti
'you (sing) ruled/have ruled' (based on ibid., 132)

This segment, he notes, occurs only with '2nd person' forms — unlike the segment *-s*, which appears throughout the paradigm, either with *-is-*, as in (103), or without it, as in (104), and is generally identified as a 'perfective' marker:

(104) re:ksi:
reg-s-i
rule-PERFECTIVE-AGR
'I ruled/have ruled' (based on ibid., 71)

However, *-is-* 'is always associated with the Perfective, in the sense that it only appears in the Perfective part of the paradigm'; and that 'it has the same phonological shape whatever the verb in question' (ibid., 81). These facts remain a mystery unless both *-s-* and *-is-* are identified 'as exponents of Perfective' (ibid., 82).

Moreover, because the agreement marking on the 2nd person singular perfect form 'is restricted to this single Tense/Aspect combination' (ibid., 132, n. 2), it is also plausibly seen as signalling the perfective. This suggests the following analysis of this perfect form:

(105)

GRAMMATICAL REPRESENTATION:	REG-	+	Perfective	+	2nd	+	Singular			
PHONOLOGICAL REPRESENTATION:	re:k	+	s	+	is	+			ti:	

(ibid., 132)

[53] See e.g. Matthews 1972: 56–103 for discussion.

Of course, the kind of mismatch that Matthews documents — which pervades the morphology of Latin, as he observes, and that of many other languages, as noted elsewhere (see e.g. Joseph & Smirniotopolous 1993: 391) — raises an important question for the 'exploded' Infl model. This is whether a claim that inflectional morphology involves the adjunction of heads expressing distinct morphosyntactic categories can be reconciled with a more complex mapping of this kind between morphosyntactic categories and morphological form. The problem is especially acute for 'concrete' interpretations of the 'exploded' Infl model, since they assume a more-or-less transparent relation between 'the order of inflectional morphemes on a verb in surface morphology' and 'the order in which the corresponding functional heads are adjoined to the verb in syntax' (Janda & Kathman 1992: 142). The only morphological device, then, that can achieve the desired parallel between morphological and syntactic structure is affixation. Yet it is clearly inadequate to the task of describing the mismatch in question.[54, 55]

For 'abstract' interpretations of the 'exploded' Infl model, which include Giorgi and Pianesi's study, the problem raised by such mismatches is a far subtler one, since analyses of this kind assume a much less direct relation between the 'abstract' morphemes that they posit and surface morphology. Here, this relation is understood to be mediated by processes that determine the morphophonological shape of these morphemes, and which have been argued to include the insertion and head-to-head movement of morphemes, the 'merger' and 'fusion' of structurally adjacent nodes (which maintain two separate nodes and create a single node, respectively), and the 'fission' of one node into two (see e.g. Halle & Marantz 1993, esp. 115–16, for discussion). Given the power of these morphophonological devices, it is necessary to ask how we may determine the morphosyntactic content of the morphemes that serve as input to them.

Many critiques of this approach,[56] as Halle and Marantz (1993: 133) point out, have assumed that 'each morphosyntactic feature... constitute[s] a single morpheme.' They dispute this, however, arguing that 'several morphosyntactic features can (and sometimes must) coexist in a single morpheme'; and that the determination of this

---

[54] Not to mention other cross-linguistically common forms of non-concatenative morphology such as stem-allomorphy and suppletion, or more exotic forms such as 'split' inflection (in which 'a given category is marked in two or more non-adjacent places within a singe word or sentence), as found in French and in the Keresan languages of New Mexico; or such phenomena as the dependence of morphemes 'on non-syntactic criteria of a morphological and/or phonological nature', as found in Choctaw and Afar (Janda & Kathman 1992: 147–50; see also Anderson 1988: 31–33 and Joseph & Smirniotopolous 1993 for further discussion).

[55] Of course, these are not the only problems associated with 'concrete' interpretations of 'exploded' Infl. Another significant one, as observed by Janda and Kathman (1992: 146–47), is that 'each highly inflected language must have its own language-specific underlying structure, a conclusion which is at odds with the GB program of minimizing cross-linguistic differences in underlying syntactic structure.'

[56] These include Anderson 1992 and Pullum & Zwicky 1991, *q.v.*

clustering of features must be part of morphological theory.[57] We might take the clustering of person and number features as a fairly uncontroversial example of this coexistence (even though it does seem to be at odds with the notion of the morpheme as the 'smallest unit of meaning'). Yet, as Halle and Marantz themselves admit, it remains unclear how other, more semantically significant features — in particular, the tense features which we have been discussing — 'are distributed among the functional heads in the syntax' (ibid.).

These considerations return us directly to Giorgi and Pianesi's claims about the morphemes in the Latin and Italian verbal systems. Given that Latin, in particular, encodes a range of morphosyntactic distinctions in its verbal system (including those of tense, aspect, mood, voice, person and number) and does so in a manner that often results in mismatches, as we have already seen, a claim about how the features that encode them are distributed in the syntax seems crucial to an analysis of this system. However, Giorgi and Pianesi simply avoid such a claim by singling out tense (and agreement) for syntactic implementation, and abstracting away from these other distinctions. The question we must then ask is whether this privileging of tense can be defended — for example, because the other distinctions can be reduced to that of tense, or because they have no syntactic function. The first possibility, it seems, can be ruled out on the basis of even a cursory examination of the verbal paradigms of these morphologically rich languages. The second is more difficult to assess, since the notion of 'syntactic function' relevant to the task is not obvious. This is because Giorgi and Pianesi's study is concerned largely with subtle claims about the relation between morphosyntactic form and interpretation, rather than the gross syntactic effects associated, say, with the distinction between finite and non-finite forms. Nevertheless, our examination of the Latin 'perfect' forms, which pointed to the existence of a 'perfective' feature, has argued strongly against such a status for tense in the verbal system of Latin (or Italian, to which similar arguments apply).

This leaves us with the following dilemma. If we wish to preserve Giorgi and Pianesi's claim that tense morphemes are associated only with particular temporal relations, then we have no obvious site for the encoding of the other morphosyntactic features in question. However, if we follow Halle and Marantz's (1993: ibid.) suggestion that distinctions of tense, mood, and voice, for example, are 'features of a single Tns node', then Giorgi and Pianesi's claim is deprived of its empirical force, since in this case tense morphemes are predicted to appear in every sentence; so that a key virtue of their analysis, which rejects the strategy of 'hypothesizing a structure... in

[57] Of course, the more that 'abstract morpheme' theories posit morphemes containing clusters of features, rather than single features, the less there is to distinguish them from theories 'that make more thoroughgoing use of feature complexes' (Pullum & Zwicky 1991: 396); and the greater the burden of justifying the remaining differences between them — in particular, the powerful operations that the former theories exploit, as catalogued in the text.

every case, for every language, even if no evidence can be detected to this purpose' (Giorgi & Pianesi 1991: 208),[58] is lost.

A similar methodological problem faces Giorgi and Pianesi's treatment of agreement marking in Latin and Italian. We saw earlier that the '2nd person present perfect' forms in Latin were sensitive to this particular tense/aspect combination. This situation is, in fact, not uncommon in Latin, as suggested by other instances noted by Matthews,[59] or in Italian, whose verbal paradigms display similar patterns.[60] Of course, these facts cannot be captured directly in the analysis that Giorgi and Pianesi assume, which assigns tense and agreement features to different nodes, although they can be readily accommodated in terms of the devices that were mentioned earlier — say, by the 'fissioning' of a 'perfective' morpheme into two and the subsequent adjunction of one of them to an agreement morpheme. While these operations could certainly produce the desired result, their ability to do so is only consistent with the positing of distinct agreement and aspectual morphemes, and provides no independent support for it. The motivation for such a model of Infl thus remains rather weak — notwithstanding the important duties it has been assigned in recent syntactic research (see e.g. Chomsky 1993).

The foregoing considerations thus tell against the 'exploded' Infl model of inflectional morphology, which appears to have little conceptual or empirical motivation, and which vastly increases the machinery of linguistic theory while providing no corresponding increase in its explanatory power. Such considerations have, in fact, led many researchers to reject the existence of a functional category Infl altogether, describing morphosyntactic categories in terms of bundles of features 'embedded under a terminal auxiliary- or main-verb node' (Janda & Kathman 1992: 152).

While the proliferation of functional categories countenanced by the 'exploded' Infl model has had many undesirable consequences, the distinction between 'lexical' and 'functional' categories itself seems highly desirable, providing a ready means of capturing significant syntactic and semantic differences between a language's 'content words' and 'function words' within a highly restricted set of assumptions about how words are represented. Accordingly, theories that exploit this distinction (such as 'Principles and Parameters' theory) have a distinct advantage over those that do not (such as 'Head-driven Phrase Structure Grammar'), since the latter have no direct means to describe 'function words', and must, therefore, appeal to other possibilities.

---

[58] This issue is also raised by Ackema, Neeleman, and Weerman (1992: 20), who seek to address it in their analysis of functional projections, *q.v.*

[59] Matthews (1972: 153) observes that '1st person singular', for example, has three allomorphs, *-o:*, *-m*, and *-i:*, which occur with 'present', 'future', and 'perfect' forms, respectively.

[60] For example, '1st person singular' is signalled by *-o* in the present, *-i* in the 'past absolute', and *-ɔ* in the 'future' (see e.g. Russo 1929: 402–3).

One is to assimilate them, often rather improbably, to the class of 'content words' (as in Pullum's (1982) analysis of infinitival *to* as a non-finite verb). Another is to introduce them syncategorematically — an even less desirable possibility, since, as Pullum (1982: 182) notes, 'it introduces irreducibly parochial (language-particular) elements into the syntactic rules of the language instead of assigning them to the natural repository for such parochiality, the lexicon'; and 'formalizes a distinction between words in a language for which there is absolutely no warrant in terms of the intuition of the native speaker'.[61]

For these reasons, we shall be adopting the conservative position — which is also perhaps the simplest one consistent with the data — that morphosyntactic categories of the verb are represented syntactically as a bundle of features dominated by Infl. Since we shall be concerned primarily with the representation of tense, this assumption also permits us to avoid a commitment about the representation of other categories without affecting other claims we shall be making about phrase structure. In this way, we can make a significant use of the functional category Infl in describing tense, without miring ourselves in controversies from which we are unable to extricate ourselves.[62]

What these last remarks suggest, then, is that, despite the many problems we have seen with syntactic approaches to tense, such approaches still remain the best hope for its analysis. This, as McGilvray (1994: 3) has argued, is because it is the syntax which 'determines an expression's meaning as finely as possible', and is thus the natural site for the foundation of a theory of tense and temporal interpretation. Since this view of the relation between form and meaning is not a familiar one, it is worth describing in some detail before we proceed any further with our analysis. Such a view, which McGilvray has developed in various studies, will thus be the subject of the next section.

2.2. WHAT IS REFERENCE?

Early in the chapter, we identified two key terms in our discussion of tense: 'tense' and 'reference'. So far we have considered only the first, examining a number of proposals for the characterization of tense, and concluding that a syntactic approach was the most fruitful of these. In this subsection, we turn to a consideration of reference, to see if we

---

[61] This is not to say that analyses within theories that do distinguish between lexical and functional categories have not made frequent recourse to syncategorematic items, as Pullum (1982: 182) notes. One class of words that are still denied functional categorization in most generative research (but see e.g. Munn 1987) is that of coördinating conjunctions.

[62] One issue on which I shall not be taking a stand is that of how functional features are ultimately realized on the verb in English. However, since 'affix-lowering' has been called into question by a number of studies (e.g. Gazdar, Pullum & Sag 1982; Chomsky 1993) and the verb appears not to move to Infl in the syntax, one possibility is that morphological rules simply associate functional features with the lexical head whose maximal projection is selected by the head hosting these features — in this case, V, whose maximal projection is selected by Infl.

can arrive at an understanding of this notion sufficient to guide our subsequent analysis. As we did with tense, we shall advert here to the 'commonsense' view of reference, which, as it pertains to time, takes 'present' tense, for example, to 'refer' to present time, and 'past' tense to 'refer' to past time. Again we shall be endeavouring to show that this view is not so much incorrect as it is limited; and suggesting how it may be supplemented. These suggestions will be couched in terms of a theory of reference developed by McGilvray (e.g. 1991, 1994, 1995a,b,c), which is 'syntactic' in a sense to be made precise below, and thus complements the syntactic approach to tense that we have already endorsed. Unfortunately, we cannot undertake a detailed review of the literature relevant to the issues McGilvray discusses, since this would take us well beyond the confines of this study. What we shall do instead is simply to highlight some of these issues in outlining McGilvray's approach, which will guide our analysis of various tense constructions in the following chapters.

McGilvray argues that '[t]he task of a theory of reference is to explain how an expression individuates, picks out, or specifies something... by outlining what sort of competence people display when they know to what an expression refers' (McGilvray 1991: 182). His claim is that such a theory should not appeal to truth, since the knowledge in question does not centre on the relationship between language and the world (or worlds). Rather, this relationship is only one involved in the exercise of referential competence, which by hypothesis comprises different competences, corresponding to the kind of referent (and thus reference) found at each of the three temporal intervals, 'i_S', 'i_R', and 'i_E' (Reichenbach's 'S', 'R', and 'E', respectively, as noted in §2.1.4.3.2.2), that every sentence picks out (ibid.).

2.2.1. 'MEANINGS' AND 'MEANINGFULNESS'

What is required for McGilvray's argument to go through is his distinction between 'meanings' and 'meaningfulness', which are associated with two very different kinds of abilities involved in the process of interpretation (McGilvray 1991: 29–30). The former involves 'a speaker's ability to refer to or specify sentential contents', and the latter a 'speaker's ability to judge and make claims about the world' (ibid., 145). An account of the latter 'is indubitably epistemic', inasmuch as it must deal with matters of 'truth, probability, existence, and rational thought' (ibid., 148). As such, it cannot avoid 'speak[ing] to the relationship between language and the world'. In contrast, McGilvray insists, an account of the former cannot properly deal with such matters, but must instead take meaning to be 'world-independent' (ibid., 145).

Given that so many semantic theories have 'tr[ied] to make truth and logic do the work of individuating meanings for sentences or parts of sentences' (McGilvray 1994: 28), it is natural to ask why this assumption should be abandoned. A simple answer is

that knowledge of truth conditions and knowledge of meanings are two different things. More specifically, the ability to determine the truth conditions of a sentence presupposes the ability to determine '*which situation* would make that sentence true'; and this, McGilvray argues, 'is a matter of knowing what the meaning of the sentence is'. Yet the latter knowledge merely guides and 'does not in any way determine our knowledge of a sentence's *actual* truth-conditions or situations of correct use' (ibid., 29–30).

There are other important reasons to see our competence at meanings as independent of our competence at judging. One is our ability to 'understand fictional tales as easily as real-life ones', or more generally to understand 'the content of a sentence no matter what world it applies to and without regard to whether someone is asserting, denying, or conjecturing' (McGilvray 1991: 34). Another is the fact that competence at judging is dependent upon belief and (at times highly specialized) knowledge, whether factual or conceptual (ibid., 31, 35). Making these part of our knowledge of meanings, though uncontroversial for the truth-conditionalist, leads to a highly improbable view of the nature of communication. Because it makes knowledge of meanings 'a matter of having a theory of the world' (ibid., 151), it leaves communication prey to sceptical doubts — 'suggest[ing] we should be worried about whether anything we say is ever understood' (ibid., 153). But such scepticism seems unwarranted, since '[w]e never encounter any serious doubts about what a word means except in perfectly obvious cases — where we try to speak an unfamiliar language, for instance' (ibid.).

A theory of meaning, then, should serve not to relate expressions to real- or possible-world entities or to truth values, but only to tell us how they receive the meanings that they do. McGilvray's own theory, with its 'syntactic' cast, does so by identifying the meaning of an expression with its 'logical form'; this, 'as a first approximation', is a 'fully specified phrase marker', which 'serves as an interface to cognitive domains' (ibid., 25). McGilvray's claim, in other words, is that the syntax itself determines the meaning of expressions; and thus that 'understanding the meanings of expressions' is a matter of 'having a syntactic competence' (ibid., 6).

2.2.2. KINDS OF REFERENCE

We can see how McGilvray applies this view of 'referential competence' to the treatment of tense by turning again to his 'supplemented Reichenbachian' notation, which was given in §2.1.4.3.2.2 and is repeated below. The claim expressed by this notation is that each sentence in English (and, presumably, other languages) is associated with three temporal intervals; and that each of these intervals hosts a different kind of entity:

(106) $S = \langle p, t, i_S \rangle$ p is a speaker or 'storyteller'
$R = \langle \psi, c, i_R \rangle$ t is a token or an utterance
$E = \langle \emptyset, t, i_E \rangle$ c is a class of things or individuals
$\emptyset$ is a situation
ψ is a 'perceiver-describer'
i_S, i_R, and i_E are intervals of time

The differences between these entities are reflected in the different forms of reference required to individuate them. Thus, 't', the 'sentence token' and 'p', the 'speaker as judge' at time of speech are individuated through 'exemplificational reference'; 'c', the 'companion' at reference time, is individuated through 'identifying' reference; and '$\emptyset$', the situation at situation time is individuated through picture reference. ('ψ', which indicates 'the speaker as referring on an occasion to a sentential content', is specified 'if c, $\emptyset$, and the RE relationship for a particular sentence are indicated' (ibid., 158).) The importance of this view for temporal reference in particular, as we shall see below, is simply this: that 'temporal referential' competence is taken to consist only in the ability to attend to and analyse sentences in this way, and not in the ability to assess whether the 'situation' described by a particular sentence is true at some time.

This is brought out most clearly in McGilvray's description of 'picture reference'. This notion serves as the keystone of his 'syntactic' theory of meaning, bearing the central burden of explaining how 'competent people' have no difficulty at all recognizing, on being presented with a sentence token, the situation the token refers to or individuates' (ibid., 164). What 'picture reference' is, as its name suggests, is reference to a given entity by picturing it. An expression or set of expressions pictures a particular class of referents by virtue of its syntactic form alone: thus, 'members of the same syntactic category picture in more or less the same way the same sorts of "things"' (ibid., 186). For example, predicates picture properties, prepositional phrases picture properties or relations, and sentences picture situations. The lexical content of an expression delimits its 'picture referent' still further, by identifying a member in this class of referents; and together with context, determines a unique 'picture referent'. Accordingly, any picture refers to a 'situation', and each picture refers to at most one 'situation', since 'any relevant difference in a picture makes it different from any other and *ipso facto* constitutes it as (picture-)referring to something else' (ibid., 165). (Disambiguation of 'situations', then, does not depend on differences in truth-conditions — a matter to which we shall be returning in chapter 2.)

'Picture-referential' competence, then, is broadly 'syntactic' in nature, consisting in a speaker-hearer's ability to 'see' the 'situation' 'displayed in a sentence-in-context' by recognizing its syntactic form and lexical content, which construct 'a complete and

detailed picture' of this 'situation' (ibid., 165, 173, 184). McGilvray emphasizes that this competence is indifferent both to the existence of the referent and to the speaker's knowledge about it; some sign picture-refers to some thing simply 'by being a particular kind of sign' (ibid., 166).

'Identifying reference' is similarly indifferent to the existence of or specialized knowedge about the referent. Unlike 'picture reference', however, it is basically 'perceptual' rather than 'syntactic' in nature, since it serves to make 'something not immediately present to the speaker salient' by means of abilities associated with our perceptual systems — although a sentence can refer 'identifyingly' only by virtue of a speaker-hearer's syntactic ability to transform the perceptual salience of particular expressions into that of the entities pictured by them (ibid., 33, 201, 208). What is 'referred to identifyingly' is, from the speaker's perspective, what he or she 'is paying attention to'; and from the hearer's perspective, 'what the speaker "has in mind" as the thing he or she is talking about when he or she produces a tensed sentence as a contribution to a story' (ibid., 216–17). This McGilvray sees as 'a matter of perceptual focusing'. In other words, focussing on 'c', the 'companion' that is the object of this reference, appears to involve 'something like taking oneself in imagination to a thing or things somewhere and somewhen and "perceiving" it then and when' (ibid., 202). Moreover, fixing 'c' in this way also fixes 'i_R', since 'c' is located at some time, which is, by hypothesis, 'i_R' (McGilvray 1995a: 5). Notice, however, that it is basic to the exercise of this form of referential competence that it is irrelevant whether 'c' is part of the 'real' world or exists in 'real' time. This independence explains 'how fictional identifying reference appears to be as easy as it is: we just do not need, in referring to Hamlet, to refer to Shakespeare' (McGilvray 1991: 204).

As such, both 'picture' and 'identifying' varieties of reference stand in marked contrast to 'exemplificational reference', which is essentially parochial, requiring 'real-world' referents. This is because the latter 'is a form of self-reference', in which a token of a tensed sentence, in exemplifying certain properties that it possesses, 'refer[s] to itself as having those properties'. Such a characterization would be incoherent unless we were dealing with a real sentence token, produced by a real speaker at a real time. These entities — the sentence token; the time at which this token is produced, namely, the 'speech time', or 'now'; and the speaker who is now producing this token — are thus the 'real-world' referents in question. As McGilvray describes it, then, 'exemplificational reference' pertains essentially to sentence tokens; but the specification of the 'speech time', or 'now', follows directly from this description, since 'now' is 'simply the time at which *this* token is produced' (ibid., 162–63).

Clearly, McGilvray's theory gives us a quite complex picture of temporal reference, which not only distinguishes three temporal intervals, as Reichenbach does, but associates these intervals with different forms of reference, corresponding to their

different natures. Significantly, the temporal entity represented by 'i_S' is the only one in this theory that is tied to the 'real' world, just as the speaker and the sentence token produced by the speaker are the only non-temporal entities that are. The other two intervals, represented by 'i_R' and 'i_E', are not tied in this way, but may be located in any world, whether real, possible, or impossible. (Given this difference in the nature of these intervals, we might expect a difference in their linguistic representation — a matter to which we shall return in the following chapters.)

Such a picture of temporal reference supplements the picture offered by the 'commonsense' view — according to which 'present' tense refers to present time and 'past' tense to past time, as we have already noted — in a number of ways. Many of these follow directly from this picture's 'Reichenbachian' source, including those associated with the claim that every tensed sentence, not just those with 'present' tenses, refers to the 'speech time' — albeit in a special, 'exemplificational' fashion —; and to two additional times, 'reference time' and 'situation time' — a distinction which provides a powerful tool for the analysis of many tense constructions, as we shall see. Others, peculiar to McGilvray's theory, include an understanding of temporal reference as a property of tensed sentences rather than of tenses alone, which permits a proper recognition of the rôle of other temporal elements, such as temporal adverbials, in securing such reference; and the claim that our ability to refer to 'real' things at 'real' times is just a special case of our ability to refer to anything at any time. While we shall be making only occasional appeal to McGilvray's terminology in the following chapters, the general view of temporal reference that his theory offers, as we have seen here, will underwrite much of the analysis of tense that we shall be canvassing there.

3. Towards a theory of tense

At this point, we have addressed many pressing conceptual and methodological issues in the study of tense — including the properties of tense that such a theory should seek to describe; the kind of linguistic phenomenon (say, semantic, syntactic, or morphological) that tense represents, and thus the 'module' of the grammar level at which it is best characterized; and the kind of formalism that best serves this purpose — and reached some tentative conclusions on these matters. We are thus now in a position to proceed with our analysis of tense, making use of our findings. What our considerations point to is a theory of tense that is 'Reichenbachian' in spirit and syntactic in orientation, seeing tense basically as a set of morphosyntactic features that express relations between 'S' and 'R'; and that combine with other elements — including verbs, adverbials, complementizers, and other tenses — and context in establishing temporal reference.

Crucial to this theory is the claim that tenses underspecify temporal interpretations; so that the range of readings that they receive is due not to their ambiguity, but to the contribution of other temporal elements and context. This claim will be cashed out in terms of a 'linking' mechanism, which associates these various temporal elements under certain well-defined conditions, and captures these readings in a straightforward manner, without appeal to powerful derivational processes or additional abstract structure.

The rest of the study will be organized as follows. Chapter 2 will consider tenses in simple sentences, and introduce a feature system of tenses and a 'linking' mechanism to capture the range of readings that tenses may receive. Chapter 3 will extend this analysis to tenses in complex sentences — in particular, those containing complement, temporal, and relative clauses —, showing that these cases can also be captured in terms of 'linking'. Chapter 4 will extend the analysis in a somewhat different direction, to the treatment of non-finite constructions. Finally, chapter 5 will offer some concluding remarks.

CHAPTER 2

A LINKING THEORY OF TENSE: ANALYSING TENSES IN SIMPLE SENTENCES

> This does not lead to observational inadequacy, but it is suspicious.
>
> Gazdar, Pullum & Sag 1982: 619

In chapter 1, we posed certain basic questions about the nature of tense and time reference, our tentative answers to them serving to introduce a general approach to tense that was 'Reichenbachian' in spirit and broadly syntactic in form. We also alluded to a specific implementation of this approach, which we dubbed a 'linking theory' of tenses. In this and the following chapters, we turn our attention to the data of tense — in particular, certain puzzles surrounding the analysis of tense in simple and complex sentences — as we sketch in the details of this syntactic 'Reichenbachian' approach.

We shall begin by examining certain properties of tenses in simple sentences, applying our results to the analysis of tenses in complex sentences in chapters 3 and 4. What will be of interest here is the range of interpretations that tenses may receive even in simple sentences, and the various attempts that have been made to capture this range while still preserving a coherent analysis of particular tense forms. The devices commonly invoked for this purpose have included (i) homophonous tense forms, which make different readings a matter of lexical ambiguity; (ii) 'abstract' or 'hidden' structure associated with certain readings of a given tense and not others; (iii) 'transformational' rules that operate on 'underlying' tense forms to derive the forms or interpretations (or both) that are actually observed; and finally (iv) morphosyntactic representations of tenses that 'underdetermine' their temporal interpretations, and are thus compatible with a range of such interpretations. As we shall see, it is this last possibility which is to be favoured on empirical as well as conceptual grounds; and which will be the point of departure for the account of tense to be presented in this study. This account will propose (i) a feature analysis of tenses, as a way of cashing out the claim that tenses are 'indeterminate' with respect to temporal interpretation; and (ii) a temporal 'linking' mechanism, which relates the grammatical elements, including tenses, verbs, and temporal adverbials and complementizers, that play a rôle in temporal interpretation. It is through this device that the different interpretations available to these 'indeterminate' tenses may be derived.

1. SOME ISSUES SURROUNDING TENSES IN SIMPLE SENTENCES

Our point of departure for this investigation will be certain puzzles in the analysis of tense in simple sentences. The basic task that we shall set for ourselves will be to test the 'commonsense' view that tenses do not involve any radical ambiguities, so that the 'present' tense refers to present time, the 'past' tense to past time, the 'future' tense to future time, and so on. Our task, in other words, will be to determine whether a unified analysis of various tenses is possible, and to examine those uses of tenses that offer a particular challenge to this view. Among these we might include (i) uses of the '*will* future' that do not appear to describe future situations; (ii) readings of the 'present' that do not appear to be true at the time of speech, or are true for a much longer interval than the time of speech; (iii) the cluster of puzzles associated with the analysis of the 'perfect' forms, such as the range of readings available for the 'present perfect', and the apparent differences in the behaviour of the 'present perfect' and 'past perfect', including those related to coöccurrence restrictions with temporal adverbials.

We shall proceed, then, by describing each of these puzzles in turn and reviewing some common approaches to them, with an eye toward our goal of discerning a coherent pattern amid the range of interpretations that the various tense forms in question have been claimed to bear. Our strategy for achieving this goal will be to try to fit certain pieces of these puzzles into a theory of tense, others into a theory of aspectuality, and others still into theories of the relation between language and cognition and between language and the world (and which, in McGilvray's (1991) terms, are related to the 'meaningfulness', rather than the 'meaning', of sentences, as discussed in chapter 1). As we shall see, the pieces of our tense puzzles can indeed be plausibly sorted out in this way; so that tenses, even with their 'special' uses, can be described quite simply in essentially 'Reichenbachian' terms. This will be the goal of the analysis of tense to be presented later in the chapter, which will 'bracket out' these other contributions to temporal interpretation, in order to highlight the contribution of tenses themselves. What we shall find, however, as studies such as Smith 1978 have already done, is that this contribution is often so intricately tied to that of temporal adverbials that we cannot 'bracket out' the latter in describing how tenses behave, but must instead make them an integral part of our analysis.

1.1. THE STATUS OF *WILL*

In our remarks above, we set ourselves the task of determining the status of the 'commonsense' view that, for example, the 'present' tense refers to present time, the 'past' tense to past time, and the 'future' tense to future time. Now, taking this task seriously involves facing one of greatest challenges for analyses of tenses: namely,

determining the most plausible explanation of significant differences in the behaviour of what is apparently a single tense form.

As it happens, the simplest way to account for such differences is to posit lexically distinct forms underlying these differences. Whether this account is also the most plausible is quite a different matter, which can be judged only on the basis of the evidence adduced for the distinct forms in question. While gauging the plausibility of these distinct forms is hardly a matter of great precision, there are nevertheless a number of considerations to which we may appeal in doing so. Among these are (i) the number of items being posited; (ii) the distinctness of the contexts in which the various items are posited to occur; and (iii) cross-linguistic evidence of analogous items with analogous ranges of behaviour. The idea behind each of these is essentially the same: namely, that scepticism will arise regarding the existence of homophonous forms whenever there is a strong suspicion that a generalization has been missed. The analyses that most invite such suspicion are precisely those that proliferate homophonous items without looking for commonalities between them; or that overlook the contribution of the various contexts in which a given form appears, or the cross-linguistic parallels in the behaviour of a given form. Our discussion below will focus on (ii), although some remarks will be offered regarding (iii).

Admittedly, decisions about the existence of distinct items become considerably more complicated in the case of a grammatical element like *will*, whose development from verb to 'future'-tense marker, and whose long record of uses, some preserved, some half-preserved, some lost, might lead us to expect distinct forms. In these cases, what should arguably come to the fore is the nature of the relationship between the items being posited. That is, even if it is plausible to assume, given the long history of this item, that differences in its use arose, increased, and were eventually established as distinct lexical items, the resulting items would nevertheless have a common ancestry. Accordingly, we should favour analyses of these items that assert this commonality — for example, by representing them all as subsets of the same set of morphosyntactic features, as suggested in 'Generalized Phrase Structure Grammar' (GPSG) and 'Head-driven Phrase Structure Grammar' (HPSG) studies of the English auxiliary system (e.g. Gazdar *et al.* 1982; Warner 1993) — over those that view these items as fundamentally distinct, on the analogy of the two distinct entries associated with the phonological string [bæŋk]. In addition, we should not expect every difference in use to be reflected in a distinct entry, simply because certain gross differences are encoded in this manner.

The modal auxiliary *will* is certainly one form whose range of uses, and whose treatment in the literature, neatly encapsulates these various issues. While it seems that most instances of this form can be readily analysed as specifying future 'situations', some are difficult to subsume under such as analysis. Hence the distinction made by

some authors, such as Palmer (1988: 136ff.), between 'temporal' and 'modal' *will*, whereby the latter instances express such notions as 'volition', 'attenuation', 'likelihood', 'inherent capacity', and 'characteristic (or predictable) behaviour' (e.g. Fleischman 1982: 129; Declerck 1991: 87).[1] The most interesting of these for our purposes are the latter four, in which *will* is used even though the sentences in which it occurs are true at the time of speech, 'so that there is no *a priori* reason for not using the present tense' (Declerck 1991: 87). While such uses are often treated as homophonous occurrences of *will*, we shall see that they are amenable to a unitary account of this form, according to which it expresses, in 'Reichenbachian' terms, the relation 'S-R'. We shall also see that in most instances, even some of the problematic ones just mentioned, *will* expresses the relation 'R,E'. In some instances, however, it quite clearly does not. These instances will serve to motivate the analysis of tense to be proposed later in the chapter, which can accommodate them within a unitary treatment of *will*.

The first of these 'exceptional' uses of *will*, that of 'likelihood', expresses some 'belief' or 'conjecture' in the likelihood of the situation described (Declerck 1991: 87). According to Palmer (1988: 136), it may be paraphrased as 'a reasonable conclusion is that...'. Some examples of this use are given below:

(1) a. That thing rustling in the bushes over there will no doubt be a chipmunk.
(based on Lakoff 1970: 839, cited in Declerck 1991: 84, (133b))

b. They will be across the border by now.

c. [*When the bell rings*] That will be the milkman. (ibid., 87, (145a–b))

This use has commonly been invoked in arguments against a unitary treatment of *will* as a 'future' tense marker (e.g. Lakoff 1970). The reason for this is clear: since sentences like those in (1) all describe situations that are already holding at the time of speech, as just noted, their temporal interpretation appears to be incompatible with the assignment of such a status to *will*.

The same remarks apply to the uses of *will* to indicate 'inherent capacity' and 'characteristic (predictable) behaviour'. These are illustrated, respectively, in (2) and (3):

(2) a. This jug will hold two litres.

b. This auditorium will seat 320 people. (Declerck 1991: 87, (146))

c. A hard-sided suitcase will carry less than a soft-sided one.

---

[1] Smith is one author who interprets these different uses of *will* as evidence that it is never a marker of 'future' tense (see e.g. Smith 1978). Partee (1973b) and Enç (1987) also claim that *will* is a modal and not a tense marker. The discussion in the text applies equally to this view.

(3) a. Oil will float on water. (Palmer 1974: 112)

b. He will talk for hours if you give him a chance. (Declerck 1991: 87, (147b))

c. Boys will be boys. (Lakoff 1970: 848)

d. Words will never hurt him.

Here, too, we can see that *will* is being used to describe 'situations' that are true at the time of speech. On closer inspection, we can also see that these two categories describe very similar kinds of 'situations'. The differences between them are arguably reducible to the unavailability in the former of animate referents, which are less naturally thought of as having inherent capacities than of having characteristic or predictable forms of behaviour. This may be brought out by comparing the sentence in (2c) with that in (4):

(4) This donkey will carry 150 kilos.

It seems odd to say that this sentence indicates the donkey's inherent carrying capacity, rather than, say, its predictable carrying behaviour. This is because we think of a given donkey as performing an activity in carrying some amount, but we do not think of suitcases as doing so.[2] This suggests that we should not attribute any difference in the interpretation of the two sentences in question to differences in the behaviour of *will*, but rather to differences in the entities to which the subjects of these two sentences respectively refer.[3]

A fourth use of *will* that describes 'situations' holding at the time of speech, but to much different illocutionary ends, is its 'attenuative' use (Fleischman 1982: 94). This appears in polite requests such as those in (5):

(5) a. That will be $2.50 plus tax. (ibid., (180))

b. Those mangoes will be three for a dollar. (Lakoff 1970: 840)

---

[2] This is not to say that the notion of 'behaviour' should be thought of as applying only to animate entities. For example, it seems perfectly acceptable to take the following sentence to describe the record's 'playing behaviour' rather than its 'playing capacity':

(i) This record will play for 45 minutes. (James McGilvray, personal communication)

The point that I am trying to make in the text is only that any difference between the use of *will* in (2c) and its use in (4) — if there actually is one — should not be attributed to differences in the meaning of *will* itself, but rather to differences in the nature of the entities to which these sentences respectively refer.

[3] Unless, of course, we are willing to countenance two different lexical entries for *carry*, one associated with animate and the other with inanimate subjects. However, the implausibility of this assumption, given that verbs almost never select for features of their subjects in this way (see e.g. Marantz 1984: 23–31), suggests little reason to do so.

That this use describes a present 'situation' is clear from the fact that, as Declerck (1991: 84, n. 90) points out, a shopkeeper who utters sentences like those in (5) knows at the time of utterance what the prices of the items in question are.

We can arguably collapse all four of these 'present situation' uses of *will*, given that the differences in the interpretation of each type appear to depend on differences in the 'situations' that each respectively describes, and not on *will* itself. The 'inherent capacity', 'characteristic behaviour', and 'attenuative' uses seem to be about more or less permanent properties or forms of behaviour; while the 'belief' uses seem to be about relatively temporary 'situations'.

Interestingly, these differences are reflected in differences in the ability of *will* to be substituted by the 'present' tense. Constructing examples of 'belief' uses of *will* that are not interchangeable with the 'present' is quite straightforward, as the sentences in (6) demonstrate. In contrast, one is hard-pressed to find examples of the other three uses that are not similarly interchangeable:

(6) a. Liverpool { lies / * will lie } on the Mersey. (Declerck 1991: 88)

b. Right now, I { am / * will be } tired.[4]

c. The building with the big 'Royal Bank' sign { is / ?? will be } the bank.

(7) a. This jug { holds / will hold } two litres.

b. This auditorium { seats / will seat } 320 people.

c. A hard - sided suitcase { carries / will carry } less than a soft - sided one.

[4] The sentences in (6a–b) arguably do have acceptable readings: the former a map-reading situation, and the latter a 'science-fiction' scenario reading, in which I must check on a computer, say, to determine how I am (Brendan Gillon, personal communication). These facts highlight the point made in the text that a verification procedure is required for these to be acceptable, since both of these contexts assume just such a procedure.

(8) a. Oil {floats / will float} on water.

b. He {talks / will talk} for hours if you give him the chance.

c. Boys {are / will be} boys.

d. Words {never hurt / will never hurt} him.

(9) a. That {is / will be} $2.50 plus tax.

b. Those mangoes {are / will be} three for a dollar.

A plausible explanation of the contrasts in (6) is that the 'belief' use of *will* is felicitous in describing 'situations' that are true at the time of speech only if the evaluation of their truth requires some verification procedure (Brendan Gillon, personal communication). Hence the clear unacceptability of (6a) and (6b), given that Liverpool's location on the Mersey is a more or less immutable fact about the city, and that a speaker's own fatigue is self-evident to him to her; and the somewhat greater acceptability of (6c), given that signs on buildings are not always sure guides to the business that is being carried on inside — although this scepticism is poorly enough placed that this sentence is perhaps best understood as a sarcastic remark or a joke. This would also explain the absence of contrasts in (7) and (8), given the relatively permanent properties that these sentences describe. This fact about the latter sentences makes it possible, but not necessary, to conceive of these 'situations' as requiring evaluation through a verification procedure. What thus seems crucial to the acceptability of these three 'present situation' *will* constructions is the possibility of understanding the 'situations' that they describe as ones about which a conversationally relevant prediction can be made. In other words, a speaker who uses *will* in this manner is not claiming that a 'situation' is holding at the time of speech, but 'suggest[ing] that it will become apparent in the future that the situation is holding' (Declerck 1991: 87).

As for (9), a somewhat different explanation is required, since this use makes no obvious appeal to a verification procedure. As Declerck (1991: 84, n. 90) suggests, this use simply 'results from the speaker adopting the standpoint of the hearer', and locating

the 'situation' in the future to distance this 'situation' from the time of speech. Thus, if we take the sentences in (9) as part of a discourse between shopkeeper and customer, then we can see how the versions with *will* come to have the effect of a polite request: namely, '[b]y locating the act of paying in the future rather than in the present', so as to avoid 'putting pressure on the person who has to pay.' As such, the use of *will* here is again possible — indeed, preferable, given the context — but not necessary.

Given such an explanation of the 'attenuative' use of *will*, it appears that all of the 'present situation' uses we have just examined may be subsumed under the same analysis: namely, one which assigns them the 'Reichenbachian' relation 'S-R', as in the standard 'future tense' use of *will*. In this way, these 'exceptional' uses of *will* can be assimilated to standard ones.

We have yet to discuss what is arguably the most common 'modal' use of *will*, namely, that 'used to express volition or willingness on the part of the subject' (Palmer 1988: 138), as illustrated in (10):

(10) a. We can't find a publisher who will take it.
b. John will help you to find a job. (ibid.)

However, there is good evidence that this use 'always carries with it the meaning of futurity' (ibid.); such evidence includes contrasts like that given in (11), adduced by Palmer (1988):

(11) a. John's willing to do it, but he's not going to.
b. * John'll do it, but he's not going to. (ibid.)[5]

This use can thus be subsumed without further complications under the 'S-R' analysis that we have just given.

The foregoing arguments seem sufficient to demonstrate that even the 'exceptional' uses of *will* that we have been considering can all be analysed as making reference to a future time, if this time is undestood as Reichenbach's 'reference time'. However, such an analysis leaves an important question unanswered, given that Reichenbach defines the 'future' tense form not in terms of the relation between 'S' and 'R' alone, but also in terms of the relation between 'R' and 'E'.[6] This is whether we

[5] Note, too, that the unacceptability of (11b) suggests that the 'volitional' use of *will* cannot involve a distinct lexical entry; this is confirmed by the unacceptability of (i), which is a contradiction, and cannot be taken to mean something like 'John is willing to do it some time in the future, but he will not manage to'.

(i) * John'll do it, but he won't.

[6] Although note that this form encodes both what Reichenbach (1947) calls the 'tense' relation 'S-R' and what he calls the 'aspect' relation 'R,E' (James McGilvray, personal communication).

can still preserve a unitary treatment of *will* if these 'exceptional' uses describe 'situations' that already hold at the time of speech, and would thus appear to require an 'ER' structure distinct from that of the standard 'future tense' use of *will*, in which 'R' coincides with 'E'.

Of course, various technical solutions are available which would allow us to dispense with distinct structures. One (mentioned in our discussion of Hornstein 1990 in chapter 1) would be to assign the ',' symbol the interpretation 'earlier than or contemporaneous with', which would allow the 'situation' to be holding prior to 'R'. Unfortunately, as Hornstein himself has noted, this would create new problems if ',' were assigned this interpretation throughout the 'Reichenbachian' tense system, since we would not want this interpretation for the 'present' tense, for example. Another would be simply to posit a new connective specifically for the 'future' which had the desired interpretation. The drawback here, though, would be a loss of the simplicity and generality that are the hallmarks of Reichenbach's system.

A quite different kind of solution, which exploits a distinction described in chapter 1, would be to claim that the 'situation referred to' by the 'future'-tensed verb is one that holds subsequent to the time of speech, both in 'standard' uses and in those 'exceptional' uses that we have been considering. Accordingly, our recognition that the sentences like those in (1)–(3) describe a 'full situation' that includes the time of speech is not be to attributed to the tense of the verb but rather to other contributions to this recognition, both linguistic and non-linguistic.

That this is a plausible solution is suggested by the following two observations. The first, a non-linguistic one, is that our ability to interpret (2a–c), for example, as statements about the 'inherent capacity' of particular jugs, auditoria, and suitcases rests on a piece of conceptual knowledge: namely, that (barring accidents and other special circumstances) an already-existing object that will hold a certain amount of matter or a certain number of objects in the future already does so now.[7] The other observation, a linguistic one already hinted at in the description of the first, is that many of the

---

[7] This claim about how we understand the sentences in (2) may seem at odds with the observation that they have a conditional force — that is, that they may be paraphrased as 'if conditions X hold, then Y will...' (Brendan Gillon, personal communication). These perspectives might be reconciled, however, if we understand this 'conditional force' to follow from the 'S,R' specification of *will* and the kinds of assertions that these sentences make. What these sentences assert is that a 'situation' involving some object will take place at an arbitrary time in the future given certain very stable structural characteristics of this entity. Given basic conceptual knowledge pertaining to these structural characteristics, we know that whatever conditions X permit Y to hold at a future time must already hold now; so that we take these sentences to mean 'If conditions X hold, then Y will...; and conditions X hold.' On this account, it is no coincidence that these sentences have conditional force even without explicit antecedents: it is because we understand the relevant conditions to be intrinsic to or closely associated with the objects referred to in these sentences. Hence the contrast between the sentences in (2) and the following one:

(i) *? A tank will hold water.

This sentence is odd because it is not obvious under what conditions we should take it to apply.

sentences containing *will* that are taken to describe 'situations' located at the time of speech have a 'deictic' NP argument which, in McGilvray's (1991) terminology, refers 'identifyingly' to some entity.[8] It is arguably in virtue of this NP that we understand the 'situation' in which its referent participates to be located at this time, since deictic elements serve to relate sentences directly to this time. Such an analysis of this 'present situation' reading would account for contrasts such as those in (12)–(13):[9]

(12) a. That thing rustling in the bushes over there will no doubt be a chipmunk. (= (1a))

b. ?? Something rustling in the bushes will no doubt be a chipmunk.

(13) a. This auditorium will seat 320 people. (= (2b))

b. ?? An auditorium will seat 320 people.

The (b) sentences are difficult to interpret, because it is not clear what in the discourse they are meant to apply to.

Further support for the relevance of this second observation comes from the additional observation that the absence of a deictic NP may give rise to ambiguity between 'present' and 'future' readings. Consider the following sentence:

(14) The Smiths' house, I suspect, will have four bedrooms.

This sentence may be used felicitously to describe two very different 'situations'. In one, which is analogous to those we have been discussing, the speaker may, for example, be commenting on the house in question on his or her way there, and on the basis of various considerations (such as the size and style of the house, and the number and age of the children in the Smith family), makes the above prediction about its number of bedrooms. In the other, the speaker may be describing a house that has not

---

[8] This account departs from that in McGilvray 1991, however, in not taking the location of this referent, McGilvray's 'c', to determine 'reference time', but rather in establishing their locations independently. However, it is highly reminiscent of McGilvray's (1995a) treatment of sentences like that in (i):

(i) That man was in New York yesterday.

McGilvray analyses this sentence as containing a 'hidden' relative clause, so that it may be paraphrased as 'That man is a person who was in New York yesterday'. The claim in the text achieves a similar effect for the 'future'-tensed counterparts of such sentences without making use of the (linguistically suspect) strategy of positing a 'hidden' relative clause. (We shall have more to say about the difficulties associated with such 'hidden' structure in §1.2.5 below.)

[9] Note, though, that this sentence is infelicitous if uttered when the auditorium actually has 320 people in it (James McGilvray, personal communication). This gives additional support to the claim that such a sentence is adequately analysed in terms of 'S-R'. It also suggests that the expression 'present situation' invoked to describe the readings of these sentences is a misnomer, since the 'situations' to which they 'picture refer' are located at future times.

yet been built, and speculating, on the basis of considerations similar to those just enumerated, that it will have four bedrooms.

It should be noted, however, that the contribution of this deictic marking device to the 'present situation' reading of these sentences appears to be a minor one compared to that of knowledge regarding the permanence of properties, which makes this reading salient for any sentence that is naturally construed as describing some characteristic property or behaviour of some object. Notice, for example, how easily (13b) can be transformed into an acceptable sentence, in which its subject now denotes a kind:

(15) An auditorium will hold many people (compared to a classroom).[10]

We have thus demonstrated that an 'R,E' analysis of even 'present situation' uses of *will* is available once we distinguish the 'situation referred to' by the sentence itself from the 'full situation' (which is reconstructed primarily on the basis of non-linguistic information). Nevertheless, there do remain 'present situation' constructions that are not amenable to such an analysis. An example of this refractory construction was given in (1b), and is repeated here as (16):

(16) They will be across the border by now.

This sentence can certainly be analysed as making a prediction, and thus as expressing 'S-R'.[11] But it is difficult to construe the 'situation' that it describes as located at some future time: the very point of the sentence is that the 'situation' can (probably) be located at a time approaching or coinciding with the time of speech.[12] Such sentences seem to compel us, then, to say that *will* can be associated with either 'R,E' or E-R'. However, another response to this observation is available, which would allow us to deny the assertion that *will* is ambiguous: this is to claim that *will* itself does not specify the relation between 'E' and 'R', but leaves it indeterminate. We might posit that a default relation of simultaneity between 'E' and 'R' is assigned to *will*, and that a relation of anteriority, as indicated in sentences like that in (16), is available only in the presence of a present-time-denoting temporal adverbial. In other words, the 'situation

---

[10] The acceptability of this sentence improves dramatically if one makes the auditorium a more specific one (Brendan Gillon, personal communication):

(i) A McGill auditorium will seat 320 people.

[11] This seems to have the interpretative effect of a condition — that is, 'If they left when I thought they did, then they will be across the border by now' (Brendan Gillon, personal communication).

[12] Rigter (1986: 123) makes a similar observation: '[T]he expectation expressed by WILL is the referent of a proposition of which the ['E'] can be located in the past or the present or the future of ['S']'. However, Rigter claims that *will* makes the 'RE' relation ambiguous, rather than simply indeterminate, as argued in the text.

referred to' by a 'future'-tensed sentence with no such adverbial modification, like that given below, is simply one located at some (contextually determined) future time:

(17) They will be across the border.

This suggestion that *will* does not specify the relation between 'E' and 'R' also allows for a more perspicuous treatment of the 'future perfect' and its ability to coöccur with past-time-denoting adverbials, as in sentences like that below:

(18) The documents will have arrived last week. (Smith 1978: 49, (28))

Since *will*, according to this account, specifies only the relation 'S-R', and leaves the 'ER' relation free, it may take VP complements that describe situations holding before the time of speech, as in this example. (This analysis of the 'future perfect' serves to counter yet another argument, this one advanced by Smith (1978: 49), against treating *will* simply as a 'future' tense marker: namely, that it can also be used to describe past 'situations'. Since this instance of *will* can be analysed unproblematically in terms of the relation 'S-R', Smith's argument loses its force.)

It should be noted, however, such a claim about *will* begs the question of why the 'future perfect' but not the 'simple future' can coöccur with past-time-denoting adverbials:

(19) a. * They will be across the border by yesterday.
b. They will have been across the border by yesterday.

We shall be addressing this rather serious problem when we discuss the syntactic conditions governing the different readings of *will* in §3 below.

We have thus seen good reason to treat *will* as a future-tense marker, where this marking is understood to express only the relation 'S-R', that between 'R' and 'E' being left unspecified. The characterization of this form in terms of the 'SR' relation alone is, in fact, in accord with the general characterization of tense offered by many authors, including Johnson (1981), McGilvray (1991: 17), Klein (1992, 1994), and even Reichenbach (1947: 297) himself, who distinguishes the 'SR' relations 'past', 'present', and 'future', from the 'RE' relations 'anterior', 'simple', and 'posterior'. Moreover, such an analysis, which resists positing 'a separate modal use' of *will* 'unrelated to [its] temporal use' (Declerck 1991: 89), is consistent with the conclusions of many studies of 'future' markers in English and other languages, which indicate that these are essentially tense forms with certain secondary modal uses, rather than the converse (ibid.). For example, Wekker (1976: 7) characterizes *will* as 'essentially a

marker of future time... all the various nuances of meanings by which it may be coloured [being] overtones of the idea of futurity.' Dahl (1985: 105) offers substantial cross-linguistic support for this claim, observing that the 'future' tenses in the sixty-four languages of his sample have a predominantly predictive meaning.

These considerations give us little reason to accept the claim of Smith (1978: 49) and others that *will* should be treated not as a tense but rather as a modal auxiliary with a 'predictive meaning', which can occur with 'past' or 'present' tenses. In fact, the kinds of interpretations available to various modal auxiliaries (some of which we observed in chapter 1) argue in favour of assimilating their treatment to that of *will*, and not vice versa.[13] In this way, both they and *will* can be seen to bear their own particular tense specifications.

A treatment of modal auxiliaries analogous to the foregoing treatment of *will* has much to recommend it, as we can see by considering the case of *may*, Smith's example of a 'predictive' modal auxiliary. As Jespersen (1931: §7.2(3)) observes, this form 'often serves to denote possibility, permission, etc. in the present time', as illustrated in (20):

(20) a. He may be rich for all I know.
b. He may be here already.
c. You may smoke in this section.

In other words, these sentences — which may respectively be paraphrased as 'He is presumably rich', 'He is presumaby here already', and 'You are currently permitted to smoke in this section' — describe situations that the speaker takes to hold now, but to require some sort of verification or implementation at a later time.

However, since 'the idea of possibility' commonly 'refers to a future time', this form 'comes in itself to denote futurity, though of a vaguer and more uncertain kind than *will*'. This usage is illustrated in (21):

(21) a. He may recover yet.
b. It may rain to-morrow.
c. You may find the door closed when you get there.

---

[13] Of course, an even simpler reason for rejecting the claim that *will* should be treated simply as a modal form with a 'predictive' meaning is that it has uses, like that exemplified in the sentence below, which cannot obviously be described in such terms (James McGilvray, personal communication):

(i) You get the hell out of here or I'll break your neck.

However, since this claim is never made explicit enough to make clear what would and what would not count as a 'prediction' (as opposed to a 'threat', as in the example sentence), it is difficult to pursue the matter further.

Interestingly, these two temporal values of *may* appear to be the same ones that we have just seen with *will*. It thus seems plausible to assign *may* the same temporal structure as *will*, and to attribute differences between them to other, non-temporal, aspects of their lexical specification.[14]

Jespersen (1931: §7.2(4)) also observes that *must*, *ought*, and *should* refer 'in much the same way as *may*... now to the present time and now to the future', given the difficulty — as demonstrated by the following examples — of 'distinguish[ing] to which of these times an obligation or duty refers':

(22) a. You must/ought to/should be careful.
b. You must/ought to/should be careful now.
c. You must/ought to/should be careful in the future. (based on ibid.)

Since these, again, are the same sorts of patterns that we have already observed with *will*, we might extend our 'S-R' analysis still further, to include at least *must* and *ought* — with the same proviso that differences between them be couched in terms of other aspects of their lexical specification. Notice, however, that *should* presents a complication, in that it can bear not only these present and future readings, but also a 'past of *shall*' reading in indirect speech contexts, as we noted in our discussion of modals in chapter 1. This ability is also displayed by *would* and *might*, as we also noted there. Some relevant examples from this discussion are repeated in (23)–(25):

(23) a. Shall I open the window?
b. She asked me if she should open the window. (Quirk *et al.* 1985: §4.60)
c. You should do as he says. (ibid., §4.56, (5))

(24) a. The plan will succeed.
b. I felt sure that the plan would succeed. (ibid., §4.60)
c. Would you lend me a dollar? (ibid., §4.63, (b))

(25) a. You may do as you wish.
b. She said we might do as we wished. (ibid., §4.60)
c. There might be some complaints. (ibid., §4.53, (3))

[14] The suggestion, in other words, is that *will* and *may* make similar temporal contributions; note that no suggestion follows from this that there is any entailment relation between them, since such a relation clearly depends on more than just shared temporal features. As it happens, the lexical properties that are distinctive of each form dictate significant differences in their respective meanings, which militate against the possibility of such a relation.

What this suggests is that all of these forms have a constant 'posterior' value, but one that may be computed from past or present 'reference times'. We shall have more to say about these observations in §3, where we shall be considering some possibilities for capturing them.

1.2. 'PRESENT' TENSE

In the previous section, we examined a number of uses of the *will* form, and concluded that all of them could be captured essentially in terms of a single description, according to which this form specifies the 'Reichenbachian' 'tense' relation 'S-R'. Here we shall examine an analogous range of uses of the 'present' tense, seeking to determine, as we did with the 'future', whether a unitary analysis of the 'present' tense is feasible, and again attending to certain uses that pose a real challenge to this view.

The uses in question might be taken to fall into two basic categories: one in which the 'situations' described by 'present' tense do not appear to hold at the present time; and another in which the 'situations' described appear to have a duration far longer than the present time. The former comprises such constructions as 'habituals', which, as their name suggests, describe situations that hold habitually and not necessarily (or even rarely) at the present time; and 'futurates', which describe situations that hold in the future. The latter comprises 'omnitemporals' (or what McGilvray (1991: 99ff.) calls 'laws' or 'nomics'), which are true at all times. These constructions are illustrated in (26)–(27):

(26) a. 'HABITUALS':
   i. Seth draws comics.
   ii. Joe goes to 'The Beguiling' every day.

   b. 'FUTURATES':
   i. I go in six weeks.
   ii. I leave early to-morrow morning. (Jespersen 1931: §2.4(2))

(27) 'OMNITEMPORALS':
   a. U^{235} decays radioactively.
   b. Copper conducts electricity. (McGilvray 1991: 104–5)

Interestingly, these constructions all make use of the 'simple present', and only the ones with temporal adverbials — the 'futurate' and the temporally modified version of the 'habitual' — appear to preserve their characteristic temporal reference when the simple form is replaced by the progressive. Thus, these continue to describe future and

habitual 'situations', respectively,[15] while the other two constructions become descriptions of 'situations' holding at the time of speech.[16] These facts are illustrated in (28):

(28) a. I am going in six weeks. (≈ I go in six weeks.)
b. Joe is going to 'The Beguiling' every day.
(≈ Joe goes to 'The Beguiling' every day.)
b′. Seth is drawing comics. (≠ Seth draws comics.)
c. * U^{235} is decaying radioactively. (≠ U^{235} decays radioactively.)

Because this distinction between 'simple' and 'progressive' forms clearly plays an important rôle in determining the temporal properties of 'present'-tensed sentences, a good part of the discussion below will be devoted to the question of how these forms differ in the temporal contributions that they make, and to what extent such differences should be expressed in a theory of tense.

Given the differences in the interpretations of 'present'-tensed sentences, as demonstrated above, it is not obvious that the various uses of the 'simple' and 'progressive' 'present' may be captured in terms of a single 'present' tense structure. Indeed, observation of such differences has frequently led researchers to seek out structural sources for them, and thus to exploit such devices as universal quantifiers and 'generic', 'habitual', and 'progressive' operators to distinguish 'nomics' from 'habituals' and 'progressives', on the one hand; and 'hidden' future tenses or other future-time-denoting expressions to distinguish the structure of 'futurates' from their present-time-denoting counterparts, on the other. Here we shall take a different tack, and attempt to collapse, rather than to proliferate, such structural differences. Our goal here, as with the future, will be to accommodate the 'present' tense constructions illustrated above within a single 'tense' relation — that of 'S,R' — and to attribute the observed differences in their interpretation to differences in the 'RE' relation; to the nature of the 'situation' described by the verb and its arguments (that is, the VP in many current treatments of argument structure, according to which the external argument is base-generated in the specifier of VP; see e.g. Koopman & Sportiche 1988 for

---

[15] The use of the 'progressive' does, however, signal a small but real shift in meaning, which we shall be treating in greater detail in §1.2.3.

[16] Notice that the 'progressivized' 'nomic' even loses its acceptability — which we might attribute to the incongruity of its temporally restricted claim about a clearly 'omnitemporal' 'situation'. This explanation resembles one often given for the unacceptability of 'progressivized stative' constructions like that in (ib): namely, that 'their meaning is already continuous in nature, so a continuous tense would be superfluous' (Galton 1984: 71):

(i) a. * U^{235} is decaying radioactively.
b. * Chester is knowing the answer.

discussion);[17] and to differences in the 'speaker commitments' associated with different uses of the 'present' tense, which are related to issues of 'meaningfulness' rather than 'meaning', as described in chapter 1.

Despite the complexities of the 'present' tense, then, the possibility of shifting much the burden of their explanation to analyses of the properties of other elements in the sentence, particularly the VP, and to context (where issues of 'meaningfulness' become relevant) makes a unitary analysis of this tense plausible. In order to give more substance to this view, it will be necessary for us to examine the constructions we have been discussing — 'habituals', 'nomics', 'progressives', and 'futurates' — in considerably more detail. This will be the task of the following sections.

1.2.1. 'HABITUALS' AND 'PROGRESSIVES': FIRST PASS

A good place to start is with an examination of 'habitual'[18] and 'progressive' constructions, whose temporal properties have frequently been compared and contrasted in the literature. This is no surprise, given their obvious similarity in form and difference in meaning, which lend themselves to contrasts like that in (29), due to Vendler (1957):

(29) a. Are you smoking?
b. Do you smoke? (ibid., 108)

Despite this similarity in form, then, the question in (29a) is generally taken to ask whether the hearer is engaged in the activity of smoking at the time of speech, and that in (29b) to ask whether the hearer smokes habitually. According to Vendler (ibid.), the 'situation' described by the latter sentence, which he calls a kind of 'habit' (a category into which he also places 'occupations, dispositions, abilities, and so forth'), should be seen, in turn, as a kind of 'state' — that is, as a situation that 'involve[s] time instants in an indefinite and nonunique sense', holding 'at *any* instant' between two successive instants (ibid., 106–7). Such a characterization of 'habits' can make sense of the fact that 'a chess player can say at all times that he plays chess and... a worker for the

[17] The claim that the VP (including an external argument, if there is one) describes a 'situation' appears to be at odds with, for example, McGilvray's (1995c: III.1) claim that sentences describe 'situations', whereas VPs describe 'relations' or 'properties'. However, since the notion of VP that McGilvray no doubt has in mind here is that corresponding to a 'predicate' — and thus, in terms compatible with the 'VP-internal subject hypothesis', to a V' — we can more or less reconcile his claim with that in the text by saying that full VPs describe 'situations', and V's describe 'relations' or 'properties'.

[18] In what follows, I shall be using the term *habitual*, or *habitual construction*, to describe the linguistic phenomenon; and *habit*, or (less frequenctly) *habitual state*, to describe the type of 'situation'.

General Electric Company can say, while sunbathing on the beach, that he works for General Electric' (ibid., 108).

It is not immediately clear, however, in what sense 'habits' can be seen to 'hold' at any instant. One way to bring out this connection between 'habits' and 'states' is by examining pairs like the following one, adduced by Salkie (1989: 8):

(30) a. John drinks tea.
b. John is a tea-drinker. (ibid., (20)–(21))

Salkie observes that (30a) 'does not assert that John is currently in the process of drinking tea, but rather that he has a certain property' — namely, the property asserted by the 'clearly stative' construction in (30b).[19] This parallel is underscored by the similarity in the truth conditions of these two assertions. As Salkie notes, neither would be falsified by, say, a single instance, or even a few instances, of John drinking coffee, since the characteristic property in question would remain unaffected. In this sense, 'habitual' constructions like those in (29b) and (30a) can be seen to express the relation 'S, R', since they each describe a 'characteristic property' of some entity as obtaining at the time of speech.

Since 'progressive' constructions like that in (29a) describe a situation that is ongoing at the time of speech, as already noted, the claim that they express the relation 'S, R' seems to be even more straightforward. In this way, then, we are able to unite two rather different 'present' tense constructions under a single descriptive generalization. Of course, while this generalization goes some way toward explaining the occurrence of the 'present' tense in 'habitual' and 'progressive' constructions, it tells us little about the basic temporal properties of these constructions, or how these contribute to the range of interpretations that each construction may receive. In particular, it does not specify how these properties interact with those of particular predicates, or how they are preserved under certain forms of adverbial modification and not others. Among the data relevant to these questions — which present a picture of these constructions far more complex than the thumb-nail sketch just offered — are those exemplified in (31)–(33):

(31) a. Seth is smoking a cigarette (right now).
b. William is writing his autobiography (right now).
(based on Galton 1984: 85, (5.4.2))
c. Joe is going to 'The Beguiling' (every day).

[19] The same point is made by Declerck (1991: 279–80), *i.a.*

(32) a. Trish lives with Graham (these days).
b. Trish is living with Graham (these days).

(33) a. John is leaving tomorrow.
b. John leaves tomorrow.

The sentences in (31) suggest that one feature of 'present progressive' constructions noted earlier — namely, their ability to picture 'situations' as holding at the actual time of speech — is not a general one, but results only from the interaction of the 'progressive' form with certain predicates and modifiers. A more inclusive generalization about 'progressives', then, would be that they describe 'situations' that hold over larger or smaller intervals of time that include the time of speech.[20] Among these situations, significantly, are 'habits', as (the adverbially modified version of) the sentence in (31c) reveals. This demonstrates that 'progressive' and 'habitual' constructions, far from displaying a true contrast, are in fact compatible in meaning. Where the true contrast lies is between 'simple' and 'progressive' forms,[21] with the 'habitual' reading available to either form. However, as the sentence in (31c) also shows, the availability of an 'habitual' reading in a 'progressive' construction depends crucially on the presence of a frequency adverbial; without such an adverbial, the 'progressive' in (31c) has only its 'ongoing activity' reading. In contrast, the 'habitual' reading of the simple form is readily available with a particular class of predicates: namely, those that describe 'processes' and 'events' (which we might think of as 'states of change' and 'changes of state' (Galton 1984: 29), respectively, and which we shall be describing in greater detail below). This suggests that the 'habitual' reading is basic to the 'simple' but not the 'progressive' form.

That the 'habitual' reading is not, however, the only one available to an unmodified 'simple' form is demonstrated by the sentence in (32a), which describes an ordinary 'state'. Similarly, the sentence in (32b) demonstrates that the 'progressive' can be used to describe more than just ongoing 'events' or 'processes', since here it is being used to describe virtually the same 'state' that the simple form does. Of course, the sentences in (32), taken together, also reveal that the differences in the respective meanings of 'simple' and 'progressive' constructions are often far subtler than suggested by the sentences in (29). This point is reiterated by a second pair of virtually synonymous sentences, those in (33). These sentences display another significant effect of adverbial modification — in this case, involving adverbials that denote future times

[20] This accounts for what Galton (1984: 85) has called the 'broad' and 'narrow' senses of a 'progressive' construction like that in (31b), according to which William is engaged in the general project of writing and actually writing, respectively. We shall have more to say about these two sorts of readings in §1.2.3.

[21] Although this contrast is often a subtle one, as we shall be discussing presently.

— which was briefly mentioned above: namely, that it creates 'futurates', which are also generally understood, whether in their 'progressive' or 'simple' version, to describe what McGilvray (1991: 40) has called 'scheduling states'. That the progressive may appear in these and other 'stative' constructions may seem surprising, given that it is so strongly associated with 'activity'. In fact, many convincing arguments have been given, by Galton (1984), Salkie (1989), and others, that 'progressive' constructions also describe kinds of 'states'. Here, too, the differences between 'habitual' and 'progressive' constructions turn out to be smaller than they appeared earlier.

The foregoing considerations of 'simple' and 'progressive' forms suggest that a closer examination of them is in order. So too is an examination of the basic 'situation' types described by the VP, which (following many authors) we shall assume to be those of 'event', 'process', and 'state'. This is because the interpretation of both 'simple' and 'progressive' forms, as we have just seen, varies directly with 'situation' type; so that the most general characterization of the semantic contribution that these forms make must take the effects of 'situation' type into account.

Admittedly, these issues are highly complex ones, for which no more than tentative answers can be offered within the confines of the present study. These should, nevertheless, provide a picture of these forms detailed enough to serve as the background against which claims about the 'present' tense itself can be developed and tested. What will emerge from our discussion is that differences in the respective temporal interpretations of these forms are attributable to differences in the size of the interval represented by 'R' relative to that of the interval represented by 'E'. Since this difference pertains to the 'RE' rather than the 'SR' relation, this analysis of 'simple' and 'progressive' forms will permit us to preserve our original generalization that the 'present' expresses 'S,R', and leaves the 'RE' relation free to vary.

1.2.2. THE STRUCTURE OF 'HABITUALS'

With these goals in mind, let us return to the discussion of 'progressives' and 'habituals' that we embarked upon earlier. We might begin with the latter construction, whose temporal properties are arguably both simpler and better understood, and then seek to apply our results to the former. The central question to be addressed here is how the syntactic form of this construction is related to its interpretation. In other words, what features of a sentence like that in (30a) signal us to read it as an 'habitual' in the first place?

Analyses of this construction concerned primarily with its interpretation have (not surprisingly) located its peculiar properties in its semantic, rather than syntactic, representation. One solution of this type has been offered by Vlach (1993: 241), who represents 'habituals' in terms of an habitual operator, which 'takes an eventuality type

into the corresponding habitual state type.' Accordingly, he assigns the sentence in (34a) the representation in (34b) (where 'Hab' is the operator in question, '*P*' 'the process of Max's selling two cars every day', and 't_s' the time of speech):

(34) a. Max sells at least two cars every day.

b. At(Hab (*P*),t_s) (ibid., (14)–(15))

Vlach intends this representation to capture the intuition that the truth of the sentence in (34a) 'requires that a state holds now which is, or typically would be, responsible for the going on of the process of Max's selling at least two cars every day for some prolonged interval including the present moment, and moreover which is of a certain sort — the general idea is that it is a "permanent" state: Max is a particularly good salesman, or his dealership has a particularly apt location, or he sells a steadily popular sort of car' (ibid., 241).

It is not obvious, however, that this proposal advances our understanding of 'habituals' any further than the more informal one canvassed earlier. To see this more clearly, we need to be more specific about what we mean by 'event', 'process', and 'state'. Here we might make use of Galton's (1984) description of these notions, which takes 'events' and 'states of affairs' as the two basic situation types, and 'processes' (or 'states of change') and ordinary states (or 'states of no change') as subtypes of the latter (ibid., 27). Galton's description elaborates upon the view that '[t]he distinction between states and events is not a distinction inherent in what goes on, but rather a distinction between two different ways we have of describing it' (ibid., 24). The central distinction that he posits is this one: in viewing some situation as an 'event', we see it 'as a unitary whole with a definite beginning... and a definite end'; whereas in viewing some 'situation' as a 'state', we see it as having neither.

This distinction, he claims, has the following corollaries: (i) 'States' are 'dissective', in that 'any stretch of time in which a particular state obtains can be broken down into substretches in each of which that state obtains.' 'Events', in contrast, are 'unitary'; so that 'even though a particular occurrence of some event may be divided into phases, these phases are not of the same type as the original event.' (ii) 'States' can be said to *obtain*, and to do so at each moment of some interval; while 'events' can be said to *occur*, and (generally speaking) to do so within some interval longer than a moment. (iii) 'States' are thus located basically at one or more moments, and at intervals only derivatively, in that they are located 'in some or all moments of the interval'. 'Events', in contrast, are located basically within intervals. (iv) 'States' cannot be thought of as having individual occurrences, 'since there is no such thing as the occurrence of a state.' That is, at any moment, a given state either does or does not obtain. In contrast, a type of 'event' can be distinguished from an individual occurrence

of this 'event'. This corollary makes a strong claim about what we can and cannot appropriately describe as an 'event' or a 'state', independent of what is actually 'going on'. For example, if we wish to describe some static situation that is periodically interrupted over some stretch of time, then according to this claim we cannot count the distinct intervals in which the situation obtains as individual occurrences of a 'state'. This is because, in doing so, we are not considering these situations as 'states', but rather as 'occurrences of an event' — namely, 'that event each occurrence of which consists of the state's first beginning to obtain, then obtaining for a while, and then ceasing to obtain.' (v) 'States' cannot be counted, so that their duration rather than their frequency is measured. In contrast, occurrences of 'events' can be, so that frequency is their basic measure.[22] (vi) Because a 'state' either does or does not obtain at a given moment, the state of affairs 'consist[ing] of a state's *not* obtaining is itself a state.' Thus, the negation of an expression that describes a 'state' produces an expression that describes another 'state': that of the original 'state' not obtaining. In contrast, the negation of an expression describing an 'event' produces an expression that describes not another 'event', but rather the failure of the original 'event' to occur (that is, a kind of 'state'). Finally, (vii) 'states' are homogeneous, inasmuch as they describe some property that does not change throughout some stretch of time. This is the case even when the property itself entails some sort of change, as in Galton's example of an object moving, described with a progressive form. As Galton puts it, 'although the object is changing with respect to its position (for that is what is meant in saying that it is moving), it is not changing with respect to the fact that it is moving.' 'Events', in contrast, 'essentially involve change'. Thus, if the object stops moving, this still counts as an event, despite the lack of movement during the interval in question. In other words, what is important is not whether there is movement, but whether there is change: 'that period of not moving can only be individuated as the occurrence of an event by the fact that it has a beginning and an end... and each of these end points does involve change' (ibid., 24–27).[23]

---

[22] As Galton (ibid., 26) notes, it is sometimes even odd to inquire into the duration of an 'event', as the following examples show:

(i) a. * How long did Jane have a swim for?
b. * How long did Jane take to have a swim?

This is another way of expressing the commonly cited observation that 'events' are unacceptable with '*for*-adverbials' (see e.g. Verkuyl 1989):

(ii) a. * Jane had a swim for four hours.
b. * Joe rode his bike to the supermarket for two hours.

[23] This understanding of the relation between 'events' and change will also figure in our discussion of the perfect in §1.3.

These last remarks suggest how a 'process' can be thought of as a kind of 'state'. As Galton notes, change can be viewed either as a 'process', and accordingly seen as being in progress during some period; or as an 'event', and accordingly seen as having occurred during that period. The former case can, as such, be characterized (as we noted earlier) as a 'state of change', and the latter as a 'change of state'. So, for example, 'if we say that something is moving, we are ascribing to it a state of change; but if we say that it has moved from one place to another, we are ascribing to it a change of state' (ibid., 29). Such a conception of 'processes' posits no important differences between them and ordinary states (that is, Galton's 'states of no change'): both are considered 'states of affairs';[24] and both are homogeneous, dissective, and located at moments rather than intervals (ibid., 30).

If we now return to our consideration of 'habituals', we can see how Galton's characterization of 'events', 'processes', and 'states' — and his claim that these are different ways of 'talking about what goes on' (ibid., 30) — might cast more light on them, and in particular on Vlach's analysis of them. We might note, first of all, that 'habits' seem amenable to the same kind of explanation that Galton offers for interrupted 'states'. That is, just as a 'state' that successively does and does not obtain during some stretch of time is properly seen not as a series of 'states', but as a series of 'events', so is an 'habitual' properly seen not as a series of 'events', but as a kind of 'state' composed of distinct 'events' or 'processes'. This view of 'habituals' is broadly in accord both with Vlach's and with the one that we canvassed earlier in the chapter. Where it differs (if the above remarks represent a legitimate elaboration of Galton's view, given that he does not treat 'habituals' explicitly) is in emphasizing that 'habituals', like other descriptions of situations, are no more than ways of viewing 'what goes on'. In particular, they involve no claim about how or why a given 'habitual' construction describes some series of 'events' or 'processes' as constituting a 'habit', beyond that embodied in this particular way of 'organizing' these situations. At the same time, it is clear that some feature or features of this construction permit us to draw such a connection.

Our earlier remarks about 'habituals' did suggest that 'habituals' described a 'characteristic property' of some individual or individuals, so that each instance of some repeated 'event' or 'process' might be understood as a typical manifestation of this property. While this description arguably provides a good intuitive understanding of the construction, it seems on reflection both too strong and too imprecise, suggesting some necessary connection between an individual and his or her 'habits', but no criterion for determining whether some repeated activity is 'characteristic' or not. Vlach makes an even stronger claim that a causal relation holds between some 'habit' and the repeated

[24] In the following discussion, we shall not be making use of Galton's terminology, but instead adhering to the more conventional terms 'event', 'process', and 'state'.

'events' or 'processes' that constitute it. More specifically, he claims that the 'habitual state' is 'responsible' — at least 'typically' — for the occurrence of the 'event' or 'process'. Of course, it is often difficult, or even impossible, to find any obvious candidate for such a 'state'. Consider the following examples, repeated from (30a) and (26ai), respectively:

(35) a. John drinks tea.
b. Seth draws comics.

With these, one is hard-pressed to point to any 'states' that are somehow 'responsible' for John's drinking tea or Seth's drawing comics, respectively, beyond John's being a tea-drinker and Seth's being a drawer of comics. Thus, neither proposal offers a plausible connection between these 'events' or 'processes' and these habitual 'states', or a plausible mechanism by which the 'habitual' construction so routinely establishes such a connection in the first place — in other words, how the repetition of certain situations comes to qualify as a 'habit'.

One proposal that goes some way toward doing so is made in McGilvray 1991: 101. This assigns to 'habituals' (and other 'iterative' constructions such as 'nomics', which we shall be discussing in §1.2.4) a semantic structure that contains a 'when'-clause and two kinds of adverbials, frequency and durational, as shown in (36):

(36) [[[When C, c Øs] FREQUENCY] DURATIONAL]
(FREQUENCY = usually, sometimes, generally, often)
(DURATIONAL = last year, from... to, next summer)
(C = circumstances) (ibid.)

Such a structure, which every speaker-hearer assigns to 'iteratives' by virtue of his or her linguistic competence, ensures the appropriate reading by specifying 'the number of times such-and-such happens when something else does.' McGilvray notes, however, that it is not important whether the speaker-hearer can actually supply specific circumstances, but only that he or she knows that 'a frequency adverbial determines an iterative state', and therefore that '*some* circumstance is presupposed' (ibid., 102). McGilvray's analysis thus succeeds in capturing the connection between an 'event' or 'process' and an habitual 'state' by analysing the latter in terms of a condition. That is, an habitual 'state' describes a condition whereby some entity engages in some 'event' or 'process' with a certain frequency under certain (possibly unspecifiable) circumstances.

While this analysis makes the meaning of 'habituals' explicit, it raises a new question in turn: namely, what principles license the introduction of such semantic

structures, given that they have no obvious syntactic correlate. (We shall be returning to this issue in §1.2.5 below.) One possibility does suggest itself, which arises from comparison of the VPs that contribute to the description of 'habits' with those that contribute to the description of other kinds of 'states'. This is that the information about the 'circumstances' governing 'habits', like those governing other situations, is essentially built into the meanings of the VPs that serve to describe them,[25] by virtue of the kinds of 'basic situations' that these VPs describe. We can see this more clearly by appealing to what Vlach (1993: 236) calls the 'granularity' of a 'situation' — that is, the period in which a 'situation' repeats itself. VPs that describe situations with zero 'granularity', such as the state of being tall or the process of growing, have no particular circumstances marking their onset and no frequency; while those that describe 'situations' with non-zero 'granularity', such as the process of smoking, running, or playing chess, do depend on particular circumstances for their onset, and do have a particular frequency. This description of the speaker's knowledge of these 'circumstances' makes this knowledge an essentially lexical matter,[26] thus circumventing the problems associated with such 'hidden' semantic structure. This also means that we need recognize no basic distinction between 'habituals' and 'states', since this distinction can be derived independently.

Some support for this 'lexical' analysis of 'habituals' comes from patterns like those displayed in (37)–(38):

(37) a. Joe draws.
b. Joe draws a comic book.
c. Joe draws a comic book every four months.

(38) a. Seth drives.
b. Seth drives a car.
c. Seth drives a car on Sundays.

Both of these sets of examples contain verbs that describe processes with non-zero 'granularity', and which therefore readily lend themselves to 'habitual' formation. The addition of an indefinite NP complement to each verb, however, has quite different effects, which seem attributable entirely to differences in the 'situations' respectively pictured by these verbs and their arguments. The sentence in (37b) describes a

[25] In fact, this sounds a great deal like McGilvray's (1991: 102) description of 'iteratives', where he speaks of them as 'hav[ing] conditions or circumstances built into them.' It is possible, then, that the differences between his account of 'iteratives' and that developed in the text are more a matter of terminology than substance.

[26] Whether lexical entries themselves have articulated structure, as Pustejovsky (e.g. 1991) and others have suggested, is another issue, which we shall not be pursuing here.

'bounded' situation — that is, one described as 'having reached a temporal boundary' (Depraetere 1995: 3) — and so does not have the 'habitual' reading available to the sentence in (37a).[27] The sentence in (38b) describes essentially the same 'unbounded' situation as the sentence in (38a) does — that is, one that has not reached a 'temporal boundary' — and is similarly amenable to an 'habitual' reading. Further addition of an explicit frequency adverbial to each sentence produces the same contrast, again altering the aspectual properties of the 'source' sentence in (37) but not in (38). That is, the sentence in (37c) describes a complex 'habitual situation', by virtue of describing a specific action that is habitually undertaken and completed (that is, a 'bounded situation' embedded in an 'unbounded' one);[28] while the sentence in (38c) continues to describe an 'unbounded situation', but makes the frequency of its repetition more explicit. These examples demonstrate quite clearly that the kind of aspectual 'type shifting' represented by 'habitual' formation is related to lexical properties of verbs, a fact which favours an approach to 'habituals' couched essentially in lexical terms.

What this means when we turn to specific patterns of acceptable and unacceptable 'habitual' readings, like those above, is that we can attribute these patterns directly to certain lexical properties of the relevant verbs and their arguments, rather than, say, to independent well-formedness conditions on 'higher-level' semantic (or syntactic) structure. Just what the relevant lexical properties are is another question, which we cannot address in any detail here. However, these have been discussed by Pustejovsky (1991), whose remarks confirm the results of the above discussion. Pustejovsky argues that verbs are lexically specified for certain 'situation' types (he identifies three: 'states', like *know* and *love*; 'processes', like *run*, *push*, and *drag;* and 'transitions', like *give*, *open*, *build*, and *destroy*, which are 'evaluated relative to [their respective] opposition[s]' (ibid., 56)). If we return to the examples in (37)–(38), we can see that it is lexically-specified 'transition' and 'process' verbs, like *draw* and *drive*, respectively, which undergo 'habital' formation.[29] In addition, simple forms of lexical 'process'

---

[27] To the extent that (37b) has an acceptable reading at all, it is that of an 'instantaneous action', which will be described in the text below.

[28] Depraetere (1995: 5) makes a similar point about the sentence in (i):

(i) John leaves at eight o'clock. (ibid., (7a))

She says about this sentence that 'the separate cases when John leaves are in themselves telic, the habit as such is not.'

[29] It is interesting to note that the ability to undergo 'habitual' formation cuts across 'level of granularity', so that processes with both 'zero granularity' and non-zero granularity' can do so, but 'states', which have 'zero granularity', cannot:

(i) a. These tulips really grow. ['habitual' reading available]
b. John grows tulips. ['habitual' reading available]
c. John really knows Latin. [no 'habitual' reading available]

This provides some support for Pustejovsky's claim that 'states' and 'processes' have different lexical representations.

verbs appear to retain an 'habitual' reading even with indefinite (and sometimes even definite) singular complements; while such complements force a 'non-habitual' reading with their 'transition' counterparts. (However, both types have 'habitual' readings with mass noun and bare plural complements.) These facts are illustrated below:

(39) a. i. Joe {drags / drives / pulls / pushes / rides} a cart. ['habitual' reading available]

ii. Joe drives the car.

b. Joe {draws / kills / sees} a man. ['habitual' reading unavailable]

c. i. Joe draws {foliage / water}. ['habitual' reading available]

ii. Joes draws leaves. ['habitual' reading available]

Such subtle interactions between verbs and their complements[30] provide further support for an approach in terms of lexical specification, like that being developed by Pustejovsky (1991, 1995) and others.

Of course, we have yet to identify the feature of the 'habitual' construction that allows a speaker-hearer to 'bootstrap' from a simple 'present'-tensed form to an 'habitual' reading in the first place. As many studies have recognized (see e.g. Declerck 1991: 121–24 for discussion and references), this feature is the 'simple present' form itself. According to these studies, the key to an explanation of the 'habitual' and other constructions in which the simple form appears is that this form is 'perfective' — in other words, that it describes a situation as 'complete'. More specifically, a 'perfective' form, as Comrie (1976: 3) explains, 'presents the totality of the situation referred to... without reference to its internal temporal constituency: the whole of the situation is presented as a single unanalysable whole, with beginning, middle, and end rolled into

[30] It should be noted that the addition of directional PPs produces similar 'type-shifting' effects, as shown in (i), where the PP *into the barn* transforms an 'atelic' 'situation' into a 'telic' one:

(i) a. John pushes the cart.
b. John pushes the cart into the barn. (based on Depraetere 1995: 11, (15))

one; no attempt is made to divide this situation up into the various individual phases that make up the action.'[31]

While such a description, as Klein (in press: §2) points out, captures a valuable intuition about this form, it is only a metaphor, which must be translated into more precise terms. One way to do so is to claim that simple tenses are aspectually 'unmarked' rather than 'perfective' — that is, that they participate in a privative opposition between 'progressive' and 'non-progressive'[32] forms, rather than an equipollent opposition between 'perfective' and 'imperfective' forms. This claim leads naturally to another: that the 'simple' form is unspecified, and the 'progressive' form specified, for some aspectual feature. We might identify this feature by drawing on Dinsmore's (1982: 229) 'Reichenbachian' analysis of 'perfective' and 'imperfective' forms. Dinsmore takes these forms to indicate coincidence of 'R' and 'E' and inclusion of 'R' in 'E', respectively. The key to this difference is that the 'marked' progressive distinguishes the duration of 'R' from that of 'E' (in a form to be made more precise below), whereas the 'unmarked' simple form asserts no duration for these intervals, treating them as equivalently punctual. If we accept this characterization of the two forms, we might say that an aspectual feature in question, which we might call [Progressive], signals this difference between them.

Now, the structure just claimed for the 'progressive' is rather complex; and the arguments required to defend it, as we shall see in the next section, are accordingly rather subtle. In contrast, the structure claimed for the 'simple' form is itself simple, and its plausibility as an explanation of the readings available to the 'present'-tensed version of this form can be demonstrated much more readily. The readings in question are the 'habitual' which we have been discussing; and one of 'instantaneous action', in which 'the verb refers to a single action begun and completed approximately at the moment of speech', and which we find, for example, in sports commentaries, performatives, and demonstrations (Quirk *et al.* 1985: §4.7; see also Salkie 1989: 8–9, McGilvray 1991: 259–60):[33]

(40) a. Black passes the ball to Fernandez... Fernandez shoots!
b. I advise you to withdraw. I apologize. We thank you for your recent
c. I pick up the fruit with a skewer, dip it into the batter, and lower it into the hot fat. (Quirk *et al.* 1985: §4.7)

---

[31] McGilvray (1991: 259) makes a similar point about such 'perfective' constructions: 'one gets "homogenization" and "packaging" of situations — development, inner "structure", and texture are lost and one "sees" the wrapped package "from outside".' See also ibid., 276–77.

[32] I have chosen this pair of terms largely because the alternative terms 'imperfective' and 'non-imperfective' are far clumsier — although the distinction between 'progressive' and 'non-progressive' is perhaps also more accurate (on this, see e.g. Declerck 1981: 98; 111, n. 6).

[33] It should be noted, though, that these actions are only conceptualized as instantaneous; or, as McGilvray puts it, make use of instants as 'fictional idealizations' (McGilvray 1991: 254).

If the structure of the 'simple present' assigns no duration to 'R' and 'E', then this form should serve to describe 'situations' that are either temporally 'unbounded' (that is,where 'R' and 'E' are interpreted 'maximally') or complete at the very moment at which they are located (that is, where they are interpreted 'minimally'), which in this case is the time of speech. This is precisely what we find in the form of 'habituals' and 'instantaneous actions', respectively.[34] Significantly, the analysis claims that 'simple present' forms are actually indeterminate between these two readings — a claim which may be verified by inspection of the sentences in (39)–(40), which, with few or no modifications, can bear salient 'instantaneous action' and 'habitual' readings, respectively.[35]

This analysis of 'simple' forms also explains how the 'past' version of this form permits a reading — that of a 'non-instantaneous action' — not available to its 'present' counterpart. This is because, given that 'R' precedes 'S' in a 'Reichenbachian' analysis of the 'past' tense, the 'durationless' 'R' and 'E' intervals do not coincide with the time of speech, as they do with the present; so that they may describe 'situations', both 'instantaneous' and 'non-instantaneous', which are complete before the time of speech.[36] Interestingly, the ability of the 'simple past' form to describe completed 'situations' means that an 'instantaneous action' reading is not a salient one for this form, as it is for the 'simple present'. Thus, the sense of 'urgency' associated with the 'instantaneous action' reading of 'simple presents' vanishes if these forms are replaced by 'past' ones — even in sports commentaries, in which this sense of 'urgency' is heightened by 'telegraphic' syntax:

(41) a. He shots, he scores!
b. He shot, he scored!

---

[34] Such an account of simple 'present'-tensed sentences can also explain 'historical' and 'expectant' presents, illustrated in (i), if, following McGilvray (1991: 278), we treat these as 'special cases of the sportscaster's present moved to non-present i_Rs':

(i) Harry pulls up to the curb, puts on his mask, and pulls off the heist, y'see. (ibid.)

[35] A similar point is made in Depraetere 1995: 12, *q.v.*

[36] It should be noted, however, that the analysis predicts that a 'simple past' form, by virtue of the fact that it assigns no duration to 'R' and 'E', has a reading whereby the 'situation' does extend to the time of speech. The existence of such a reading appears to be confirmed by sentences like that in (i), where the parenthetical statement does not result in contradiction:

(i) Joe walked the dog every day (and he still does).

The reason that such a reading is not generally available may thus be a pragmatic one: namely, that the 'present' version makes this reading much more salient.

This discussion of the 'present habitual' has suggested, then, that the source of its meaning lies, on the one hand, in the lexical properties of particular verb types, and on the other, in the aspectual properties of 'simple' verb forms. In pointing to these properties, it highlights a claim about this construction which we made earlier: namely, that it is 'about the present', and as such expresses the relation 'S,R'. This gives further support to our contention that the differences between 'present' 'habitual' and 'progressive' constructions are not properly within the scope of a theory of tense, which adverts only to the relation between 'S' and 'R'. Of course, in order to bolster this contention, we must undertake a more detailed examination of the latter construction — the results of which we shall also need to account for 'progressivized habituals', one type of 'habitual' construction which we have so far neglected. It should be noted that the semantic analysis of the 'progressive' remains a matter of great controversy; and our treatment of it, given the scope and overall concerns of this study, will be rather cursory. Nevertheless, it should at least serve to outline a plausible analysis of the 'progressive', and to indicate the place of such an analysis with respect to a theory of tense.

1.2.3. THE MEANING OF THE 'PROGRESSIVE'

Given the picture of 'simple' and 'progressive' forms just outlined, the primary objective in this section will be to argue for an analysis of the 'progressive' along the lines just suggested, according to which 'E' includes 'R'. Perhaps the best way to proceed is to return to instances of the 'progressive' like those discussed in §1.2.1, which display a sharp contrast with 'simple' forms. One such instance is the 'progressive' that appears in (42); as Salkie (1989: 8) notes, this is the form that a speaker must use if he or she 'sees Judy walking down the street towards her place of work and wants to report this event straightaway':

(42) Judy is walking to work. (ibid., (18c))

The question, then, is why this should be so. We claimed earlier that 'progressive' forms in sentences like this one describe 'situations' as ongoing, or 'incomplete', or 'in progress', at the time of speech. However, as Landman (1992: 1) remarks, such a claim (which he calls the 'classical wisdom' about the 'progressive') offers little insight into its meaning in the absence of a more precise statement of 'what it means' for some event 'to be in progress'.[37]

[37] It has also been claimed, by Huddleston (1977: 733), among others, that this characterization of the 'progressive' in terms of 'ongoing situation' does not even capture such uses as that illustrated in (i):

One line of research that has sought to clarify this notion has conceptualized the part of the 'incomplete situation' actually described as forming a distinct 'situation' itself: namely, the state of some action 'being in progress' (Vlach 1993: 241; see also Salkie 1989: 10; Kamp & Reyle 1993: 507–8). We might understand this (somewhat paradoxical) claim as one according to which the 'progressive' pictures a 'steady state' existing within a larger 'situation' — a claim reasonably well captured by the paraphrase 'be in the midst of Ving'. Such a view of this form accounts for certain important similarities and differences between 'simple' and 'progressive' forms, in addition to the 'event in progress' interpretation of the 'progressive' itself.

For example, it provides a ready explanation of the pattern in (43), highlighting the differences between (43a) and (43b) and the similarities between (43b) and (43c):

(43) a. When we arrived she made some coffee.
b. When we arrived she was making some coffee.
c. When we arrived she was sad. (Salkie 1989: 10, (23))

That is, while (43a) describes a coffee-making action that begins at the time of our arrival, (43b) describes a (presumably) temporary state of coffee-making that is holding at this time, just as (43c) describes a (presumably)[38] temporary state of sadness.

This 'steady state' view of the 'progressive' can also be seen to elucidate the 'event in progress' reading of 'progressives' like that in (43b), given the additional assumption that a speaker-hearer recognizes (presumably on the basis of conceptual knowledge) that a state holding at a given instant must have held 'for a period preceding that instant' and will hold 'for a period following that instant' (ibid.).[39] In this way, we

---

(i) We are meeting Max at 3:00. (ibid., (14))

The argument is that this sentence locates our meeting with Max at a specific point in time, and not within some period of time. It is not obvious, however, that the problem posed by this sentence is any different from that posed by a present-time-denoting 'progressive' like that in (ii), which does have the sense of an 'ongoing situation':

(ii) At this very moment I am thinking of something else.

We shall have be exploring this issue in the text below and in §1.2.4.

[38] I say 'presumably' because neither assertion is falsified if the 'states' in question are permanent:

(i) When we arrived she was making coffee — as she always was.
(ii) When we arrived she was sad — as she always was.

[39] Galton (1984: 25) makes a similar point: '[T]he sentence Jane was swimming at midday can be understood quite literally as saying that Jane was engaged in swimming at the exact moment of noon; she can only have been so engaged, of course, if she was also swimming immediately before and after that moment, but the sentence does not say this explicitly, and the parallel inference does not hold in all cases.'

can derive the interpretation of the 'present progressive' as describing a state that holds for a period extending forward and backward from the time of speech itself.

This view of the 'progressive', as Salkie notes, also goes some way toward making sense of its syntactic structure: that is, if it describes a kind of state, then the fact that it is formed from *be* and a 'present' participle is no great surprise, if the former is analysed 'simply [as] common-or-garden BE' and the latter as a kind of stative predicate (ibid.). These various considerations, then, show that this 'stative' analysis of the 'progressive' has much to recommend it.

Unfortunately, the analysis as presented suffers from a serious weakness, in that it offers no satisfying account of the 'progressive' forms of predicates that describe states. That such forms are neither unacceptable nor particularly unusual — contrary to the claims of certain studies (see e.g. Kamp & Reyle 1993: 508, 566; Vlach 1993: 242) — is suggested by those in the (b) sentences below:[40]

(44) a. George is testy.
b. George is being testy. (McGilvray 1991: 274)

(45) a. Small things matter.
b. We are at a point here where small things are mattering.

(46) a. John resembles his father.
b. John is resembling his father more and more these days.
(Verkuyl 1989: 45, (5))

More to the point, the interpretations of these 'progressive' forms are quite distinct from those of their 'simple'-form counterparts; and describing them in terms of 'being-testy', 'mattering', and 'resembling-his-father' states, respectively, adds little to our understanding of them. The relevant difference between the (a) and (b) examples above, as Salkie (1989: 13, n. 4) suggests, seems to be one of more 'permanent' and more 'temporary' states, respectively, the 'progressive' forms somehow serving to derive the latter from the former.[41]

One solution to this problem, as proposed by Landman (1992), pursues a line of inquiry into the 'progressive' that takes this form to describe a 'relation between two events (or their corresponding intervals): an event in progress and a corresponding complete event' (ibid., 5). In Landman's version of this analysis, the 'situation' described by a 'progressive' is seen as a 'stage' of a larger 'situation' — that is, as part

[40] However, only predicates describing certain kinds of 'states' are compatible with the 'progressive', as we shall see below.

[41] See also McGilvray (1991: 260–61): 'the... imperfective operates on states and processes to yield something like "temporary and requiring support (or effort)".'

of a 'situation' that represents 'a less developed version' of it, such that the latter represents a continuation of the former (ibid., 23–24).[42] Since the 'situation' described by a 'progressive' can presumably be the 'stage' of a larger 'event', 'state', or 'process',[43] we might understand the 'progressive' forms of state-denoting predicates simply as describing temporary 'stages' of larger 'situations'. Such a conception of the 'progressive' also suggests a way of understanding the contrast in acceptability displayed in the following pair of sentences:

(47) a. This is a Barbera, I think.
b. * This is being a Barbera, I think. (McGilvray 1991: 262)

These sentences describe an instance of what McGilvray (ibid., 261) has called a 'classification/type situation' — a kind of state that is indefinitely long and completely stable. Since no 'stage' of such a 'situation' will exhibit any properties different from any other 'stage', we might see the unacceptability of the 'progressive' form in (47b) as stemming simply from the lack of communicative relevance in singling out a 'stage' of such a stable 'situation'. To use the paraphrase of the 'progressive' that we offered above, it seems odd to describe some individual as being 'in the midst of' a static 'situation'.

Yet a major difficulty with Landman's proposal arises when we attempt to determine the 'situation' type of the 'stages' described in the (b) sentences of (44)–(46). Notice that these cannot be 'states' that are 'stages' of larger 'states', as might seem natural. This is because the sentences in question clearly describe temporary 'situations' that are distinct from the 'background states' that they presuppose, and such a scenario is completely at odds with a key property of this 'situation' type: namely, its homogeneity. Neither of the other possibilities is any more compelling. If we identify these 'stages' as 'processes', then we lose the appealing generalization that 'progressives' describe 'steady states'; and if we identify them as 'states' that are 'stages' of 'non-states', then the nature of the latter becomes a mystery.

Such difficulties might raise our suspicions about the very claim that the 'progressive' describes two 'situations' — albeit two that are in a 'part/whole' relation — and thus lead us to a closer examination of Landman's evidence for this claim. This is related largely to the problem posed by one version of the 'imperfective paradox', which takes the form of 'incomplete situations' like those described by the following sentences:

---

[42] I wish to thank Mark Baker and Lisa Travis for bringing Landman's article to my attention.

[43] I say 'presumably' here because Landman's proposal treates only 'event' stages, although nothing about the ontology of 'stages' as he describes them suggests that they could not describe parts of 'states' (although with one important proviso to be discussed presently).

(48) a. Mary was crossing the street, when the truck hit her.

b. Mary was wiping out the Roman army.

(Landman 1992: 10, 14, (13), (17))

c. Mary was swimming across the Atlantic. (based on ibid., 18, (20))[44]

The 'imperfective paradox' in its basic form pertains to the observation that 'the inference from the past progressive to the simple past' is valid for sentences describing 'activities' but not 'accomplishments' (ibid., 1), as illustrated in (49):

(49) a. Mary was pushing a cart.

a′. Mary pushed a cart.

b. Mary was drawing a circle.

b′. Mary drew a circle. (ibid., 2, (1)–(4))

In the version of the 'paradox' illustrated in (48), sentences with 'progressive' forms do not merely disallow the inference that the 'accomplishments' that they describe were realized, but either assert or strongly imply that these 'accomplishments' could not be realized. Landman's analysis of the 'progressive' thus permits a ready description of such scenarios, in terms of some 'stage' of a complete 'situation' that is not realized — respectively, Mary's crossing the street, wiping out the Roman army, and swimming across the Atlantic. The idea, then, is that the interpretation of 'progressive' sentences that describe 'incomplete events' requires the speaker-hearer to track the 'situation' described by the sentence until its completion in the real world or one very close to it, in order to determine whether (the proposition expressed by) the sentence is true.[45]

---

[44] I have changed Landman's 'crossing' to 'swimming across' in order to eliminate the irrelevant reading whereby Mary crosses the Atlantic in a less unusual way — say, by ship.

[45] Many studies of the 'progressive', including Landman's, have also claimed that this form creates an intensional domain when applied to certain predicates. Landman offers the following contrast in support of this claim:

(i) God created a unicorn.
(ii) God was creating a unicorn, when He changed His mind. (Landman 1992: 8, (9))

Since (i) but not (ii) entails that there was a unicorn that God created, and since (ii) suggests that the verb *create* itself does not create an intensional domain, the 'progressive' appears to be the only candidate for this function.

There is good reason, however, to be sceptical about this claim. First, because it predicts that the 'intensional' effect of the 'progressive' will emerge only in contexts where entities normally come into existence as a result of some action — namely, one that creates these entities —, it pertains only to a very small set of 'progressive' forms. This in itself might lead us to wonder whether the effect in question should not be seen simply as a by-product of the application of the 'progressive' to the set of predicates denoting this type of 'situation'. What might make us even more sceptical is that Landman's entire case for treating 'progressives' as creating intensional domains rests on (a particular understanding of) a single predicate, namely *create*. According to Landman, 'a certain process of creation [may require] several stages that are necessary for the process... but during which no object whatsoever exists, while at the end of the process the object comes into existence in a flash' (ibid., 8). This represents, then, his interpretation of (ii). Unfortunately, such an interpretation of this sentence is highly idiosyncratic:

As Landman suggests, the most obvious way of conceiving of this tracking task, and one which captures our intuitions about the truth conditions of sentences like those above, is to appeal to such normative notions as 'normal course of events' or 'reasonable options' for the continuation of an 'event' (ibid., 25). Thus, given the past course of events of Mary's stepping off the curb, walking to the middle of the street and then being hit by a truck, we judge the proposition expressed by (48a) to be true. This is because the completion of the 'event' of Mary's crossing the street is a 'reasonable' possibility, which would be realized in a world whose properties are close to those of our own — even if, as in (48a), the 'event' is not realized in the actual world. Conversely, given the past 'situation' of Mary's doing battle with the entire Roman army, we judge the proposition expressed by (48b) to be false. This is because, as Landman puts it, 'Mary didn't have a chance in hell of succeeding. There's just too many [soldiers] and she's not that strong. Only a miracle could make her succeed, and the problem is that our world is usually not a miracle world' (ibid., 18). At the same time, miracles do sometimes occur, so that we could judge the proposition expressed by (48c) to be true if, say, we already knew that Mary's attempt to swim across the Atlantic has been successful — although we would otherwise judge it false, given that success in this endeavour is not a reasonable possibility.

Landman offers an insightful analyis, then, of those uses of the 'progressive' that involve 'incomplete events'. It is not obvious, however, that such an analysis could form the basis of a more general account of the meaning of the 'progressive'. As we have already seen, it does not lend itself easily to an explanation of the 'progressivized stative' sentences given in (44)–(46), even though such uses are also very much a part of the phenomenon of the 'progressive'.[46] Indeed, the sentences in (44)–(46) represent

---

according to my own intuitions and those of other native speakers I have consulted, entities do indeed come into being (in some sense of 'being') in the various 'stages' that mark a 'process' of creation, but what their precise ontological relation to the entity that is the final product of this 'process' is difficult to state.

Observe, too, that the evidence Landman adduces pertaining to anaphoric reference is also highly suspect. He claims that anaphoric reference to the NP *a unicorn* in the sentence below is impossible, citing the unacceptability of the continuation given in (a); however, the more idiomatic continuation given in (b) seems perfectly acceptable:

(iii) God was creating a unicorn.
  a. ? It was not created. (ibid., 9, (10c))
  b. But he never finished it.

While more substantial evidence bearing on this claim might be available, the foregoing remarks suggest that Landman has not provided very robust evidence that the 'progressive' creates an intensional domain.

[46] Of course, the sense of 'incompleteness' expressed by the 'progressive' forms to which Landman's analysis draws attention is by no means central to the use of the 'progressive' generally; as Quirk *et al.* (1985: §4.25) note, it 'is distinctive chiefly in the case of certain types of dynamic verb meaning'.

only a small part of the spectrum of 'stative progressive' constructions, additional examples of which are given below:

(50) a. 'STATES OF EMOTION OR ATTITUDE':
I am hoping you will come. (Quirk *et al.* 1985: §4.28)

b. 'STATES OF PERCEPTION':
i. I am looking at these photographs. (ibid., §4.29)
ii. I am seeing things.

c. 'STATES OF BODILY SENSATION':
i. My foot is hurting.
ii. My back is aching. (ibid.)

d. 'STANCES':
i. James is living in Copenhagen.
ii. He is standing over there. (ibid., §4.32)

e. 'HABITS':
Seth is drawing a lot these days.

Moreover, the effect of the 'progressive' in all of these 'stative' sentences — namely, to suggest the 'temporariness' of the states they describe — is perhaps the most common one created by this form. Yet it is an effect into which Landman's account offers us little insight.

This shortcoming is equally apparent in Landman's analysis of 'progressive processes'. While this analysis succeeds in describing their truth conditions, by defining these in terms of 'process stages' that 'ha[ve] the same process characteristics' as the larger 'process' itself, such an analysis does not tell us what the 'progressive' actually means — why, for example, a sentence like that in (51) 'can be understood quite literally as saying that Jane was engaged in swimming at the exact moment of noon' (Galton 1984: 25):

(51) Jane was swimming at midday. (ibid.)

That is, a description of this sentence couched in Landman's terms will reveal only that the proposition that it expresses is true just in case Jane's swimming at midday has the same characteristics as the larger 'situation' of which her swimming at midday is thus a 'stage'. But this does not capture the observation, as made by Galton (ibid.) and others,

that this sentence does not say explicitly that Jane 'was also swimming immediately before and after' the moment of midday, nor that very similar sentences, like those in (52), do not even invite the inference that the 'process' that they describe has any greater duration (ibid.):

(52) a. Jane was balancing a cup on her head at midday.
b. At that moment, Joe was shooting the bird at the driver who cut him off.

With 'momentary situations' like the ones described in these sentences, it is unclear what explanatory benefits accrue to an analysis of them in terms of two 'situations'.

Of course, the question remains whether it is possible to capture the insights of Landman's analysis without resorting to his claim that the 'progressive' involves two 'situations'. The analysis of the 'progressive' introduced in the previous section, according to which 'R' is included in 'E', does seem to fulfil these requirements. By attributing the 'partitive' quality of the 'progressive' to this property of describing a particular 'RE' relation, rather than that of describing a 'stage' of a larger 'situation', this analysis can mimic the effects of postulating two 'situations' while avoiding the difficulties associated with this postulation — in particular, those that arise with 'progressivized stative' constructions. As we have seen, the homogeneity of 'states' makes it implausible to view these constructions in terms of 'stages', since their very function is to describe distinctive temporary 'states', which accordingly cannot be seen as 'stages' of larger homogeneous 'states'. Let us first examine these cases before proceeding to those that Landman addresses.

As we observed above, the effect created by the 'progressivization' of 'stative' constructions is a suggestion of the 'temporariness' of the 'state' described, and of a contrast between this temporary 'state' and a normal one that might otherwise hold. We noted that an effect of 'temporariness' is also associated with the standard 'process' use of the 'progressive', as exemplified in (51). The suggestion here, however, is not that the 'process' described by the sentence is to be distinguished from some more stable one, but that it may hold only for the short interval. An analysis of the 'progressive' along the lines just suggested, couched in terms of the inclusion of 'R' in 'E', may be able to capture these different senses of 'temporariness' by appealing to the different rôles of 'R' of 'E' in temporal reference.

In chapter 1, we noted (following McGilvray 1991) that sentences refer 'identifyingly' to an individual or individuals located at 'R', and 'picture-refer' to a 'situation' located at 'E'. Earlier in this chapter, we saw that the particular 'situation' located at 'E' is specified by the verb and its arguments. Now, if the 'progressive' form — by virtue of a [Progressive] feature, as posited earlier — functions to include 'R' in 'E', then the sense of 'temporariness' with which it is associated might have an obvious

source: namely, that a sentence with a 'progressive' verb form refers 'identifyingly' to an 'R' that is, by hypothesis, only a subinterval of 'E'. (We might go further and speculate that the [Progressive] feature assigns 'R' the breadth of an 'idealized instant', much like the 'instantaneous actions' which we discussed earlier.) The different implications that this 'temporariness' can have might then be attributed to the interaction between the brief interval represented by 'R' and the stability and duration of the 'situation' constructed by the VP and located at 'E'.

For example, the 'progressivized stative' sentence in (53a), repeated from (50di), might create the effect of 'temporariness' lacking in its 'simple stative' counterpart in (53b) because of the normally stable 'situation' indicated by its VP.

(53) a. James is living in Copenhagen. (* In fact, he's always lived here.)
b. James lives in Copenhagen.

Given such a 'situation', the 'focussing' on James at 'R' achieved by the 'progressive' has a certain implication: namely, that James is being 'captured' in a 'situation' that has not already occupied, and will not continue to occupy, some indefinitely long interval. If this implication does not hold, then there is no obvious relevance to this focussing. That this is a plausible account of such 'stative' sentences is indicated by the unacceptability of the parenthetical continuation of the sentence in (53a), whose oddness resembles that of the 'progressivized' sentence given earlier, and repeated below:

(54) * This is being a Barbera, I think.

This sentence, which describes a 'classification/type situation', as discussed earlier, is unacceptable simply because it is difficult to ascribe any purpose to this focussing on the Barbera at 'R' when the 'situation' in which it figures is a completely stable one.[47]

It should be noted that the relative instability of the 'situation' described by a 'progressivized stative' sentence appears not to be a matter of truth, but simply a matter of evidence available to the speaker. Thus, the use of such a sentence in the following exchange seems perfectly acceptable, since the relevance of speaker B's locating James only at 'R' is clear from the context:

---

[47] McGilvray (1991: 275) suggests that the judgements involved here are not those of grammaticality, since 'there is nothing in the nature of states as such that rules out imperfectivizing any state whatsoever.' Thus, the unacceptability of sentences like that in (54) stem from the fact that 'there are states we refuse to imperfectivize because we refuse to count them as giving unstable or temporary descriptions of things' (McGilvray 1991: 275). See McGilvray 1991: 260–76 for further discussion of 'progressivized statives'.

(55) A: Do you know where James lives?
B: Last I heard, he was living in Copenhagen.
C: Oh, he's always lived there.

The following examples of 'progressivized statives' are acceptable for similar reasons:

(56) a. The Empire State building will be standing to your right. (McGilvray 1991: 264)
b. The village was lying in the valley. (Verkuyl 1989: 46)

What is 'unstable' in sentences like these is not the position of the referent of the subject itself, but the location of this referent relative to the speaker or hearer (McGilvray 1991: 264), or the experience of seeing the particular 'situation' that is being described (Verkuyl 1989: 46).[48] In these cases, the relevance of focussing on the referent of the subject at 'R' derives from the fact that the 'situation' described by the VP is, from the speaker's perspective, an unstable one.

Similar comments apply to the other 'stative' sentences in (50a–d), and to those given earlier in (44)–(45). In each case, 'identifying' reference to an individual at 'R', against the background of the fairly stable 'state' described by the VP, serves to suggest that this 'state' is holding only temporarily.

It should be observed, however, that a sense of 'temporariness' is not always associated with the 'progressive' form exclusively. It is arguably conveyed, for example, in both of the following sentences:

(57) a. My back is aching.
b. My back aches.

We might attribute this to the nature of the 'situation' described by the VP here. Since this 'situation' is generally understood to have only a (relatively) short duration, the effect of 'focussing' on the referent of the subject at 'R' is less pronounced than in the

---

[48] Notice, however, that similar sentences with the 'progressive' form of *be* are unacceptable, even though their meaning should be quite similar to the 'progressive' forms of *lie*, *stand*, and similar verbs of location (and other 'progressivized statives' with *be* are acceptable, as we have seen):

(i) a. The Empire State Building is to your right.
b. * The Empire State Building is being to your right.

(ii) a. The village was in the valley.
b. * The village was being in the valley.

Whatever the ultimate explanation of these sentences, we might speculate that it is related to the peculiar properties of *be* itself, rather than to those of the 'progressive' form.

other cases that we have just examined, where the discrepancy between 'R' and 'E' is greater.

A description of 'progressivized statives' in terms of the inclusion of 'R' in 'E' is thus able to give us some insight into their properties. 'Progressivized process' sentences, such as those given in (51)–(52), may be described in essentially the same terms, which are able to capture the somewhat different effect of 'temporariness' associated with them, as we have already noted. Because the 'situations' described by the respective VPs in such sentences are quite different in character from those described by the VPs in 'stative' sentences, being inherently dynamic — in Galton's (1984) terms, 'states of change' rather than 'states of no change' —, we might posit that the relevance of 'focussing' on an individual at 'R' will in turn also be somewhat different. Here, it will not suggest a contrast between a stable and an unstable 'situation', given that 'processes' themselves are already unstable, but only that the individual being 'captured' at 'R' may be involved in this 'process' only temporarily. In fact, the strength of this suggestion depends entirely on the nature of the 'process' being described. Those of very short duration, like that described in (54a) (repeated from (52b)), will invite this suggestion more readily; while those of long duration, like that in (54b), will not, resulting instead in the 'in the midst of' reading described earlier in the chapter:

(54) a. At that moment, Joe was shooting the bird at the driver who cut him off.
b. From what we heard, James was working on a new book.

Again, a difference in the nature of the 'situation' described by the VP is revealed as the source of the different effects associated with the 'progressive'.

So far, our account of the 'progressive' has assumed that 'R' is specified as an 'idealized instant'. While this assumption has raised no obvious difficulties with the examples already considered, it does seem at odds with the interpretation of sentences like those given below (repeated from (43e) and (46)):

(58) a. Seth is drawing a lot these days.
b. John is resembling his father more and more these days.

Each of these sentences appears to refer to an 'R' whose breadth is specified by the respective temporal adverbial that they contain.[49] Otherwise, however, they pattern with the 'progressive' sentences that we have already seen, 'focussing' on an individual at 'R' and suggesting a temporary or unstable 'situation'.

[49] Why these adverbials specify 'R' rather than 'E' remains unclear to me, and must be left for future research.

Other sentences — more specifically, those whose VPs describe 'situations' characterized by 'internal gaps' — also appear to refer to an 'R' whose breadth is greater than an instant. One such sentence (repeated from (31b)), is given in (59):

(59) William is writing his autobiography (right now).

As Galton (1984: 85) observes, this sentence has two quite different readings. One is the 'broad' reading, according to which the sentence makes a true assertion 'at any time between when William starts his autobiography and when he finishes it; or, if in the event he never does finish it but at some point gives it up, unfinished, for good, then... at any time between when William starts writing his autobiography and when he gives up writing it.' The other is the 'narrow' reading, according to which the sentence makes a true assertion only 'at those times when William is actually at work on his autobiography'. What is interesting about these readings is that both are available with the adverbial *right now*, which, one might think, would force the 'narrow' reading. 'Situations' with such 'internal gaps' thus raise very difficult questions which we are unable to answer here. What does at least seem clear from this and the previous two sentences is that 'R' may be specified as an instant only as a default, and may assume other values through adverbial modification or context, consonant with suggestions made earlier in §1.2.1.

We have seen, then, that a description of the 'progressive' in terms of a particular relation between 'R' and 'E', and the different functions of these intervals in temporal interpretation, can account for a range of effects associated with this form. We might turn now to some of the cases that Landman discusses — namely, those that exemplify 'progressivized eventive' sentences —, to see if this description can account for the effects that lead Landman to postulate that the 'progressive' indicates a 'stage' of a possibly unrealized 'situation'.

One way to address this issue is simply to call into question the strategy of explicating the meaning, as opposed to the use, of the 'progressive' by appealing to the devices that Landman employs — in particular, those of 'counterfactual situations' and 'reasonable possibility'. The assumption that our knowledge of this form could hinge on our ability, for example, to track some uncompleted 'event' 'in our world until it stops', and then to 'perform a thought experiment' to determine how this 'event' would 'have continued if it hadn't stopped' seems very much at odds with the ease with which we understand sentences like that in (60) (repeated from (48a)):

(60) Mary was crossing the street, when the truck hit her.

Similarly, our ease at picturing Mary wiping out the Roman army or swimming across the Atlantic when presented with the sentences in (61) (repeated from (48b–c)) makes it implausible to see the notion of 'reasonable possibility' as part of the meaning of the 'progressive' itself, rather than as part of our real-world knowledge of the difficulties in accomplishing such feats:

(61) a. Mary was wiping out the Roman army.
b. Mary was swimming across the Atlantic.

A normative notion like 'reasonable possibility' seems — to use McGilvray's (1991) terms — much more plausibly attributed to the 'meaningfulness', rather than the 'meaning', of the 'progressive'. As for our ability to understand sentences like that in (60), which describe 'unrealized events', it is not clear whether this requires any appeal to counterfactual 'situations', rather than simply an assessment of evidence we have available at the time of speech, as McGilvray (1991: 298) suggests. In other words, we judge whether the individual located at 'R' by a sentence with a 'progressive' form is or was involved, at 'R', in the 'situation' described by the VP of this sentence by assessing the evidence available to us at the time of speech. If, for example, we know that the Mary of the sentence in (60) was halfway across the street when she was hit by the truck, then we are likely to judge this sentence true. If, in contrast, we witnessed the (same?) Mary of the sentences in (61) at the 'Rs' respectively described by these sentences, then given the size of the Roman Army and the breadth of the Atlantic, we are likely to judge these sentences false. Recall that the difference noted by Landman (1992: 14–15) in the instances in which we judge the sentence in (61b) respectively true and false is crucially tied to the evidence that we respectively have available to us at the time of speech in making this judgement. In the former instance but not the latter, we already know that Mary has indeed crossed the Atlantic.[50]

The foregoing examination of the 'progressive' has unfortunately been rather cursory and impressionistic, and has, of course, not provided any definitive answers to any of the difficult questions that it has raised. It has arguably served, at least, to sketch out an account of a range of uses of this form (although one difficult case, that of the 'futurate progressive', remains, which we shall be considerring briefly in §1.2.5 below). Moreover, it has suggested that a 'present'-tensed version of this form, despite its complex temporal qualities, nevertheless serves to locate an individual at an interval

[50] These considerations also explain the reluctance of the speakers I consulted to judge as true Landman's sentence about God and the unicorn, discussed in n. 39 and repeated below, if God has nothing whatsoever to show for His efforts. This is simply that there is no evidence available to assess whether He was actually engaged in a unicorn-creating activity.

(i) God was creating a unicorn, when He changed His mind.

'R' coinciding with (or including) the time of speech. Such a suggestion permits us to preserve the unitary treatment of the 'present' tense that we have been canvassing throughout §1.2, according to which this tense expresses the relation 'S, R', and leaves the relation between 'R' and 'E' indeterminate.

We might note, finally, that a key element in our account of the 'progressive' was an appeal to the rôle of evidence in helping us to assess the truth of propositions expressed by sentences containing 'progressive' forms. Evidence plays an equally important rôle in our use of nomics and other 'iteratives', as we shall see in the next section, where we shall be discussing this matter in more detail.

1.2.4. 'ITERATIVES' AND EVIDENCE

In the previous three sections, we discussed 'simple' and 'progressive' 'present'-tensed forms, and concluded that both could be subsumed under the generalization that the 'present' tense expresses the temporal relation 'S, R'. It should be observed, however, that our discussion of the former construction was confined largely to 'habituals'. Yet these represent only one of a class of readings of the 'simple' present often referred to collectively as 'iterative' (e.g. Declerck 1991: 277; McGilvray 1991: 99). These other 'iterative' readings all describe 'situations' that extend indefinitely into the past and future, and thus present a serious challenge to our claim about the meaning of the 'present' tense. The strategy that we shall exploit in order to meet this challenge is to appeal to the non-linguistic knowledge that we use as evidence in judging different 'iterative' assertions.

We might begin with Lyons' (1977: 680) classification of the 'iteratives' in question. He distinguishes the following types: (i) 'omnitemporal', which express propositions 'whose truth-value is constant for all values of t_i in a finite or infinite set of time-points or time-intervals $\{t_1, t_2, t_3, ..., t_n\}$'; (ii) 'timeless', which express propositions 'for which the question of time-reference... simply does not arise', and among which 'generic' propositions are arguably included; and (iii) 'gnomic', which express 'so-called general truths', which describe a range of propositions extending from the 'timeless' and 'omnitemporal' to those which 'could hardly said to describe anything more than tendencies, generalities and assumed regularities' (Lyons 1977: 680–81). Examples of these different 'iteratives' are given below:

(62) a. 'OMNITEMPORAL':
Copper conducts electricity.

b. 'TIMELESS':
i. Two times two is four. (Reichenbach 1947: 292)

ii. Cows are herbivorous. ('generic') (Lyons 1977: 680)

c. 'GNOMIC':

i. It never rains but it pours.

ii. Corruption starts at the top. (ibid., 681)

If, as Lyons (1977) claims, the propositions expressed by these 'iteratives' have '[nothing] to do with present time' (ibid., 681), then these constructions may require us to abandon our unitary treatment of the 'present' tense, and to recognize an additional, 'non-deictic', meaning for this form.[51] Yet given Lyons's remarks about the temporal differences reflected in the class, a single addition may not be sufficient to capture all of the uses of the 'present' tense reflected in the sentences above.

However, the suggestion that we multiply the meanings of the 'present' tense to account for these different 'iterative' types should give us pause — making us wonder whether we were missing a generalization about the meaning of this tense and the uses to which it may be put. This doubt is reinforced by the occurrence of 'past'-tensed sentences like the following one:

(63) Saber-toothed tigers ate meat. (McGilvray 1991: 105)

This sentence expresses the same sort of assertion that the sentence in (62bii) does, except that it employs the 'past' tense to indicate that the generalization in question no longer holds, given that it applies to an extinct animal.[52] If 'past' tenses can thus be assigned similar 'non-deictic' readings, then the case for multiplying 'present' tense meanings becomes even weaker, since we could not plausibly expand the range of meanings for one tense without doing the same for the other.[53] Our sense of a generalization being missed thus becomes even more pronounced.

It turns out that such a proposal would be difficult to implement in any case, because of the practical difficulties of distinguishing different classes of 'iteratives'. As Lyons himself notes, both the distinction between 'timelessness' and 'omnitemporality' and that between 'omnitemporality' and the 'time-bound notions' expressed in 'gnomic' statements 'that approximate to, or resemble, omnitemporality' is 'difficult to draw in

---

[51] Such a suggestion is made by Reichenbach (1947: 292), for example, who notes that 'a second temporal function of the present tense' is to express 'validity at all times', in which function 'the time argument is used as a free variable'.

[52] As McGilray (1991: 105) puts it, 'past'-tensed 'nomic' sentences of this kind 'indicate that there are no things... left that the nomic describes'.

[53] It could be argued, however, that the 'present'-tensed sentence asserts the truth of a proposition for past, present, and future, while the 'past'-tensed sentence asserts the truth of a proposition only for the past. The use of the 'past' tense in question nevertheless pertains to the whole of the past (until the death of the last saber-toothed tiger), which is arguably as different from more 'standard' uses of this tense as is the use of the 'present' tense in sentences like that in (62bii) from its more 'standard' uses.

particular instances' (ibid., 680–81). These considerations should lead us to entertain the possibility that the differences in question are a matter of use.

In fact, such a position has been adopted by a number of researchers, who have argued for a unitary treatment of 'habituals' and other 'iteratives'. Just as 'present'-tensed 'habitual' sentences can be seen to describe a situation as holding at the time of speech — the view of 'habituals' that we canvassed earlier —, so too can these other kinds of 'iteratives'. Accordingly, Comrie (1985: 40) claims that a 'generic' sentence, for example, 'refer[s] only to the present moment, the interpretation of this as a universal truth being on the basis of structural and extralinguistic factors beyond the meaning of the present tense.'[54] Declerck (1991: 282–83) claims, similarly, that all of these 'iteratives' 'represent a situation as a state', and that their 'present'-tensed versions represent this state as holding at the time of speech. What this means is that both 'iterative' and 'non-iterative' 'present' tense constructions can be assigned similar temporal structures, so that it is 'unnecessary to posit a special kind of "generic" or "universal" tense' to account for the former type.

Such a position is elaborated by McGilvray (1991: 99–113), who argues that the task of distinguishing one type of 'iterative' from another is essentially '[one] for epistemology' (ibid., 99), since the difference between them is related to a difference in the 'speaker commitments' that each demands (ibid., 100). That is, nothing in the temporal structure of a given 'iterative' sentence signals us to read it as one kind of 'iterative' rather than another. The source of the differences between them is to be found, instead, in the degree of commitment that we are willing to make to the truth of the assertion expressed by a given 'iterative' sentence. What we are doing, for example, when we use and accept a sentence like that in (62a) as an 'omnitemporal'[55] is to commit ourselves to the assertion that the 'situation' described by this sentence has no bounds, and thus 'hold[s] everywhere and anywhere in our world' (ibid., 107). It follows, then, that the only 'iterative' sentences that are able to bear this 'omnitemporal' (or what McGilvray calls 'nomic', as noted earlier) reading are those that 'concern, are about, or are used in offering correct descriptions of the things of our world' — in other words, those expressing assertions about 'our world' that are continuously agreed to be true, based on the availability, at least in principle, of firm evidence for them

---

[54] Comrie (1985: 40–41) argues, in addition, that the 'universal' and 'habitual' tenses claimed to exist in some languages (he cites Swahili, which is claimed to have both, the former used for 'general truths not restricted temporally' and the latter for 'customarily recurring situations') are more plausibly understood as markers of 'aspect' or 'mood'.

[55] As McGilvray (1991: 106) points out, there is certainly nothing nonsensical about reading such a sentence as only an 'habitual'. In fact, we should expect such 'misreadings' to occur, given that 'correctly' interpreting a given sentence as an 'omnitemporal' often requires a certain amount of specialized non-linguistic knowledge, the possession of which could not be assumed for every speaker of English — not even for one who knows the meanings of all of the words in the sentence.

(ibid., 108–9).[56] While the various types of 'iteratives' thus have a common temporal structure, the type just described are most naturally used to make 'omnitemporal' assertions, given the lexical information that they contain, and thus the kinds of 'situations' that they describe.[57]

McGilvray (1991: 111) also observes that some assertions 'are treated in practice as continuously true... sometimes almost to the point where good evidence against them is ignored.' Examples of these include 'stereotypical' assertions like the following ones, which are 'useful in the efficient, though sometimes faulty, perception and identification of things of our world':

(64) a. Tigers are striped.
b. Lemons are yellow.
c. Humans are bipedal. (ibid.)

While McGilvray does not discuss 'gnomics', these would also presumably fall into this category of assertions that we assume to be true even in the face of counterevidence.

This brief discussion of 'iteratives' have thus suggested that the challenge that they seem to pose to our generalization about the 'present' tense is not a real one. Given an approach to them of the kind sketched here, we can analyse them in the same fashion as we have analysed other 'present' tense constructions: namely, in terms of the relation 'S,R'.

1.2.5. 'FUTURATES'

The last 'present' tense construction that we shall examine is the 'futurate', in which the present is 'understood as referring to future time' (Huddleston 1977: 732), and which also seems problematic for our 'S,R' claim. While this use appears to be associated with both 'simple' and 'progressive' forms, it is generally associated with the former only when they are modified by temporal adverbials (including *wh*-adverbials) that can be understood as specifying a future time.[58] In the following discussion, we shall be

[56] Note that such an account observes no distinction between 'timeless' and 'omnitemporal' propositions — which, as we already noted, is a problematic one in any case.

[57] We might speculate that the lexical items that most strongly 'cue' a hearer for an 'omnitemporal' assertion include count nouns that have the form of bare plurals and mass nouns that have the form of bare singulars, both of which commonly indicate names of kinds, and thus naturally lead to the type of assertion in question.

[58] Jespersen (1931: §2.4(3)) does cite the following examples of 'futurates' that do not require adverbials to establish a future time for the 'situation' being described:

(i) a. Good-bye, old man, 'We meet in heaven, if not before.' (McKenna, *Sonia*: 350)
b. I shall not dine at home: I meete the Captaines at the Citadell. (Shakespeare, *Othello* III. 3.57)

focussing on the 'simple' version of this construction; some examples of this are given in (65):

(65) a. I start for Italy on Monday next.
b. I go in six weeks.
c. I leave early to-morrow morning.
d. When do we start? (Jespersen 1931: §2.4(2))

One question that this construction raises is the following one: how can the 'present' be compatible with non-present adverbials? One possibility is that the 'present' tense 'is actually a non-past and does not inherently refer to present, as opposed to future, time' (Binnick 1991: 389).[59] We might be reluctant to accept this claim, given that nothing in our consideration of the 'present' tense so far has required an appeal to it. As it happens, various facts about this construction militate against such a claim. Perhaps the most straightforward is that the 'futurate' construction has a past-tensed counterpart, as exemplified below:[60]

Such examples, however, do not seem to be grammatical in contemporary English, and will therefore not be considered here. However, there are examples of 'simple present' forms unmodified by temporal adverbials that are impeccable in contemporary English:

(ii) a. Either you tell him or I do. (Huddleston 1977: (1b))
b. Where does this box go?

In each case, the availability of the 'futurate' reading appears to be dependent on some element that c-commands the tense, although just what properties are involved here remains unclear. Notice, too, that not all adverbial *wh*-phrases license the 'futurate' reading:

(iii) * Why do we start?

[59] A related claim, developed in Enç 1990, is that 'present'-tensed forms are actually unspecified for a tense value.

[60] This appears to be at odds with Hornstein's (1990) claim about this construction, which is that 'past' tense versions of it are ill-formed. This follows from his claim (which we shall be reviewing in chapter 3) that embedded 'past' tenses in 'sequence of tense' constructions are actually 'present' tenses, 'the apparent past-tense form being just the morphological manifestation of a shifted temporal dependency on the matrix-event time' (ibid., 123). Hornstein adduces the following contrast as evidence for this claim (the judgements are his):

(i) a. * The Canadiens were in New York tomorrow.
b. John said that the Canadiens were in New York tomorrow.
c. The Canadiens are in New York tomorrow. (ibid., 162, (81))

He argues that the (a) sentence is unacceptable because the *were* that appears there is a true 'past' tense and thus (according to his CDTS, as described in chapter 1) cannot be modified by a future-time-denoting adverbial; while (b), in contrast, is acceptable, because the *were* that appears there is really a 'present' tense, and thus can be modified by such an adverbial.

While the (a) sentence does admittedly sound odd, this is likely because it is difficult to construct a suitable context for its utterance. (The difficulty arises from the nature of the 'situation' described: one that is scheduled some time before the moment of speech for the day after the moment of speech, and described from the perspective of the time at which the scheduling has taken place — since otherwise

(66) a. I joined tomorrow. (Conrad, cited in Declerck 1991: 169, n. 7, (iii))

b. The game started at seven. (based on Quirk *et al.* 1985: §14.31, n. [e])

This suggests that the pattern cannot be attributed to peculiar properties of the 'present' tense, but must have a more general explanation.

An even more compelling fact about the 'futurate' is that its meaning cannot be equated with that of the 'future' tense. Indeed, its distinctive meaning is well documented, having been identified by Jespersen and others early in the century, and reiterated in many studies since then (e.g. Joos 1964; Boyd & Thorne 1969). This meaning is described by Jespersen (1931: §2.4(1)), for instance, as follows: 'In using the present tense in speaking of future events one disregards, as it were, the uncertainty always connected with prophesying, and speaks of something, not indeed as really taking place now, but simply as certain.' In other words, the 'futurate', in contrast to the 'future', appears to express a statement rather than a prediction (Boyd & Thorne 1969, cited in Fleischman 1982: 92–93).

This idea has also been expressed in terms of 'programmes', 'schedules', and 'plans'. For example, Palmer (1924: 144; cited in Jespersen 1931: §2.4(1)) claims that the 'futurate' is used when 'a future action is considered as part of a programme already fixed'. McGilvray (1991: 42) claims, similarly, that it involves a 'schedule' — although he adds that this schedule need not be one that anyone anywhere 'has the power to change'. This qualification, which suggests that the notion of 'schedule' should not be taken literally, accords with various recent remarks about the construction. One of these is Fleischman's (1982: 181, n. 61) claim that 'the notion of a plan' is too restricted to subsume all of the contexts in which the 'futurate' may be used; and that what is significant 'is not so much the objective existence of a plan, but the speaker's belief that the future event can be entirely determined by present circumstances.' Another is Rigter's (1986: 125) (closely related) claim that the construction is used when a speaker 'is talking about the way his world is organized in the present.'

---

the 'present' or 'future' tense would be used). However, once we do construct such a context (no mean feat), the acceptability of the sentence greatly improves:

(ii) As of Friday, the Canadiens were in New York tomorrow, but now it looks like they're there on Thursday.

Replacing the copula with an 'eventive' verb in the 'progressive' form (which, as we shall claim below, has essentially the same tense structure) improves the sentence's acceptability even more:

(iii) As of Friday, the Canadiens were playing in New York tomorrow, but now it looks like they're playing there on Thursday.

Given these facts, it seems reasonable to reject Hornstein's claim. (See chapter 3 for a more detailed discussion of these issues.)

It should be noted that the 'present progressive' may also have a 'futurate' reading, as shown in (67):

(67) John is arriving tomorrow. (Huddleston 1977: 730, (3))

However, it has been claimed, in Huddleston 1977 and elsewhere, that examples of this kind are not 'futurates' at all, but rather instances of the gerundial 'future complement' construction, just like the sentence given in (68):

(68) I intend finishing it by lunch-time. (ibid., (2))

In other words, what appear to be 'progressive' forms in sentences like that in (67) are, in fact, concatenations of main verb *be* and a gerundial form, and thus instances of the gerundial counterpart of the infinitival complement construction illustrated in (69):

(69) John is to arrive tomorrow.

Huddleston's claim is motivated by certain asymmetries between the 'simple present futurate' and its 'progressive' counterpart. Perhaps the most compelling of these is the optionality of modification by a temporal adverbial in the former but not the latter construction, as shown in (70):

(70) a. John is leaving by train. (Dahl 1992: 648, (9))
b. John leaves by train.

The sentence in (70b), lacking a future-time-denoting temporal adverbial, is not amenable to a 'future-event' reading, as we have already suggested. In contrast, (70a) appears to be 'ambiguous between an ongoing interpretation with present-time reference' — an interpretation 'typical of the progressive in nonfuture contexts' — 'and an aspectually neutral interpretation with future-time reference' (Dahl 1992: 648).

Curiously, though, the 'ongoing process' reading of the 'progressive' is in complementary distribution with the 'future-event' reading, even though there appears to be no incompatibility between them — as suggested by the existence of 'future progressive' forms. This gives us some reason to doubt that this structure is not simply a 'progressive'. Further doubts arise from the observation that the ambiguity found in the sentence in (70a) does not emerge in other sentences that are similar in structure, such as those in (71), even when such sentences are clearly able to bear 'futurate' readings:

(71) a. We are eating dinner.
a′. We are eating dinner at six.
b. Seth is working.
b′. Seth is working tomorrow.
c. Bruno is building his dream home.
c.′ Bruno is building his dream home next year.

The availability of this reading without an explicit temporal adverbial appears to be based on independent factors — more specifically, the lexical properties of the main verb and the 'situation' described by the VP. As the sentences in (72) suggest, this reading emerges quite clearly with VPs that describe paths to some explicit or implicit goal (although this goal, it seems, must be at least contextually established for the reading to be available); or with those that commonly describe some 'scheduled' duty or activity (although again context is crucial in making this reading available).

(72) a. Trish is driving the car (to Montreal).
b. Joe is taking the train.
c. Chester is doing the laundry.

As it happens, the evidence that Huddleston (1977: 733) adduces in support of a distinction between 'progressive' and 'future complement' constructions does not appear very robust. His evidence takes the form of a contrast in the interpretation of these two sentences:

(73) a. We are meeting Max at 3:00.
b. We are still interviewing students at 3:00 — the last isn't due until 3:30.
(Huddleston 1977: 733, (14)–(15))

While the contrast itself is clear — (73a) has the nonaspectual 'future-event' reading and (73b) the 'ongoing process' present reading that we saw in (70) above —, it is not obvious that it should be attributed to structural ambiguity. The latter reading is more plausibly due to the presence of *still* rather than to any such ambiguity, since it becomes unavailable once this adverbial is absent, and the 'futurate' reading reasserts itself (in which case the speaker's afterthought becomes pragmatically odd, hence the marginality of the resulting sentence):

(74) ?? We are interviewing students at 3:00 — the last isn't due until 3:30.

All of these considerations call into question the existence of a distinct 'future complement' construction, and suggest that the observed differences between 'simple' and 'progressive' 'futurates' should be attributed to the differences between 'simple' and 'progressive' forms themselves.

The question then, of course, is how to explain the former differences in terms of the latter. Perhaps the most significant difference to be explained is that demonstrated in the following pattern of acceptability:

(75) a. The sun sets at 8:39 tomorrow.
b. ?* The sun is setting at 8:39 tomorrow. (Huddleston 1977: 731–32, (9))

(76) a. ?* I go out with Wanda June tomorrow.
b. I am going out with Wanda June tomorrow. (based on ibid., (10))

(77) a. ?* I see Robert this evening.
b. I am seeing Robert this evening. (ibid., (11))

This pattern — which admits of some variability, one member of each pair being merely odd for some speakers but completely unacceptable for others (see ibid., 731–32) — has commonly been described in terms of the relevance to the 'progressive' but not the 'simple' construction of 'human agency' in determining the future 'situation' in question (ibid.). Thus, 'other things being equal, the progressive is more likely... to suggest intention, initiation, or control by the subject' (ibid., 732). Accordingly, the sentence in (75b) is odd because 'it seems to suggest some departure from the expected timing' (ibid., 731). Conversely, those in (76a) and (77a) are odd because they suggest the respective speakers' lack of control over the 'situations' described, contrary to our assumptions about such 'situations'.

In fact, the analysis of the 'progressive' canvassed in §1.2.3 gives us a natural way to capture these observations, if we assume that this form serves the same function in this construction that it does in the ones that we examined earlier: namely, that of 'focussing' on an individual at 'R'.[61] This 'focussing', we suggested, was behind the effect of 'instability' that we observed with many 'progressive' constructions — in particular the 'progressivized statives' which presented such difficulties for analysis. Accordingly, we might say that a similar 'instability' characterizes 'progressive futurates', and thus makes them acceptable only in the description of 'situations' whose

[61] Because of the way that we shall be analysing the 'futurate' below — namely, as expressing 'S,R' and 'R-E' — it is necessary to revise our claim that the 'progressive' specifies an inclusion relation between 'R' and 'E', since in this case (as well as in the case of the 'perfect' forms) 'R' and 'E' do not coincide. Let us say, then, that the relation specified by the 'progressive' is one in which 'R' is less than or equal to 'E'.

coming to pass can be taken to depend upon human agency, and is thus not completely fixed and immutable. Conversely, those 'situations' that cannot be understood in this way will strongly resist the 'progressive' version of the 'futurate', and require the 'simple' version. Such an account of the two versions seems to accord well with the above patterns; in addition, it suggests why some 'situations' can be acceptably described with either the 'simple' or 'progressive' version of the 'futurate', while others cannot:

(78) a. The train leaves at 8:39.
b. The train is leaving at 8:39.

(79) a. The sun sets at 8:39.
b. * The sun is setting at 8: 39.

The reason is a simple one: a 'situation' like that described in (78) can be conceived of either as more or less fixed by schedule, or as more or less subject to human and other variables. In contrast, a 'situation' like that described in (79) is not taken to admit of such variability, but to be the result of highly stable and predictable properties. The kinds of considerations that we have invoked in describing the use of these two different versions of the 'futurate' clearly make the choice between them a matter of acceptability, rather than of grammaticality — a conclusion which is consistent with the attested variability in judgements about these sentences.

Given the foregoing discussion, it seems reasonable to treat this 'progressive' construction as a variety of the 'futurate', whose attested differences from the 'simple' version can be attributed to those between 'simple' and 'progressive' verb forms generally. Accordingly, we can conclude our excursus into this distinction, and return to the analysis of the 'futurate' construction itself.

1.2.5.1. Derivational accounts

Given the properties of the 'futurate' as outlined above, it appears that a basic goal in the analysis of this construction is to account for its 'dual' nature — that is, for its ability to refer somehow both to the present and to the future. Perhaps the most common approach to this construction in the literature has been a derivational one, which has taken various forms. One, proposed by Lakoff (1971) and others, posits an auxiliary *will* in the underlying structure of simple tense 'futurates', which is subject to a rule of '*Will* Deletion' if 'the event is one that the speaker can be sure of' (Lakoff 1971: 339). Another, proposed by Jenkins (1972), posits a rule of '*Will* Interpretation' to achieve similar results.

A third, proposed by Hornstein (e.g. 1977, 1990), is technically and conceptually more sophisticated, one result of an ambitious programme (described briefly in chapter 1) of giving an explicitly derivational account of tense behaviour in 'Reichenbachian' terms. Hornstein (1977) grounds this derivational approach in the following claim, based on remarks in Braroe 1974, which he dubs 'Braroe's Principle':

> If a sentence has a reading with a certain adverb it does not mean that the sentence can have that meaning without the adverb. It is not the case that the sentence is ambiguous and that the time adverb simply focuses on one reading thereby resolving an ambiguity. Rather, the time adverb adds meaning that was not there before.
>
> (Hornstein 1977: 524–25)[62]

This claim reflects an approach to tense which will be at the core of this study — one according to which the temporal interpretation of expressions involving tenses and temporal adverbials involves the active participation of both of these elements, such that neither is merely 'anaphorically' related to the other. However, Hornstein's interpretation of 'Braroe's Principle' in derivational terms is only one possibility, and one which suffers from many weaknesses, as we shall see below.

His claim, as illustrated below, is that the 'futurate' reading of the present tense arises from a modification of its 'basic tense structure' (BTS), 'S,R,E', by a future-time-denoting adverbial, in accordance with his 'Constraint on Derived Tense Structures' (CDTS), which we discussed in chapter 1. This results in the 'derived tense structure' (DTS) 'S-R,E', which is identical to the 'BTS' of a future tense:

(80)

John is leaving		tomorrow	John is leaving tomorrow
S,R,E	————>		S-R,E | tomorrow

(based on Hornstein 1990: 19, (24))

Hornstein's analysis thus departs from others in that the tense in these 'futurate' constructions is really 'present', and not 'underlyingly future'. As such, it derives the 'future event' reading of the 'futurate' in a manner compatible with the insights of 'Braroe's Principle'.

---

[62] Hornstein makes the same point in his 1990 study: 'It is important to remember that adding adverbs adds interpretations not available without them. Thus, adverbs do not simply bring out interpretations that are there; they make available interpretations that are absent without them' (ibid., 224, n. 37).

However, two observations about 'futurate' constructions which Hornstein overlooks present problems for this analysis, given that it requires the presence of a future-time-denoting adverbial to allow the relevant modification of a 'present' tense structure. One, which we have already seen, is that 'progressives' can bear a 'futurate' reading without any adverbial modification. Since we observed that a 'futurate' reading emerges in these cases only if there is a contextually-established future time, we might think of these cases as involving a kind of ellipsis. The other problem, which does not have such an obvious solution, is that 'futurates' may be constructed not only from inherently future-denoting adverbials like *tomorrow*, but also from those like *on Tuesday*, which may denote contextually determined future 'situations'. Since the latter are not lexically specified as future-denoting adverbials, but may, like other 'context-dependent calendar names' (Kamp & Reyle 1993: 614), denote virtually[63] any contextually-relevant interval that has this name, it is not obvious what would qualify them to perform the modifying task in question.

Far more damaging to Hornstein's analysis, though, is its claim that modification of the 'Reichenbachian' structure of the 'present' tense makes this structure indistinguishable from that of a 'base-generated' 'future' tense. Such a claim is, of course, at odds with the characterization of the 'futurate' given earlier, according to which it describes the speaker's world '[as] organized in the present' (Rigter 1986: 125), by describing a future 'situation' 'entirely determined by present circumstances' (Fleischman 1982: 181, n. 61). In fact, there is good evidence that the 'futurate' does have such temporal properties, which are substantially different from those of the 'future'. This evidence includes the following contrasts, adduced by McGilvray (1991: 40–41):

(81) a. * George loses tomorrow. [except if the match he is playing is fixed]
a′. George will lose tomorrow.
b. * The car misfires tomorrow.
b′. The car will misfire tomorrow.
c. * The rock falls tomorrow.
c′. The rock will fall tomorrow.

(82) a. * George is losing tomorrow.
a′. George will be losing tomorrow.
b. * The car is misfiring tomorrow.
b′. The car will be misfiring tomorrow.
c. * The rock is falling tomorrow.

[63] This ability is subject to certain restrictions, as Kamp and Reyle (1993: 614–20) observe.

c'. The rock will be falling tomorrow. (based on ibid.)

These contrasts are readily accounted for if present 'futurates', unlike 'future' tense constructions, acceptably describe only situations that can be 'determined by present circumstances'. Since none of the situations described here can do so — except, tellingly, the match-fixing 'situation' that is a possible interpretation of the sentence in (81a) — the 'futurate' sentences are all ruled out. In contrast, the sentences with 'future' tense forms, which only make predictions about the 'situations' in question, are all perfectly acceptable.

One could try to blunt the effect of these examples by claiming, as some authors have (see e.g. McGilvray 1991: 42, 331, n. 26 for references), that the felicitous use of the 'futurate' crucially depends on the future 'situation' being a likely one. But this qualification is still unable to rescue the analysis, since 'futurates' can be 'hedged' (ibid., 42), as the sentences in (83) demonstrate:

(83) a. The Celts {play / are playing} tomorrow at 3:00, I {guess / think / believe}.

b. The train {leaves / is leaving} at 4:00, I {guess / think / believe}.

c. The President of Mars {delivers / is delivering} his speech tomorrow, I {guess / think / believe}.

(based on ibid., 42)

This shows quite clearly that the likelihood of a 'situation' is not relevant to the acceptability of the 'futurate'.

The only reasonable conclusion to be drawn from such evidence is that derivational accounts of the 'futurate' — which attempt to derive its properties from those of the 'future' tense, either by a process that transforms an 'underlying future' tense into a 'present', or through one that transforms the temporal structure of a 'present' tense into that of a 'future' — are empirically inadequate, since they can account neither for the subtle interpretative properties of this construction nor for its distribution.[64] Of course, any claim that one tense is transformed into another under

[64] Similar comments apply to another analysis of 'present'-tensed 'futurate' constructions, that found in Smith 1978, which takes them to have a future 'R', and thus suffers from the same empirical difficulties as the analyses described here.

certain conditions raises an important question: namely, why the grammar would underwrite such an obscuring of meaning, which has no obvious systemic motivation and substantially increases its complexity. If, in this case, 'present futurate' constructions were essentially equivalent to their 'future' tense counterparts, it is natural to ask why they would persist in the language. The most obvious answer, as we have already seen, is that they are not equivalent, and that their apparent synonymy disappears under close enough scrutiny.[65]

1.2.5.2. 'HIDDEN' STRUCTURE

Another attempt to account for the 'futurate', as presented in McGilvray 1991: 40–42, involves the positing of 'hidden' semantic structure — that is, structure not derivable from the properties of the syntax alone — as a means of reconciling the observed form and meaning of this construction. The claim of this analysis, more specifically, is that the 'present futurate' is, semantically speaking, a complex sentence, which consists of a 'present'-tensed matrix clause, accordingly specified 'S,R,E', and an embedded infinitival whose 'R' is specified by a future-time-denoting temporal adverbial. This is illustrated in (84):

(84) a. George is arriving tomorrow.
b. 'George is planning to arrive tomorrow.'
S,R,E R,E

Taking the paraphrase given in (84b) 'as a better rendering of the original sentence' given in (84a) certainly give us a clearer picture of the meaning of this 'futurate', thereby lending credence to McGilvray's claim. Yet an inevitable difficulty with this approach is that it provides no obvious means to relate the syntactic structure of 'futurates' to the semantic structure being posited, and as such cannot help us to understand how these sentences come to bear a 'futurate' meaning. This general empirical difficulty is associated with a number of more specific ones, arising from the claim that the main verb in the syntactic structure of these sentences is mapped to an infinitival verb form in their 'elaborated' semantic structure. The difficulties in question, then, are related to the properties of the main verb that must in turn appear in the finite clause of the latter structure. Since, as McGilvray notes, such a verb is liable to a range of paraphrases, including 'intends to', 'is preparing to', 'is in the process of', and probably also is 'scheduled to', we are left with two possible ways to characterize it: either to posit an 'abstract' verb, whose meaning is sufficiently underdetermined to

[65] We shall have occasion in chapter 3 to consider this issue further.

encompass every instance of this construction; or to posit a number of possible main verbs, corresponding to the range of readings available to it. Neither of these solutions is very satisfying, since neither gives us good reason to believe that such a verb is not an artefact of the analysis, serving only to bear a tense and to select an infinitival complement. The latter solution is even less satisfying than the former, since its appeal to a specific verb places it at odds with our intuition that the 'futurate' leaves the nature of this 'understood' verb indeterminate, as McGilvray's various paraphrases suggest. To the extent that a given instance of the 'futurate' does make any of these more salient than the others, this seems most plausibly attributed to the situation described by the 'surface' VP, together with context, rather than any additional factors. These considerations lead us to conclude that McGilvray's account of the 'futurate' is best seen as a description of 'what' it means, rather than 'how' it means.

The question, then, is how we might preserve McGilvray's insights without recourse to such 'hidden' structure. One natural way to do so, consonant with the approach to tenses that we have been canvassing throughout this chapter, is to propose that the ability of 'futurate' constructions to describe situations posterior to 'R' is due to the function of tenses to specify the 'SR' but not the 'RE' relation. The 'lexical indeterminacy' of the latter relation thus leaves it to be specified by the temporal adverbial that is part of this construction. In this fashion, the present 'futurate' construction comes to express the 'tense' relation 'S,R' and (what McGivray calls) the 'descriptum' relation 'R-E'. (Similar comments apply to the past 'futurate', modulo the difference in 'R'.) As it happens, such a proposal has already been made by Rigter (1986: 125). We shall be exploring a specific syntactic implementation of this proposal, which makes use of a 'linking' device, in §3.

1.3. 'PERFECT' FORMS

In the preceding sections, we examined the interpretation of the 'present' and 'future' tenses in a number of constructions, exploring the claim that these tenses specified only a relation between 'S' and 'R', and left that between 'E' and 'R' free to vary.[66] Not only was this claim consistent with a substantial range of data, but it also permitted a unified analysis of each tense, and was thus able to avoid problematic appeals to homophonous tense forms. In this section, we shall seek to apply this general approach to an analysis of the 'perfect' tenses, whose varied interpretations have commonly led to claims of ambiguity. Such claims, as we shall see, have been effectively countered by researchers who have pointed to the rôle of adverbials, 'situation' type, and context in creating the variety of interpretations to which sentences containing 'perfect' forms

[66] This claim has also been investigated extensively by Klein (1992, 1994).

are liable. Attention to these factors will set the stage for a unified analysis of these forms, which, like the analyses of 'present' and 'future' tenses already offered, will make substantial appeal to their temporal indeterminacy. Such an analysis will also help us to explain a cluster of puzzles associated with restrictions on the adverbial modification of 'present' and 'past' perfect forms.[67] While our discussion will focus on these two 'perfect' forms, we shall also see that it applies similarly to 'future', 'conditional', and non-finite 'perfects'.

1.3.1. The interpretation of the 'present perfect'

Let us begin with the 'present perfect', whose peculiar temporal properties have attracted the most linguistic attention. Much of this attention has been devoted to a consideration of the various readings that it bears, and whether these should be taken to signal its ambiguity or indeterminacy. One of the most commonly cited defences of the former view is McCawley 1971. McCawley adduces the following four readings for the 'present perfect': (i) 'universal', which 'indicate[s] that a state of affairs prevailed throughout some interval stretching from the past into the present'; (ii) 'existential', which 'indicate[s] the existence of past events'; (iii) 'stative', which 'indicate[s] that the direct effect of a past event still continues'; and (iv) 'hot news', which 'report[s] hot news' (McCawley 1971: 104). These are illustrated respectively in (85):

(85) a. I've known Max since 1960.
b. I have read Principia Mathematica five times.
c. I can't come to your party tonight — I've caught the flu.
d. Malcolm X has just been assassinated. (McCawley 1971: 104, (31)–(34))

McCawley claims that these readings reflect a true ambiguity in the meaning of the 'present perfect', and is each associated with a distinct underlying structure[68] — the first two reading involving universal and existential quantification, respectively; the third involving a representation that expresses 'the direct result of ___ continues'; and the fourth again existential quantification, with some restriction on the range of the quantifier based on the speaker's 'estimate of his addressee's presuppositions' (ibid., 105, 108–9).

Few researchers today would accept McCawley's claim that these occurrences of the 'present perfect' should each be assigned a distinct structure. The 'hot news' use, in

[67] There are also many more issues pertaining to the 'perfect' forms which we shall not be addressing, such as the subtle difference in use between the 'present perfect' and the 'simple past'. (On this, see e.g. Declerck 1991: 326–27, 338, 346.)

[68] Note that McCawley's 'generative semantic' analysis takes syntactic representations to be derived from semantic ones.

particular, is rarely acknowledged as a distinct reading, but has been seen, following McCawley's own suggestions (see ibid., 109), as a particular instance of the 'existential' reading, which arises when the 'event' described represents 'new information' and has occurred very recently (Declerck (1991: 329, n. 41). Yet McCawley's other categories still figure, under different terminological guises, in much recent discussion of the 'present perfect'. Accordingly, what McCawley calls the 'universal', 'existential', and 'stative' meanings of this form are more commonly known as 'continuative', 'indefinite', and 'resultative', respectively.[69] We shall be considering these readings in more detail below. What we shall find is that they, too, can be accounted for in terms of factors associated with, but independent of, the 'perfect' form itself. McCawley's distinctions will thus collapse, revealing the possibility of a unified treatment for this form.

1.3.1.2. 'RESULTATIVENESS' AND 'CURRENT RELEVANCE'

Two claims about the 'present perfect' recall the use that McCawley (1971) identifies as 'stative'; these are that its basic meaning is to indicate that a past 'situation' has 'current relevance', or produces some 'result' (see e.g. Zydatiß 1978: 358, n. 13 for references). These two claims are closely related, since, as Vlach (1993: 269) points out, '[p]robably the most typical way for a sentence that reports a past eventuality to be relevant to the present is for the consequences of the past eventuality still to hold at the present time.' Despite the ability of these notions to elucidate many uses of the 'present perfect', there are compelling reasons for treating them as inferences from these uses, rather than as 'inherent part[s] of the meaning' of the 'present perfect' itself (Declerck 1991: 325); and thus for excluding them from a characterization of this form.

One of the most basic reasons for doing so is that neither notion is well enough defined to have much explanatory value (Salkie 1989: 11, n. 3). As Declerck (1991: 325) points out, 'resultativeness' is such an amorphous notion that a sentence like that in (86) can be seen to have any number of 'resultative' interpretations, all predictable from context rather than from the meaning of the sentence itself:

(86) They've fallen into the river. (Declerck 1991: 325)

These interpretations might include 'Please help them', 'That's why they're soaking wet', 'That's how they got pneumonia', and 'That's why they're late'. The availability

[69] For example, Michaelis (1994: 113) claims that the 'present perfect' 'is polysemous in much the same way that words may be polysemous: a single form has several related meanings'. While we shall not be examining Michaelis' (1994) study in any detail here, we might note only that its offers little reason to believe that the various uses of the 'present perfect' require a description in terms of distinct syntactic or semantic structures for the 'present perfect' itself.

of such a range of interpretations could be taken to suggest only that the meaning of the 'present perfect' is highly context-dependent, functioning essentially 'as an instruction for the hearer to interpret the situation referred to as having some result', based on both discourse and extralinguistic context. Nevertheless, such a definition of 'resultativeness' is so weak that it seems an implausible candidate for 'the core meaning of the perfect' (ibid.).

Similar comments apply to a definition of the 'present perfect' couched in terms of 'current relevance' — which, as Declerck (1991: 340) notes, 'was initially introduced to account for the fact that the present perfect often yields a resultative interpretation.' Unfortunately, given the difficulties associated with 'resultativeness' itself, the promotion of 'current relevance' to the status of a 'basic aspect of the meaning' of this form has inevitably led to its 'complete erosion' as a concept. Research that has sought to understand 'current relevance of a past stituation' broadly enough to cover all of the uses of the 'present perfect' has resulted in criteria with little empirical content. For example, Palmer (1974: 50) claims as the criterion for 'current relevance' that 'in some way or other (not necessarily in its results) the action is relevant to something observable at present.' Dowty (1979) claims, similarly, that the criterion is that 'the event described has some relevance or other to the present context, the nature of which is to be inferred entirely from contextual factors.' Of course, such notions of 'current relevance', as many studies have pointed out, apply to any sentence in a discourse, whether or not it contains a 'present perfect' form , given Grice's (1975: 45) 'Maxim of Relation', which requires a coöperative speaker to make his or her conversational contributions relevant. Thus, if a contribution cannot be taken as 'relevant to the present context', then the maxim has not been observed (Declerck 1991: 340).

Admittedly, many sentences with 'present perfect' forms do suggest a much narrower range of 'relevant' inferences than that given in (86). Among them are the sentences in (87), adduced by Zydatiß (1978: 358–59):

(87) a. Elizabeth Taylor has smiled for the first time since her divorce from Richard Burton.
a′. ∴ She must have another lover.
b. Mr Podgorny has visited Tanzania this week
b′. ∴ The political influence of the Soviet Union in Africa is growing.
c. I've finished my work
c′. ∴ Now I can rest. (Zydatiß 1978: 358, (65), (65), (66), (66), (68))

It seems quite clear, though, that the inferences that follow from these sentences are still only pragmatic ones,[70] much like those that we enumerated for the sentence in (86). The only difference here is that context plays a more effective rôle here in delimiting the range of reasonable inferences.

There is still another class of sentences in which a sense of 'resultativeness' can plausibly be seen to follow from their semantic properties. Zydatiß (1978: 358) offers the following examples of such sentences:

(88) a. Climbing Ben Nevis has exhausted Dave.
a'. ∴ Dave is exhausted now.
b. Bob has walked to the station.
b'. ∴ Bob is at the station now.
c. He has broken the chair.
c'. ∴ The chair is (still) broken.
d. Mary has knitted a sweater.
d'. ∴ A sweater now exists. (ibid., 358–59, (63), (64), (67), (56))

These sentences, Zydatiß (ibid., 358) notes, can all support a description like 'the present state is the result of an action in the past'. It seems clear, however, that this sense of 'result' is not due to the contribution of the 'present perfect' itself, but to the kinds of 'situations' that these sentences describe. They are all ones in which some 'inherent or intended endpoint' (Depraetere 1995: 3) has been reached — those, in other words, that are both 'telic' and 'bounded'. The relevance of each of these properties can be seen from the loss of a 'resultative' sense when either property is absent, as demonstrated by the following sentences (Declerck 1991: 343–44; Zydatiß 1978: 359):

(89) a. Mary has knitted $\left\{\begin{matrix}\text{this (type of) sweater} \\ \text{sweaters}\end{matrix}\right\}$ for five years.

(Zydatiß 1978: 357, (61))

b. Mary has been knitting this sweater for weeks.

(90) a. Bob has walked for four hours.
b. Bob has been walking to the station.

These sentences in (89) describe 'situations' that are either 'unbounded' and 'telic' ((89a–b), (90a)) or 'bounded' and 'atelic' ((90b)). In no case does any obvious 'result'

[70] I thus use the '∴' only for sake of convenience.

follow from the 'situation' described: no particular sweater that Mary has made now exists, and Bob has not necessarily reached any destination.

Declerck (1991: 325–26) offers similar evidence to demonstrate that 'resultativeness' cannot be 'an inherent part of the meaning of a perfect that is interpreted as resultative'. This is that sentences that explicitly deny an expected 'result' are acceptable unless the 'situation' being described is understood to be irreversible:

(91) a. * He has broken the chair, but now it's not broken.
b. ? Lazarus has died, but now he's alive.
c. I have closed the door, but now it is open again. (ibid., 325–26)
d. She has already told me his name, but I have forgotten it. (ibid., 343)

In fact, many sentences with 'present perfect' forms suggest 'no clear sense of resultativeness' (ibid., 325). Some examples of these, adduced by Declerck, are given in (92):

(92) a. I have never heard such nonsense before.
b. These forks have been ours, they have been my cousin's, and now they belong to you.
c. Some people have been reluctant to believe this, but everybody certainly believes it now. (Declerck 1991: 325, (28))

These considerations strongly suggest, then, that the sense of 'result' or 'current relevance' associated with many instances of the 'present perfect' cannot be considered part of the meaning of the verb form itself. This conclusion is given further support from the observation that simple 'past'-tensed sentences like the following ones may also imply that the 'situations' that they describe have some 'result' or 'relevance':

(93) a. It rained hard all last night. (Declerck 1991: 325)
b. Take a nap, Allen. You didn't sleep much last night.
(Vlach 1993: 269, (57))

The sentences lead us to the respective inferences that the earth is now wet, and that Allen is now tired. However, these inferences, like those associated with many 'present perfect' sentences, are simply pragmatic ones, based on the nature of the 'situations' described by these sentences, and the present focus of the discourses in which they are embedded (Declerck 1991: 325; Vlach 1993: 269).

It is clear, then, that the sense of 'resultativeness' or 'current relevance' that frequently accompanies the 'present perfect' should be seen as no more than a natural

accompaniment to its meaning. As such, it should play no integral part in the analysis of this form (Salkie 1989: 6; Vlach 1993: 268).

1.3.1.3. 'CONTINUATIVE' AND 'INDEFINITE' READINGS

Another claim about the 'present perfect' is that it may bear either an 'indefinite' or a 'continuative' reading. These correspond, respectively, to descriptions of 'situations' as holding entirely before 'S' and as still holding at 'S'; and thus to 'bounded' and 'unbounded' readings, since the former 'situation' is seen as complete, while the latter is seen as incomplete or 'in progress' (Declerck 1991: 324). The difference in question can be seen quite readily in the following sentence, which bears both readings:

(94) John has lived in Paris for four years. (Declerck 1991: 340)

This sentence may mean either that John spent some four-year interval living in Paris, and no longer lives there (the 'indefinite' reading); or that John has spent the past four years living in Paris, and still does (the 'continuative' reading).

The distinction between these two readings, which is a traditional one (see e.g. Zydatiß 1978: 339 for references), has generally been couched in terms of an ambiguity in the 'present perfect' form. However, such a description of these readings has been called into question by a number of studies, which have argued that these two 'meanings', just like the ones discussed in §1.3.1.2, are associated with particular (contextually-dependent) sentences containing 'present perfect' forms. As such, they should not be taken to signal an ambiguity in the form itself, which is properly seen to '[express] no more' than that a given situation 'is located somewhere' in the interval that continues up to 'S'. The emergence of one or the other reading thus depends only whether this interval does or does not include 'S' (ibid., 339).

Of course, this still leaves us with the question of what gives rise to the inclusion or exclusion of 'S' in this interval, and thus to the two readings described. According to Zydatiß (1978), these readings are not a matter of ambiguity, lexical or structural, since linguistic factors independent of the 'present perfect' either determine a particular reading for a sentence that contains this form, or simply leave the sentence indeterminate between the two readings, so that the choice between them is determined by context. Of these linguistic factors, the most important are temporal adverbials and the various determinants of a sentence's aspectual properties, which conspire to produce the range of interpretations that we observe with this form. For example, 'eventive' sentences like those in (95), which are 'telic' by virtue of the lexical properties of their respective verbs and the particular arguments that these verbs take,

and 'bounded' by virtue of the verbs' simple forms, can only be interpreted as complete at time of speech, and accordingly receive 'indefinite' readings:

(95) a. Mary has knitted a sweater. (= (88d))
b. The IRA have assassinated Enoch Powell. (ibid., 357, (62))

That such sentences can receive only this kind of reading is highlighted by two observations, as illustrated in the examples below. One is the unacceptability of continuing the 'bounded telic' sentence in (95) in either of the ways given in (96), since the former creates a contradiction and the latter a tautology (ibid., 356). The other is the contrast in the acceptability of *for*- and *in*-adverbials with such 'bounded telic' sentences, as demonstrated in (97); this is because the former type of adverbial is compatible only with 'bounded' situations and the latter only with 'unbounded' ones (see e.g. Verkuyl 1989: 50–51):[71]

(96) Mary has knitted a sweater, { * and she is still knitting at it / * but she isn't knitting it any more }.
(ibid., 356, (57))

(97) Mary has knitted a sweater { in five days / * for five days }.
(based on ibid., (58))

Note, however, that counterparts of these sentences with different aspectual properties display a different pattern of readings and possibilities for adverbial modification. For example, 'telic' sentences that are 'unbounded' by virtue of their 'progressive' verb forms, like those in (98), generally receive 'continuative' readings;[72] while sentences

---

[71] Although Verkuyl (1989: 50–51) notes that there are certain difficulties associated with the use of the '*in*-adverbial' diagnostic, these do not arise in the case of a 'telic' sentence with an 'agentive' subject, like that given in (97).

[72] Zydatiß (ibid., 359) claims that 'telic' sentences with 'progressive' forms are always 'unbounded', so that '[w]ithout additional contextual information', a sentence like that in (i) 'is ambiguous as to the [indefinite] or continuative interpretation':

(i) Mary has been knitting a sweater, { and she still is / but now she isn't any more }.

While the continuations given in (i) are both clearly unacceptable according to my own judgements and certain other speakers of North American English whom I have consulted — resulting, respectively, in a tautology and a contradiction, just like the continuations given in (96) —, they have been confirmed by native speakers of British (more specifically, Scots) English (Sheila Glasbey, personal communication), suggesting a dialectal difference in the interpretation of 'progressive' forms of the 'present perfect'. (Just what the relevant dialects are, however, is not yet clear, since some speakers of

like those in (99), which, by virtue of their indefinite NP objects, are 'atelic' as well as 'unbounded', preserve their 'indefinite' readings. Both types of 'unbounded' sentences are nevertheless compatible with *for*-adverbials, which generally lead to a 'continuative' reading,[73] as suggested by the examples in (100)–(101):

(98) a. Mary has been knitting a sweater.
b. The IRA have been destroying the Empire.

(99) a. Mary has knitted sweaters.
b. The IRA have assassinated all sorts of people.

(100) a. Mary has knitted sweaters for years.
b. The IRA have assassinated all sorts of people for years.

(101) a. Mary has been knitting a sweater for two days. (based on ibid., 359, (71))
b. The IRA have been assassinating all sorts of people for years.

'Process' and 'stative' sentences with 'present perfect' forms display a rather different pattern of readings, largely because most occur most naturally with durational adverbials and are generally rather odd without them. However, to the extent that these 'unmodified' sentences are acceptable, they appear to receive only an 'indefinite' reading, much like 'telic' sentences:

North American English whom I have consulted have also accepted these continuations. An identification of them must therefore await further investigation.)

It should be noted that both interpretations of this form can be accounted for in terms of the analysis of 'progressive' forms that we canvassed in §1.2.3, according to which the 'progressive' specifies that 'R' is less than or equal to 'E'. Since the 'progressive' has the effect of 'focussing' on an individual at 'R', and 'R', in the case of the 'present perfect', coincides with 'S', the communicative relevance of this 'focussing' lies in the implication that 'E' extends beyond an instant in the past — although the interval described by 'E' may extend to the time of speech itself, as in (some varieties of?) North American English, or may remain unspecified, as in the British English reflected in the sentence in (i).

[73] These 'unbounded' sentences appear to be subject to the same dialectal difference described in the previous note. Notice, in addition, that an 'indefinite' reading of the sentences in (100)–(101) is also possible even for those speakers who do not take these 'unbounded' sentences to be generally indeterminate between 'continuative' and 'indefinite' readings. The reason is that the durational '*for*-adverbial' cannot by itself indicate that the 'situation' leads up to 'S', and should thus be compatible with either 'indefinite' or 'continuative' readings (Zydatiß 1978: 345). The two readings in question (which also occur with 'atelic' sentences) are captured by the sentences in (i):

(i) a. Mary has knitted sweaters for years now.
b. Mary has knitted sweaters for years in the past (but no longer does so).

We shall be returning to the question of how these adverbials license both readings in the discussion below.

(102) John has run,

a. * and he is still running.

b. * but he isn't running any more. (based on ibid., 344, (12)–(13))

(103) a. ? The Buddha has stood on the mantelpiece.

b. John has lived in London.

c. ? Dave has {wanted / owned} a Jaguar.

d. ? Mary has known the truth. (ibid., 351, (40))

e. Seth has been sick.

When such sentences do contain durational adverbials, they tend to receive a 'continuative' reading. This reading may be forced in the case of sentences containing elements that make explicit reference to the interval stretching up to 'R', as in (104), or of those that describe irreversible 'states', as in (105b'). Otherwise it may simply be contextually salient, if the 'situation' in question 'is overtly observable' as still holding at the time of speech (ibid., 345, 347-49):[74, 75]

---

[74] While the 'continuative' meaning does seem possible here, it is more commonly expressed by means of a 'perfect progressive' form.

[75] Zydatiß (1978: 347–48) claims that 'the way the state situation is conceptualized by the speaker' also influences the choice between 'continuative' and 'indefinite' readings. He bases this claim on contrasts like the one between the sentences in (i) and (ii) (in addition to the 'irreversible state' sentence given in (105b')):

(i)

Dave has owned a Jaguar since he won in the pools / up to now,

{* but now he doesn't any more / and despite the cost of petrol he intends to keep it in the future too}.

(ii) I have owned a Volkswagen at least twice since 1970 but I don't have one now. (ibid., 348, (23)–(24))

He argues that the 'state' described by the sentence in (i) is conceptualized as 'unbroken', and as such suggests a 'continuative' reading; while that described by the sentence in (ii) is conceptualized as 'reversible' and hence 'repeatable', and as such suggests an 'indefinite' reading. It is not obvious, however, that an account of the respective interpretations of these sentences need make any appeal to differences in the conceptualization of the respective 'states' that they describe, since these differences correspond directly to the presence in the latter but not the former sentence of a frequency adverbial, which itself indicates the possibility of a 'repeated' state. This is clearly demonstrated by the sentence in (iii), in which a frequency adverbial imposes a 'repeatable state' reading on a predicate generally taken to describe an irreversible 'state':

(iii) My father has been dead at least twice since 1970.

(104) a. David has run {for two hours now / for the last two hours}.

b. Bob has loved Mary {ever since he met her / for the last / past five months}.

(ibid., 344, (14), 347, (22))

(105) a. David has run for two hours.

b. The window has been broken for a week.

b′. My father has been dead for many years.

(ibid., 345, (15), 348–49, (25), (31))

Zydatiß is certainly correct, then, in describing 'continuative' and 'indefinite' readings in terms of the contributions of 'situation' type, adverbials, and context in making one or the other reading available to a sentence with a 'present perfect' form. It is less certain, however, that the availability of both readings for one subset of sentences — namely, 'atelic' sentences containing *for*-adverbials — is not a matter of structural ambiguity, rather than of possible ellipsis, as Zydatiß argues. His claim is that sentences like those in (105a–b), when read 'continuatively', are simply elliptical versions of sentences that express an explicit relation between 'E' and 'R', as indicated by the glosses in (106):

(106) a. David has run for two hours.

a′. = 'David has run for the past two hours.'

b. The window has been broken for a week.

b′. = 'The window has been broken for the past week.'

Such ellipsis is possible, Zydatiß suggests, because 'the situation existing at a point of reference... is usually self-evident' (ibid., 345).

However, there is some reason to believe that sentences with *for*-adverbials may be structurally ambiguous.[76] This is related to the possibility of 'fronting' the durational

---

[76] This accords with Declerck's (1991: 340) claim that such sentences have 'two clearly differentiated readings', which 'are not just a question of vagueness.' Declerck's only evidence for this claim, however, is the 'conjunct' diagnostic, as illustrated in (i):

(i) a. John has lived in Paris for four years.

b. John has lived in Paris for four years and so has Bill.

What this diagnostic shows is that this sentence does not permit a reading according to which one conjunct has the 'continuative' reading and the other the 'indefinite' reading, which would be possible if these two readings were merely a matter of indeterminacy. However, this diagnostic cannot help us decide between the claim that sentences like that in (ia) are structurally ambiguous and Zydatiß' claim that they are only elliptical, since the predictions of the two claims with respect to this diagnostic appear to be the same.

adverbial, as shown in (107) — a possibility that results in a 'continuative' reading for the sentence:

(107) a. For four years, John has lived in the same place.

If a 'fronted' *for*-adverbial like this one is adjoined to IP, and in this position results in a 'continuative' reading, then we might posit that the same adverbial in 'non-fronted' position is also adjoined to IP whenever it results in a 'continuative' reading, and in a position adjoined under VP[77] whenever it results in an 'indefinite' reading. The relation between the latter position and the 'indefinite' reading is suggested by the following sentence, in which the presence of another adverbial in sentence-final position makes the assumption of a VP position for the *for*-adverbial a plausible one:

(108) The window has been broken for a week $\left\{\begin{matrix}\text{before}\\ \text{several times}\end{matrix}\right\}$.

Such a 'scopal ambiguity' analysis, then — which has been advanced, for example, by Declerck (1991: 332) —, argues for a straightforward relation between phrase structure and interpretation for the two readings of *for*-adverbials with the 'present perfect'. As such, the fact that the ambiguity in question, as Zydatiß (1978: 349–50) correctly notes, 'hardly ever exists' in 'actual discourse' would be irrelevant, since the two readings would nevertheless correspond to different structures, with the greater salience of one or the other in a given discourse related to contextual factors.

Unfortunately, while we have just seen good evidence, in the form of sentences like those in (107) and (108), that this adverbial does occur in positions adjoined to IP and V', the claim that 'non-fronted' adverbials may occur in either position is at odds with the results of standard constituency tests, as shown in (109):

(109) a. V'-SUBSTITUTION ('*DO SO*')
Joe has been [$_{V'}$ drawing for two hours], and Seth has been [$_{V'}$ doing so], too.
b. VP-DELETION:
?? Joe has been [$_{VP}$ drawing] for two hours, and Seth has [$_{VP}$ Ø] for three hours.

Both of these tests suggest that *for*-adverbials, even when they lead to a 'continuative' reading for the sentences that contain them, are located in the VP. Consistent with this difference between 'fronted' and 'non-fronted' *for*-adverbials is that only the former may be followed by comma intonation; the latter cannot, even when they receive a

[77] I am assuming that in this case the adverbials are adjoined to intermediate projections; another possibility, which I shall not be exploring here, is that they are adjoined to maximal projections.

'continuative' reading. These considerations cast serious doubt on an account of these two readings of *for*-adverbials with the 'present perfect' couched in terms of phrase structural ambiguity. Of course, it may still be possible to account for these readings in terms of structural ambiguity; we shall be briefly considering one possibility in §3, where we shall be canvassing a 'linking' analysis of tense-adverbial interactions.

Despite these difficulties for a 'scopal ambiguity' analysis of *for*-adverbials, the claim that the 'fronted' occurrence of these adverbials occupy a position in the IP does remain a plausible one. What is interesting about this 'fronted' adverbial position, moreover, is that it does have a rather clear interpretative effect, which carries across different adverbial types, as the sentences in (110) suggest:

(110) a. John had already departed at ten o'clock.
a′. At ten o'clock, John had already departed.(based on Salkie 1989: 12, (27))

b. John was solving the puzzle in five minutes.
b′. In five minutes, John was solving the puzzle. (Declerck 1991: 359, n. 80)

The effect is this one: in each of these pairs, the 'fronted' adverbial must refer to a time other than 'E', while its 'non-fronted' counterpart may or may not refer to this time (Declerck 1991: 359, n. 80). While the identification of this 'non-E' interval appears to vary according to adverbial type, the sentences in (107) and (110) suggest that it is always related to 'R'. Thus, the interval specified by the temporal locational adverbials in (110a–a′) is 'R' itself (see e.g. McGilvray 1991: 36); while that specified by the *in*-adverbial in (110b–b′) is one between 'R' and some time previously established in the discourse; and that specified by the *for*-adverbial in (107) is the one between the onset of 'E' and 'R'.

We might speculate that the connection between 'R' and this 'fronted' position has much to do with the adverbial's proximity in this position to the tense features in Infl, which serve to establish the 'SR' relation. As such, it contributes to the task of determining the value of 'R', and thus of locating in time the 'situation' described by the VP. In contrast, a temporal adverbial in a VP position may itself become part of 'the description of the situation that is being located in time' (Declerck 1991: 331–32), as is the case for a *for*-adverbial given in (108), and for the locational adverbial given in the following sentence, which we shall be discussing in greater detail below:

(111) John HAS left the house at five o'clock. (Declerck 1991: 331, (30))

Thus, the rôle of a temporal adverbial's position in determining its temporal value, while not quite so straightforward as the 'scopal ambiguity' analysis of *for*-adverbials has suggested, will nevertheless turn out to be a significant one, as we shall see in §3.

The evidence presented in this section, then, gives us sufficient grounds to conclude, with Zydatiß (1978), Declerck (1991), and others, that the 'present perfect' itself does not bear 'indefinite' and 'continuative' readings. Such readings are, instead, 'context-dependent interpretations' of sentences, which arise through the interplay of the 'present perfect' with the various linguistic and non-linguistic factors that we have discussed (Zydatiß 1978: 360–61). Just what the meaning of the 'present perfect' itself is, however, is quite another question, some tentative answers to which we shall be considering in §1.3.3. Before we do this, however, it may be instructive to examine certain analogous claims that have been made about the ambiguity of the 'past perfect'. This is because this examination, too, will reveal how apparently distinct meanings of a tense form may be collapsed, once we isolate the temporal contribution of the tense form itself from other linguistic and non-linguistic factors.

1.3.2. The interpretation of the 'past perfect'

In the last two sections, we investigated various meanings that the 'present perfect' has been claimed to have, and found that such meanings were not associated with the 'present perfect' itself, but resulted from its interaction with other linguistic elements and context. In this section, we shall see that a similar case can be made for the distinct meanings claimed for the 'past perfect': namely, that they should not be considered part of its basic analysis.

The meanings in question, as described by McCawley (1971: 103) and others, are 'past of a past', 'past of a present perfect', and 'past of a past perfect'; these are illustrated, respectively, in (112)–(114):

(112) a. When John married Sue, he had met Cynthia five years before.
b. [= past of 'John met Cynthia five years ago.']

(113) a. When John married Sue, he had read *Principia Mathematica* five times.
b. [= past of 'John has read *Principia Mathematica* five times.']

(114) a. When John had married Sue, he had known Cynthia for five years.
b. [= past of 'John had known Cynthia for five years.']

(ibid., 102–3, (26)–(30))

The glosses that McCawley offers for these sentences, as given in (b) of each example, do suggest three quite distinct meanings, each associated with a different source. But as Declerck (1991: 356) and others have argued, the claim that the 'past perfect' has such meanings arises only if we think of this form as being somehow derived from these others — a claim generally associated with accounts of indirect discourse that appeal to a rule of 'backshift', as we shall see in chapter 3. Yet there is no particular reason to analyse this form as the 'past' version of either the 'simple past' or the 'present perfect', rather than as a form that simply 'expresses anteriority in a past domain' in its own right. As Declerck (ibid.) emphasizes, the mere fact that English employs two forms, the 'simple past' and 'present perfect', to locate a 'situation' before 'S', but only one, the 'past perfect', to locate a 'situation' before a past 'R' 'does not entail that the latter is ambiguous'. Nor does a claim of ambiguity follow from the fact that a 'past perfect' may describe a 'situation' as either anterior to a time in the past, giving rise to a 'past of a past' reading; or as anterior to a time that is itself anterior to a past time, giving rise to a 'past of a past perfect' reading. Such differences in the meanings of sentences that contain 'past perfect' forms are thus a matter of the contexts in which these forms appear, and are not plausibly analysed in terms of the ambiguity (or polysemy) of the forms themselves.

1.3.3. THE MEANING OF 'PERFECT' FORMS

In our discussion of 'present perfect' and 'past perfect' forms in the previous sections, we have argued against proliferating the meanings of these forms as a way of accounting for the interpretations of the sentences that contain them. Instead, we have suggested that these forms have basic meanings, which are elaborated through their interaction with other linguistic elements and context. What this discussion has yet to reveal, however, is what these basic meanings are. Given the 'Reichenbachian' cast of the analysis of tenses that we have offered in this chapter, a natural suggestion for expressing the meanings of the 'perfect' forms would simply be as pairs of 'SR' and 'RE' relations, as we have expressed the meanings of the other tenses. Accordingly, we could assign the 'present perfect', 'past perfect', and 'future perfect', respectively, the temporal structures 'S,R', 'E-R'; 'R-S', 'E-R'; and 'S-R', 'E-R'.[78] Note that such structures indicate that these forms are essentially 'present', 'past', and 'future' tenses, respectively, which select a particular complement type that expresses 'E-R', as many authors have suggested (see e.g. Bouchard 1984: 93–94; Cowper 1991: 54; Giorgi &

[78] The 'conditional perfect' cannot be assigned a parallel structure, since its structure must express both anteriority of one 'R' to the time of speech, posteriority of another 'R' to the first, and anteriority of 'E' to the second 'R' (Declerck 1991: 383–84). We shall offer a tentative solution to the problems raised by this form in §3. What does remain true, despite these difficulties, is that the 'perfect' component of this form may be treated in a fashion parallel to the other 'perfects' discussed above.

Pianesi 1991: 200–4). The virtue of such an analysis is that it asserts a parallelism among the 'perfect' forms, implying that the differences between them display are to be attributed to their different tense specifications — an approach both simpler and more empirically adequate than those that have asserted fundamental differences in the meanings of different 'perfect' forms (see e.g. Salkie 1989 for discussion of this point).

While this 'Reichenbachian' analysis of the 'perfect' forms thus offers many advantages, there are certain reasons, which we considered in chapter 1, for believing that the 'past' participle in these forms does not express a basically temporal relation, between some 'E' and some 'R'. These are related to the distribution of 'past' participles, as indicated in the following set (repeated from chapter 1):

(115) a. Charles has fried the eggs.
b. The eggs were fried in butter.
c. With the eggs fried, Charles could make the coffee.
d. The eggs are fried, not scrambled.
e. Charles likes his eggs fried.
f. Charles likes fried eggs.

Since the 'past' participles in all of these sentences appear to be quite closely related in meaning, suggesting some sort of 'change of state', it seems reasonable to claim that these occurrences, even if they do not represent a single form, share at least some core lexical feature (or features). Just what the relevant feature is, however, is a difficult question.

One possibility that we might pursue, based on our observation that these uses all involve a 'change of state', is that the feature in question, which we might call simply [Perfect], sets up an opposition between two states, thus creating a 'derived transition'. A 'transition', as described by Pustejovsky (1991: 56), is a 'situation' that is 'evaluated relative to its opposition.'[79] If we consider the 'past' participles above, we might say that each suggests a prior 'state' of '¬fried' opposed to a resultant 'state' of 'fried'.

Such an analysis also appears to apply to the 'perfect' forms of 'stative' and 'process' predicates, accounting for their 'eventive', 'indefinite' readings. Consider the examples in (116):

[79] The analysis presented here also has a significant parallel in Löbner's (1989) analysis of the German particle *schon* 'already', according to which this particle sets up an opposition between earlier phase 'p' and a later phase '¬p'.

(116) a. Seth {has / had / will have} been sick.

b. Joe {has / had / will have} walked.

Here the 'perfect' form in (116a) might be seen to establish an opposition between '¬be sick' and 'be sick', and — given the 'momentary' nature of the 'situation' indicated by the 'simple' form — to indicate that the sickness is over at 'R'. Similarly, the form in (116b) might be seen to establish an opposition between '¬walk' and 'walk', with the 'simple' form again indicating the 'situation' as over at 'R'.

Of course, we have seen that 'perfect' forms — more specifically, those with 'progressive' morphology or durational adverbials — may also specify a 'situation' as having some duration. This 'two-situation' analysis of the 'perfect' also suggests a way of capturing the duration of the latter, 'resultant situation' indicated by such forms, which are illustrated in (117) and (118), respectively:

(117) a. Seth {has / had / will have} been drawing.

b. Chester {has / had / will have} been eating the cake.

(118) a. Joe {has / had / will have} been sick for days.

b. Seth {has / had / will have} drawn for years.

The effect of the 'progressive' form in sentences like those in (117) is (as we suggested in §1.3.1.3) that of 'focussing' an individual at 'R'; as such, it suggests some duration for the 'resultant situations' of Seth drawing and Chester eating the cake, respectively.

Similarly, the effect of durational adverbials in sentences like those in (118) is that of modifying the 'resultant situation', and creating the sense of duration (and in the case of the 'present perfect', continuity to the time of speech) that we observe with these sentences. Interestingly, this analysis predicts that durational adverbials will be unacceptable with 'eventive' verbs, since in this case they will modify the 'resultant situation':

(119) a. * Joe { has / had / will have } eaten the cake for ten minutes.

b. ≠ 'It { has / had / will have } been ten minutes since Joe ate the cake.'

This analysis of the meaning of 'perfect' forms is admittedly very sketchy, and will require considerable refinement — which, unfortunately, cannot be undertaken here — to achieve any real descriptive adequacy. Nevertheless, it offers some suggestion of how we might reconcile the uses of 'past' participles illustrated in (115) with the more obviously temporal interpretation that they receive in 'perfect' constructions. The analysis suggested here does seem to mimic the interpretative effect of the 'Reichenbachian' relation 'E-R', permitting a 'situation' to be located anterior to 'R', without recourse to the claim that 'past' participles always contain explicitly temporal features. Note that this attempt to reconcile temporal and non-temporal interpretations of this form assumes considerable significance in the theory of linguistic competence that we have been considering in this study, according to which the meaning of a form is describable essentially in terms of its syntactic (including lexical) properties. The fact, then, that the 'past' participle in 'perfect' constructions has an interpretation equivalent to 'E-R' is not sufficient for us to assume that this mirrors the lexical features of this form, since the assignment of such features in other contexts would leave the uses of this form in these contexts unexplained. In contrast, the analysis that we have canvassed suggests a way to offer a general account of this form while preserving a parallel treatment of the different 'perfects' — a desirable result.

1.3.3. PUZZLES OF ADVERBIAL MODIFICATION

Despite this clear parallelism between the 'perfects', at least one significant difference between the 'present perfect' and 'past perfect' forms has been noted. This pertains to the kinds of adverbial modification that each allows, and in particular to a restriction on

the former which Klein (1992) has dubbed the 'present perfect puzzle'. As we shall see, there is good reason to treat this restriction, and another, closely related restriction on the appearance of two adverbials in a single clause, as pragmatic in nature. The possibility of a non-grammatical explanation of these effects will thus permit a simpler account of the grammatical properties of these forms.

1.3.3.1. THE 'PRESENT PERFECT PUZZLE'

The 'present perfect' puzzle, as Klein (1992) describes it, concerns the well-known unacceptability of past-time-denoting adverbials with the 'present perfect', either in 'fronted' or in 'non-fronted' position, as illustrated in (120):

(120) a. * Chris has left York {yesterday / last year / some ten years ago}.

b. * {Yesterday / Last year / Some ten years ago}, Chris has left York. (ibid., 525, (2)–(4))[80]

Close examination of the relevant data confirms that this constraint is rather a specific one. For example, it does not apply to all temporal adverbials that describe a past time, since indefinite adverbials like those in (121) are acceptable:

(121) a. Chris has {just / recently} arrived.

b. Chris has been in Pontefract before. (ibid., (5))

Nor does it apply to definite temporal adverbials generally, since sentences like the following ones, which contain present-time-denoting adverbials, are also acceptable:

---

[80] Declerck (1991: 333–34) notes that the following examples have been reported in the literature:

(i) A: Have you ever seen Macbeth on the stage?
B: Yes, I've seen it ages ago, when I was a child. (Quirk *et al.* 1985: 195)

(ii) A: How has he been occupying himself this week?
B: Well, he's played golf on Tuesday, ridden horseback on Wednesday, and rested on Thursday. That's all I know about so far. (McCoard 1978: 104)

However, such examples have generally been characterized as anomalous, and will thus not be considered further.

(122) a. I have worked hard today.
a'. Today, I have worked hard.
b. I have not played chess this year.
b'. This year, I have not played chess. (based on Jespersen 1931: §5.1(4))

In addition, it does not apply mechanically to every definite past-time-denoting adverbial, since, as we have already observed in §1.3.1.3, these adverbials are acceptable in 'present perfect' constructions on a reading in which they function 'non-deictically' to describe part of the 'situation' itself, rather than to locate this 'situation':

(123) a. John HAS gone swimming at six o'clock in the morning.
b John HAS left the house at five o'clock.
c. Passengers HAVE been terrified when their plane began to lose height.
d. I HAVE left before Tom (did). (Declerck 1991: 333, (34))

Since we noted that such 'non-deictic' uses of temporal adverbials might have a structural explanation, it remains unclear from the data presented so far whether the 'present perfect puzzle' reflects a grammatical or non-grammatical constraint on this form.

As it happens, there is rather compelling evidence that the constraint is not a grammatical one. This takes the form of the observation that the 'present perfect' may be unacceptable even with locational adverbials, which often imply (although they do not specify) some past time (Declerck 1991: 327, n. 35):[81]

(124) a. * I have learned that at school. (ibid., 327)
b. I have learned that lesson well.

What is relevant to the constraint, then, cannot be the presence of an adverbial with particular temporal features — since it is unlikely that these locational adverbials would have such features[82] — but only the indication of some (more or less definite) past time. This lends considerable credence to the pragmatic solution to the 'present perfect puzzle' that Klein (1992) has proposed, which we shall now examine.

Klein's solution is a simple one. He argues that the 'puzzle' can be explained in terms of a constraint on the definiteness of the temporal location of 'R' and 'E' in an utterance: the constraint is against these two intervals being independently located at

[81] However, it is doubtful that we should accept the claim of Geis (1975: 7; cited in Declerck 1991: 327, n. 35) that such adverbials are 'residues of *while*-clauses' — in other words, derived from more explicitly temporal expressions like "during the time while I was at school"' — since the temporal information implied by the locational adverbial is easily recoverable from its lexical content.

[82] On this point, see the previous note.

definite times (ibid., 546).[83] Since the 'present perfect' always locates 'R' at the time of speech, any sentence containing this form will already specify one definite time, so that the indication of a definite time distinct from this one will be unacceptable. Such a constraint seems to be all that is required to account both for the unacceptable sentences in (120) and (124a), and for the acceptable sentences in (121), (122), and (123). The former sentences all involve definite locations of 'E' that are distinct from 'R', whether these are indicated implicitly or explicitly. The latter, in contrast, involve locations of 'E' that are distinct from 'R' but not definite, as in (121), where the adverbials do not actually fix a particular past time,[84] and (123), where the adverbials, as noted earlier, are part of the description of the 'situation' itself; or are definite but not distinct, as in (122), where the adverbials include the time of speech.

Note that this analysis of unacceptable 'present perfect' sentences readily accounts for the acceptability of their 'past perfect' and 'future perfect' counterparts, as illustrated in (125):

(125) a. Everybody {had left / will have left} at five o'clock.

b. At five o'clock, everybody {had left / will have left}.

(based on Declerck 1991: 359)

As Klein observes, the 'past' and 'future' tenses, unlike the 'present', do not fix the position of some past or future 'R', but indicate only that this 'R' respectively precedes and follows 'S'. (Accordingly, different sentences containing 'past' or 'future' tenses may indicate different past or future times.) What this means is that sentences with 'past perfect' and 'future perfect' forms like those in (125) each indicate only one definite time: namely, that specified by the adverbial. As mentioned earlier, and as many authors have noted (see e.g. Salkie 1989: 12), this adverbial indicates 'R' when in 'fronted' position, as in (125b), and either 'R' or 'E' when in non-fronted position, as in (125a).[85] Since only one interval is assigned a definite location in each case, these

---

[83] I have reworded Klein's (1992: 546, (43)) formulation, paraphrasing his terms or replacing them with standard 'Reichenbachian' ones.

[84] See Klein's (1992: 547–48) discussion of these 'indefinite' adverbials.

[85] One apparent class of counterexamples to this claim involves sentences with 'past perfect' forms of verbs of communication and of verbs describing instantaneous actions, as exemplified in (i)–(ii):

(i) a. At six o'clock, John had said that Bill was on his way. (Hornstein 1990: 170, (9))
b. At noon, Bill had asked for directions.

(ii) a. At five, the bomb had exploded.

results are consistent with Klein's constraint. This account of the difference in behaviour of 'perfect' forms thus allows us once more to maintain a parallel treatment of them.

Klein (1992: 544) points out that this account of the 'present perfect puzzle' also lends itself to the explanation of another pattern of adverbial modification, which we touched on briefly in chapter 1. This pertains to the acceptable and unacceptable occurrences of two temporal adverbials in the same clause, as illustrated in (126):

(126) a. * At seven, Chris had left at six. (ibid., 544, (41))

b. Yesterday, John left at five o'clock in the morning.
(Declerck 1991: 284, 285, (29))

The former sentence is unacceptable for the same reason as the sentences given in (120): namely, that its two adverbials specify distinct temporal locations for 'E' and 'R', thus violating Klein's constraint (ibid., 544). The latter example, conversely, is acceptable because its two adverbials do not specify distinct intervals, but rather two intervals one of which is included in the other (on this point, see e.g. Declerck 1991: 285).[86]

However, Klein's account of these 'two-adverbial' sentences, and thus his proposal more generally, appears to face two sorts of counterexamples. One takes the form of acceptable sequences like that given in (127a), which seem to provide the same temporal information as their single-clause counterparts, specifying 'R' as seven o'clock and 'E' as six o'clock in each case (see Michaelis 1994: 113–14):

(127) a. Yesterday, Mary came to Chris's office at seven. But Chris had left at six.
(Klein 1992: 544, (40))

b. * At seven, Chris had left at six. (= (126a))

The other takes the form of acceptable 'two-adverbial' sentences like the following ones:

(128) a. Today, John is leaving tomorrow.

b. Yesterday, he was leaving on Thursday.

This sentence seems to have a reading (arguably even the preferred one) according to which John's saying occurred at six o'clock. A possible explanation for this effect (which does not seem to generalize to other classes of verbs) is that the adverbials in these sentences do specify 'R', but that the 'situations' described by these sentences involve an 'E' whose breadth is so narrow that it is for all intents and purposes indistinguishable from 'R'.

[86] Notice that a 'complex' reading for two or more adverbials requires that no more than one of these be 'deictic'. The reason for this is straightforward: if such a condition does not hold, then the various adverbials cannot coöperate to establish a single time relative to the time of speech.

As it turns out, both sorts of counterexamples can be squared with Klein's constraint, once we consider the nature of this constraint, and how it interacts with the sentences in question. Let us first examine the pair of examples given in (127), which we discussed briefly in chapter 1. As we suggested there, the function of the temporal adverbial *at seven* in (127a) is only to 'frame' the 'situation' of Chris's leaving. In contrast, its function in (127b) is to 'single out' a specific 'R' to which the time of Chris's leaving is being related. It is this 'R' about which the sentence is expressing an assertion, which might thus be paraphrased: 'As of seven, Chris had left at six.' However, as Klein notes, it is 'odd to give an explicit specification' of some 'R' in this case, since the precise time at which one asserts that Chris has already left is irrelevant, and doing so gives 'the... impression that, at some other time yesterday, Chris had not left at six' (ibid., 544). Notice, however, that there are instances in which specifying 'R' in this way, and thus giving this impression, is appropriate. One such instance might be the description of an interrogation into Chris's whereabouts, in which the person being interrogated changes his or her statement as the interrogation proceeds. In this instance, the sentence in (129) would be perfectly acceptable:[87]

(129) At seven, Chris had left at six, but at ten, he had left at five.

This possibility, of course, highlights the pragmatic nature of Klein's constraint.

Similar considerations apply to the acceptability of the sentences in (128). Given that these describe 'scheduling states', it is not odd that they give explicit indication of both 'R' and 'E', since this is consistent with the way in which 'situations' are 'scheduled': that is, asserted at one time (namely, 'R') to take place at another time (namely, 'E'). Both of our counterexamples, then, appear not to be problematic for Klein's proposal, giving us good reason to believe that the constraints on adverbial modification that we have just examined are indeed pragmatic in nature.

Our discussion of the 'present perfect', 'past perfect', and 'future perfect' forms in the foregoing sections has shown that they can be described as 'present', 'past', and 'future' tenses, expressing 'S,R', 'R-S', 'S-R', respectively — their 'perfect' meanings being attributed, accordingly, to the specific lexical properties of their verbal complements. We explored the possibility that these lexical features did not basically express the temporal relation 'E-R', as claimed by many researchers, but nevertheless served a temporal function in 'perfect' forms by mimicking the effect of such a specification. Finally, we found that various other meanings claimed for 'perfect' forms

[87] Such 'two-adverbial' sentences have, in fact, been reported as grammatical, at least for some speakers (e.g. Declerck 1991: 364, n. 88, where the readings given in the text are also reported; Hornstein 1991: 25; Smith 1978: 52).

were best seen as the result of their interaction with verbs and their arguments, adverbials, and context; and that certain constraints on their adverbial modification could be explained as pragmatic consequences of the respective 'SR' relations that they expressed, and required no invoking of other differences between them. All of this suggested that the claim for a parallelism between the structure and the meaning of these forms could be preserved.

2. TENSES, ADVERBIALS, AND TEMPORAL INDETERMINACY

In §1, we examined a number of tense constructions and a number of analyses of them. What we found was that these constructions could all be accounted for in essentially 'Reichenbachian' terms, once we viewed tenses as specifying only the relation between 'R' and 'S', and not that between 'R' and 'E'. What we also found was that 'locating a situation in time is not something which tenses do quite on their own' (Declerck 1991: 254). That is, the temporal interpretation of sentences was revealed to involve a significant interaction between tenses, VPs, temporal adverbials, and context. One claim about the interaction between tenses and temporal adverbials in particular for which there was strong support was that described by Hornstein (1977: 524–25) as 'Braroe's Principle'. According to this principle, temporal adverbials do not function to resolve the ambiguities created by tenses, but rather to '[add] meaning that was not there before.' However, the most promising application of this principle turned out not to be the 'derivational' approach for which this principle was originally invoked, which took adverbials to alter the meanings of tenses; but rather a 'representational' approach which emphasized the temporal indeterminacy of tenses, and took temporal adverbials merely to supplement the meanings of tenses.

One researcher whose work has emphasized this temporal indeterminacy of tenses, and the importance of adverbials in determining a sentence's temporal interpretation, is Smith (e.g. 1978, 1981). Her claim is that sentences 'with tense alone', like that in (130), can be perfectly well-formed syntactically, but 'are incomplete semantically' in that they are missing information necessary for full temporal interpretation. As such, they 'may be interpreted in more than one way, depending on the context in which they occur' (Smith 1978: 48):

(130) Albert is playing tennis.
  a. = 'Albert is scheduled to play tennis.'
  b. = 'Albert is playing tennis right now.' (based on ibid., (21))

What these sentences require, according to Smith, is a temporal adverbial, which coöperates with tense to establish 'R', and thus to ensure a full temporal interpretation

(ibid., 46). This elaboration of Reichenbach's (1947: 294) claim about temporal adverbials — namely, that they are 'referred, not to the event, but to the reference point of the sentence' — is the basis of Smith's analysis of tense and temporal interpretation.

Smith's (1978, 1981) analysis, like many of those examined in this study, is based closely on Reichenbach's, and, again like them, suggests how his temporal schemata might be realized in the temporal expressions of English. Smith's claim is that 'R' is the only interval that 'is actually specified in independent sentences' — as just noted, by particular combinations of tenses and adverbials. 'S', which is given by the context of utterance, is not encoded directly, but rather through 'past', 'present', and 'future' values of the tense morpheme, which specify a relation between 'S' and 'R'. In most cases, 'E' is also not encoded directly, but only in relation to 'R'. It is thus assigned a specific value only when it is equivalent to 'R', as indicated by adverbials like those in (131). Otherwise it is located only relative to 'R', by adverbials like those in (132), which specify 'R' as noon and midnight, respectively (Smith 1978: 44, 48–49):

(131) a. Bill arrived at ten o'clock.
b. They hired Carol on Tuesday. (ibid., 48, (23), 73, (2))

(132) a. Harry ate before noon. (ibid. 58, (74))
b. Harry ate after midnight.

However, 'E' may be specified directly by an adverbial just in case 'R' is already specified. This possibility arises when 'R' is specified by the tense form itself, as in the following sentence with a 'present perfect', which determines an 'R' simultaneous with 'S' (ibid., 53–55):[88]

(133) They have eaten all the fudge while you were out. (ibid., 53, (52))

It also arises when one clause or sentence is 'temporally dependent' on another, so that the 'R' of the former is specified by the 'E' of the latter. This is illustrated in the following example, in which the matrix temporal adverbial specifies 'R' of the embedded clause, leaving the embedded temporal adverbial free to specify 'E' (ibid., 55, 59):

(134) They announced before noon that the fugitive had been caught three hours earlier. (ibid., 59, (80))

[88] Note that the same reasoning should apply to 'present' forms also, since they specify 'R' as much as 'present perfect' forms do. We shall return to this matter below.

What these examples highlight is Smith's claim that the temporal adverbial contained in 'a single independent sentence' generally serves to specify 'R', and therefore cannot specify 'E' (ibid., 55).

However, as she observes, the ability of a given temporal adverbial to combine with a given tense depends crucially on the temporal compatibility of the two. As the following chart shows, only certain tense-adverbial pairs are able establish a value for 'R' (1978: 47; 1981: 216–17):

(135)

		ADVERBIAL			
		present	past	future	unanchored
TENSE	present	present	past[89]	future	future
	past	—	past	—	past
	past *have*	—	—	—	—

Tense-adverbial pairs whose values are incompatible thus result in sentences, such as those given in (136), that cannot establish 'R' (Smith 1978: 51):[90]

(136) a. John had read the article three weeks ago.
b. Harry was arriving tomorrow. (ibid., (43)–(44))

In such cases, 'R' must be established outside the sentence itself, on the basis of temporal information supplied by a neighbouring sentence that does establish 'R'. In this fashion, a value for 'R' is determined for the 'temporally dependent' sentence, leaving its own adverbial to specify 'E' (ibid., 82).[91]

---

[89] Smith changes her claim about the possibility of this combination of tense and adverbial between her 1978 and 1981 studies, permitting this combination to establish 'R' only in the later paper. The fact that her system permits such a change while remaining essentially intact suggests that her claim about how 'R' is and is not established is problematic. We shall consider this matter in more detail below.

[90] Smith (1978: 82) claims that sentences with incompatible tense-adverbial combinations have incomplete semantic representations, which she represents as in (ic):

(i) a. Mary was amused now.
b. S [past Temp [Present]]
c. S [INCOMPLETE] (ibid., (27)–(29))

The semantic import of such a representation, however, is unclear, given that it suggests that these forms somehow lose their internal structure. In fact, Smith's own remarks, as described in the text, suggest otherwise — indicating that 'incompatible' tense-adverbial combinations result in the interpretation of the adverbial as specifying 'E', and the establishment of 'R' on the basis of temporal information supplied by another sentence.

[91] This claim for what Smith calls the 'sharing' of tenses will be described in more detail in chapter 3.

Smith's analysis of temporal expressions is an interesting one, which captures the observation that tenses commonly require the support of adverbials and other temporal elements to be assigned temporal interpretations. Yet it suffers from many weaknesses which conspire to make its claims about the nature of tenses untenable. These pertain to the rôle that she assigns to 'R' in her system, and to the tight connection that she asserts between 'R' and temporal adverbials, and its various consequences for the specification of 'E'.

An especially problematic aspect of Smith's analysis is her adoption of Reichenbach's principle that temporal adverbials specify 'R' rather than 'E'. We have already noted the empirical inadequacy of this principle in our discussion of Reichenbach 1947 in chapter 1. While Smith does recognize certain exceptions to the principle, as we observed above, its prominence in her assumptions about temporal interpretation leads her to claims about particular constructions which are either implausible or empirically inadequate. The constructions in question include 'futurates', 'perfects', and sentences with two temporal adverbials, each of which we discussed earlier.

Given Smith's claim that 'R' is established on the basis of a tense-adverbial combination, the 'future-oriented' reading of the 'present futurate' construction, as exemplified in (137), leads her to analyse this construction as establishing a future 'R':

(137) Chris is working tomorrow. (ibid., 47, (13))

However, our own findings about this construction, as reported in §1.2.5, strongly suggested that it expresses the relation 'S,R', and that its temporal adverbial specifies 'E'. As it happens, Smith provides no algorithm for calculating 'R' in cases where the values of the tense and the adverbial do not coincide, and thus no real justification for her assumption that the latter value overrides the former in this case. Curiously, the temporal adverbials in 'past futurate' constructions like that in (138) do specify 'E', according to her analysis:

(138) Ross was leaving in three days. (ibid., (17))

This is because the tense and temporal adverbial do not, in this case, establish 'R'; so that the temporal adverbial can serve instead to specify 'E'. That Smith offers such a non-parallel treatment of what are clearly 'present' and 'past' counterparts of the same construction, and no independent motivation for such a treatment, raises serious doubts about the rôle that she has assigned to temporal adverbials in her system.

Similar problems beset Smith's treatment of sentences containing 'past perfect' and 'future perfect' forms, for which she once again invokes her principle that temporal adverbials specify 'R' and not 'E' (ibid., 55):

(139) a. They had eaten all the cookies while you were away.
b. They will have eaten all the cookies on Tuesday. (ibid., 54, 55, (56), (62))

Despite her assertion that there is 'no possibility of interpreting' the temporal adverbial as specifying 'E' in these sentences, the 'E' reading appears to be the only one available to the temporal adverbial in (139a); and both 'E' and 'R' readings appear to be available to the temporal adverbial in (139b). In fact, the ambiguity commonly associated with adverbially modified 'perfect' forms, which we discussed in chapter 1 and elsewhere in this chapter, has been widely attested in the literature (see e.g. Declerck 1991: 230, 358, n. 81 and references cited there), and constitutes perhaps the strongest evidence against Reichenbach's original claim.

A final demonstration of the limitations of Smith's principle that temporal adverbials specify 'R' can be seen in her treatment of sentences with two temporal adverbials. Given this principle, and her assumption that 'English allows only one time adverbial per sentence' (ibid., 58), it follows that 'E' cannot be specified in 'temporally independent' sentences (with the exceptions already noted). This leads Smith to the suggestion that two-adverbial sentences 'have a 2-sentence source', being 'reductions of sentences' that have the same 'R'. A 'plausible source' for the sentence given in (140a) would accordingly be either of the two-sentence sequences given in (140a′, a″), respectively:

(140) a. Last night, Mary had disappeared 3 months ago.
a′. Bill told me last night: Mary had disappeared 3 months ago.
a″. It was the case last night: Mary had disappeared 3 months ago.

Since this two-sentence source has the same configuration as that which licenses the specification of the 'R' of one sentence by that of another, Smith's assumption is that the sentence in (140a) is dependent on the sentence that undergoes 'reduction', so that the temporal adverbial in the former is able to specify 'E'. Smith thus offers a clever means of reconciling her assumptions with the observation that the 'fronted' adverbial in 'two-adverbial' sentences specifies 'R', while the 'non-fronted' adverbial specifies 'E'. Of course, given current theoretical assumptions, the derivation of one sentence from two that Smith proposes is simply not permissible. However, even if we could put aside this basic technical problem (including the difficulty of specifying the 'correct' source sentence), her analysis of 'two-adverbial' sentences would still remain

unsatisfying. This is because these sentences are not well paraphrased by two-sentence sequences like those given above, as we saw in the previous section. To the extent that such sentences have acceptable readings, these readings indicate that the 'fronted' adverbial does not merely specify a temporal location, but indicates the time with respect to which an assertion is being made. Because Smith assumes that 'two-adverbial' sentences like that (140a) are indistinguishable from two sentence sequences like that in (140a′, a″) from the standpoint of temporal structure, she has no means to capture the attested differences between them.

Perhaps even more problematic than Smith's adherence to Reichenbach's 'temporal adverbials specify R' principle is her claim that sentences generally require temporal adverbials in order to establish 'R', and are otherwise 'semantically incomplete', requiring an appeal to 'information from context, linguistic and other, or... general heuristic strategies' (Smith 1981: 217). Admittedly, the interpretation of sentences without temporal adverbials, such as the well-known example from Partee 1973b given in (141), does often require recourse to other sources of temporal information:

(141) I didn't turn off the stove. (ibid., 602, (3))

However, many studies (see e.g. Declerck 1991: 252, n. 7 for references) have shown that Smith's claim overstates the rôle of temporal adverbials in temporal interpretation. What these studies suggest is that temporal adverbials are neither necessary nor in many cases sufficient to secure a temporal interpretation for the sentence.

A clear instance in which temporal adverbials are not needed to establish 'R' is one in which 'R' is assigned a definite location by the tense form itself. This we find in the case of the 'present perfect', which, as Smith observes, specifies 'R' as simultaneous with 'S'. But this also holds for the 'present' tense generally, since (as we found in our examination of this tense in §1.2) it can be seen to express 'S,R' in virtually all of its forms and uses:[92]

(142) a. Seth lives here.
a′. Seth is living here.
b. Joe draws comics.
b′. Joe is drawing comics now.

---

[92] A possible exception is the 'historical' or 'narrative' present, as illustrated below:

(i) a. The battle is just beginning: the Romans are vastly outnumbered.
b. A hamburger walks into a bar, and orders some french fries.

Even these, however, can be taken to express 'S,R' if 'S' is defined as the present of some historical or narrative discourse. On this matter, see e.g. Hornstein 1990: 11.

b. Joe is drawing comics these days.
c. The sun rises in the east.
d. He shoots, he scores!
e. The train leaves at four.
e'. The train is leaving at four.

Notice, however, that temporal adverbials are no more necessary with tenses that do not assign a definite location to 'R' than with those that do. The 'past' tense, as we noted earlier, does not indicate a definite 'R'; yet it may easily occur without a temporal adverbial, as the italicized sentences in the following sequences demonstrate:

(143) a. We know that *John lived in Boston for some time and was quite a*
b. Is Bill in the house? — No, *he went away.* (Declerck 1991: 253, n. 7)
c. What became of your sisters? — Oh, *Jane married a sailor, Sue bought a gold mine, and Marjorie joined the air-force.*
(Heny 1982: 134, cited in ibid.)

What is significant about these sentences from the perspective of this study is that they are fully interpretable in the absence either of temporal adverbials or of contexts 'establishing a particular time reference' (ibid.). In fact, the use of temporal adverbials would arguably be inappropriate in these cases, since the locations of 'R' and 'E' are either not well enough known or not relevant enough to the discourse to warrant their use. It is thus difficult to describe such sentences as 'semantically incomplete' without circularity. (Of course, Smith's claim could still be preserved in the face of such examples by the positing of 'understood' temporal adverbials, with indeterminate temporal values consistent with the interpretations of these sentences. However, the positing of such adverbials, as we noted in our discussion of them in chapter 1, has virtually no empirical justification and few arguments to recommend it.)

There are also instances in which temporal adverbials, far from making the sentences that contain them 'semantically complete', are insufficient to establish a definite time, and must therefore be supplemented by contextual information. For example, temporal clauses, as Declerck (ibid.) points out, generally leave indeterminate both the time of the 'situation' that they describe and the time of the 'situation' described by the matrix clause, as the following example illustrates:

(144) When I arrived in London, the rents were high. (ibid.)

Here, contextual information is crucial for a determination of the times at which the matrix and embedded clause 'situations' respectively hold. But contextual information

is also necessary, if perhaps less strikingly so, in sentences like the following one, which contains a context-dependent 'clock time' adverbial:

(145) Trish left at five.

Here, one must know which contextually-relevant five o'clock the sentence is referring to in order to assign it a temporal interpretation.

A rather different set of problems with Smith's analysis concerns its determination of 'E' on the basis of 'R'. For example, many authors (see Declerck 1991: 288, n. 63 and references cited there) have disputed her claim, as described above, that in PP adverbials like those in the following sentences (repeated from (132)), the NP indicates 'R' while the preposition indicates the relation between 'R' and 'E':

(146) a. Harry ate before noon.
b. Harry ate after midnight.

According to these authors, the internal structure of these PPs is simply 'irrelevant to the temporal schema realized by the tense' (ibid., 286, n. 60), and only the PP as a whole figures in the calculation of temporal relations (ibid., 288, n. 63). This can be demonstrated by examples like the following one:

(147) Before midnight, Joe was leaving at two.

Here, the NP *midnight* clearly has no rôle in the specification of 'R' independent of the PP in which it is contained. Curiously, even Smith herself, as Declerck (ibid.) points out, has argued elsewhere for this analysis of the temporal function of such PPs in complex sentences like that given in (148):

(148) Sam will announce before midnight that Sue left three hours earlier.
(Smith 1977a: 160)

Smith (ibid.) claims about this sentence that it can 'only be interpreted to mean that the point of reference for *three hours earlier* is *before midnight*, not *midnight*.' (In fact, Smith's (1978: 49) claim about PPs like *before midnight* considerably complicates her analysis of complex sentences like this one, as we shall see in chapter 3.)

A more serious problem with Smith's treatment of 'E' and 'R' is that it is able to express only relations of anteriority, posteriority, and simultaneity between these two intervals, and not the more complex relations that may arise from the interaction of tenses with the lexical properties of the temporal adverbial and the VP. We already saw

some indication of this complexity in our examination of 'progressive' constructions in §1.2.3, many of which were analysable in terms of the inclusion of 'R' in 'E'. As Declerck (1991: 268, 335–37) and others have shown, the presence of temporal adverbials often induces a similar complexity, since, like 'situations', they may be 'dissective' or 'non-dissective'.[93] The 'non-dissective' type, according to Declerck, can refer only 'to the timespan as a whole, not to any subinterval of this' (ibid., 335). Thus, if such an adverbial serves to indicate both 'R' and 'E' in a sentence, as in the following examples, then these two intervals must coincide:

(149) a. Seth will be here from nine till five.
b. Joe started at six.

In contrast, the 'dissective' type 'can refer not only to the interval as a whole but also to subintervals of it' (ibid., 336). In this case, if such an adverbial serves to indicate both 'R' and 'E', the former may either properly include or coincide with the latter, depending upon the type of 'situation' described by the sentence (ibid., 268–70, 336). These possibilities may be illustrated in the following examples:

(150) a. Bill left yesterday.
a'. Bill left today.
b. John was here yesterday. (ibid., 268–270)

In the first example, the 'situation' of Bill's leaving, which is 'bounded', cannot be simultaneous with yesterday, but must instead occur at 'some unspecified subinterval' of this twenty-hour period (ibid., 268). Similarly, this 'situation' as described in the second example cannot be simultaneous with today, since this would be incompatible with the verb's 'past' tense form, which expresses 'R-S'. Notice, however, that this apparently incompatible combination of tense and temporal adverbial does (*pace* Smith) produce a 'temporally complete' sentence; what the temporal adverbial indicates in this case is the twenty-four period that today represents, of which the time of Bill's leaving is a subinterval 'l[ying] entirely in the past' (ibid., 269). (This suggests that the temporal adverbial contained in both of these examples serves primarily to indicate not 'R', but rather the time of which 'E' is a subinterval, and to which 'R' is related only indirectly. We shall be exploring this possibility in §3.) The third example, in which the 'situation' of John's being here is 'unbounded' and the temporal adverbial is 'dissective', permits a range of possibilities for the interval in which the 'situation' in

[93] Declerck (1991) calls these adverbials 'unbounded' and 'bounded', respectively, pursuing an analogy with 'situation' types. However, these terms seem to confuse matters, since a 'dissective' adverbial like *today* is nevertheless bounded.

question holds. Thus, John may have been here 'all day yesterday'; or may have 'arrived and left yesterday, but... not stay[ed] for the whole day'. Moreover, since the 'situation' as it actually held may be longer than the interval to which sentence itself refers,[94] it is also possible that John arrived before or left after yesterday, or both, and even that he is still here at 'S' (ibid., 269–70).

It is interesting to compare this example with one in which the 'situation' is 'unbounded' but the adverbial is 'non-dissective'. Such an example is given in (151):

(151) Between one and two, John was eating in the kitchen.
(based on ibid., 267)

Here, the possibility also exists that the time interval during which the 'situation' has actually held is longer than the hour specified by the temporal adverbial (ibid.). What is not possible, however, given the properties of 'non-dissective' adverbials, is that this 'situation' has held for an interval shorter than this.

What these examples emphasize is that temporal adverbials — even those that do not, on Smith's (1978) analysis, indicate the anteriority or posteriorty of 'E' with respect to 'R' — commonly do not determine either the temporal location or the duration of 'E' (ibid., 270), leaving this to be done by context or simply to remain undetermined. This suggests that we need an analysis of tenses and temporal adverbials that preserves Smith's basic insights about the indeterminacy of tenses, but is flexible enough to accommodate the greater range of possibilities that Declerck and others have presented. Just such an analysis will be proposed in the following section.

3. THE PROPOSAL

Our examination of tenses and temporal adverbials in §§1–2 has lent strong support to analysis of them in 'Reichenbachian' terms. Note, however, that while we have assigned Reichenbach's schemata a prominent rôle in this examination, the rôle that they have played has been largely descriptive. In other words, we have yet to address the important question of how these schemata might actually be expressed in the temporal system of a given language. Of course, any answer to this question, as reflected in the kind of analysis of tense that is offered, is directly related to the kind of linguistic phenomenon that we consider tense to be. The view of tense that we have been canvassing in this study presents it as a syntactic phenomenon; and many of the patterns displayed both here and in the previous chapter have been shown to be

[94] The distinction in question, which was alluded to during the discussion of *will* forms in §1.1, is between what Declerck (ibid., 267) refers to as the 'full situation' and the 'situation referred to' (that is, '"that part of the situation that is talked [about] in the sentence "').

characterizable in 'broadly syntactic' (including lexical) terms. This makes the broad outline of our desired analysis clear: this analysis must be syntactic — that is, firmly grounded in the syntactic properties of tense. Given this desideratum, two others follow naturally from the results of our examination of various tenses. One is that our analysis must present tenses as syntactic encodings of relations between 'S' and 'R', while at the same time capturing the temporal indeterminacy of tenses by showing how both the temporal location and the duration of 'R' may be determined by temporal adverbials, lexical properties of the verb and its arguments, and context. Another, consonant with the first, is that our analysis distinguish the 'SR' relation expressed by tense from the 'RE' relation, which is expressed by aspectual morphology and by the factors, as just enumerated, responsible for determining 'R'. Since these factors, as we have seen, are also responsible for determining the temporal location and duration of 'E', our analysis must show how this interval may be determined by them. However, since the location and duration of 'E' are taken, in the absence of information from such sources, to be equivalent to 'R', our analysis should show how this value functions as a default.

The analysis to be presented below seeks to fulfil these desiderata by proposing (i) a feature analysis of tense forms, which suggests how tenses might encode the 'SR' relation; and (ii) a 'linking' device, which suggests how tenses, verbs, and temporal adverbials might interact in establishing syntactic representations of temporal relations. (In what follows, however, we shall be considering this device only as it applies within sentences, postponing consideration of its operation between sentences until the next chapter.)

3.1. THE SYSTEM OF FEATURES INTRODUCED

The temporal system that is at the heart of the analysis exploits two features, [Anterior] and [Posterior], which figure in the syntactic description of Infl and adverbials of temporal location. These features establish a relation between 'S' (which may, but need not always be, the actual time of speech) and 'R', the 'reference time' — which we might think of as being computed at a level of semantic representation such as that described by the 'Discourse Representation Structures' (DRSs) of Kamp & Reyle 1993, Rigter 1986, and other studies.[95] While these two features resemble the elaborations of a [+/- Past] feature that have been proposed elsewhere (including Fassi Fehri 1993: ch. 4, Kamp & Reyle 1993: ch. 5, Ogihara 1989: 178), what distinguishes them most from the latter features is the values that they may bear and thus the rôle that they are claimed to play in the system of temporal marking.[96] In the system being

[95] Just how these features are related to DRSs is, however, a topic of work in preparation.

[96] A detailed comparison of these approaches is beyond the scope of this study, and is taken up in work in preparation.

proposed here, these features may either be assigned a positive or negative specification or simply be left unspecified (in which case, their value in simple sentences can be determined only by context). The latter possibility, as we shall see, will be important for a system in which context commonly determines the readings of 'temporally underspecified' forms.

3.1.2. TENSES

Let us begin with the temporal specification of 'tensed' verb forms. Here, we shall follow (fairly) standard assumptions and take these forms to be realizations of V and Infl nodes, the latter encoding their property of being 'tensed'. (The question of how these two nodes are related in a single form will, however, be left open.) In the system being proposed here, the Infl of 'tensed' forms is associated with the feature matrix [Anterior, Posterior]. Since (as we shall see in chapter 4) this will be sufficient to distinguish these forms from their 'untensed' counterparts, neither forms will need to be specified for the feature [Tense]. The verbal component of 'tensed' forms has no temporal specification of its own, and thus can receive one only through its interaction with 'temporally specified' elements, as will be described below.

3.1.2.1. 'PAST', 'PRESENT', AND 'FUTURE'

Closer examination of these two features, [Anterior] and [Posterior], reveals their utility in describing the tense system of English and other languages. Perhaps most importantly, they readily produce values corresponding to 'present', 'past', and 'future' tenses: namely, [- Anterior, - Posterior], [+ Anterior, - Posterior], and [- Anterior, + Posterior], respectively. These, in turn, can be seen to correspond to the three 'tense' relations 'S,R', 'R-S', and 'S-R', given the assumption that in simple sentences these feature matrices are evaluated with respect to an 'orientation time' which is generally the time of speech. (Note that this 'orientation time', which we have been calling 'S' throughout this study, should not be equated with the time of speech, since there are two sets of cases where it has a different value: 'special' uses of the 'present' tense, such as 'historical' or 'narrative' uses; and 'dependent' tenses in embedded clauses, which we shall be discussing in chapter 3, for which the value of 'S' is determined by the value of 'R' in matrix clauses.) In addition, these three feature specifications also serve to encode the 'tense' values of 'present perfect', 'past perfect', and 'future perfect' forms, since, as we suggested earlier, these forms do not constitute distinct tenses, but rather 'present', 'past', and 'future' tenses, respectively, that are associated with a particular type of complex VP structure. (The 'conditional' and 'conditional

perfect' forms, which represent a quite distinct possibility for the instantiation of the [Anterior, Posterior] feature matrix, will be treated in §3.1.2.2 below.)

Among the other advantages of this feature system is that the existence of a 'future' tense emerges as a natural consequence of this system, as does the status of the 'present' as the least 'marked' value in the system. The latter result is consistent with the use of the 'present' in English as a 'default' tense — that is, a tense form that carries the least temporal information (see e.g. Declerck 1991: 69 and references cited there). Significantly, however, the description of the 'present' being proposed here, as negatively specified for [Anterior] and [Posterior], still makes it a true 'present' tense form, syntactically specified to locate an individual at the time of speech. Such a description is thus distinct from that offered by Binnick (1991) and others, as mentioned in §1.2.5, which take the 'present' in English to be 'a non-past [which] does not inherently refer to present, as opposed to future, time' (ibid., 389). As we have seen, the various uses of this tense have a simpler explanation if it is taken to locate an individual consistently at the time of speech.[97] Notice, though, that the specification [- Anterior, - Posterior] merely locates 'R' at 'S', leaving its breadth indeterminate. This is consistent with the two possibilities for 'R' that we suggested earlier: namely, that it may coincide with or include 'S', as dictated by factors independent of tense, both linguistic and contextual.

Further support for this specification of the 'present' in English, given the descriptive possibilities of the proposed feature system, is that it permits us to distinguish it from its counterparts in other languages, such as French and German, with which it displays an obvious 'parametric difference'.[98] The 'present' tenses in the latter languages, for example, are quite plausibly described as 'temporally unspecified', given the following uses available to them:

(152) a. Combien de temps restes-tu ici?
'How long are you staying/will you be staying here?'

a'. Depuis combien de temps es-tu ici?
'How long have you been here?' (Pascal Amsili, personal communication)

b. Wie lange bist du hier?
'How long have you stayed here?'
'How long are you staying/will you be staying here?'
(Antje Roßdeutscher, personal communication)

---

[97] These remarks apply *a fortiori* to the claim of Enç (1990) and others that English 'present' tense forms are 'temporally unspecified'.

[98] Such a 'parametric difference' in 'present' tense forms has been mentioned frequently in the literature. See e.g. Enç 1987: 649; Salkie 1989.

(153) a. Je demeure depuis trois ans en Allemagne.
b. Ich wohne seit drei Jahren in Deutschland.
'I have lived in Germany for three years.'

These examples demonstrate that the 'present' tense in French and German may be used in contexts that require 'future' or 'present perfect' forms in English. As such, they provide compelling evidence that this tense in the former languages is specified for neither [Anterior] nor [Posterior] — in other words, that it is associated with the feature matrix [0 Anterior, 0 Posterior].[99] Such a specification would also explain why the French and German counterparts of the English 'present perfect' may, depending on context, be equivalent to either the 'present perfect' or the 'past', as these examples show:

(154) a. Je suis arrivé hier.
b. Ich bin gestern angekommen.
'I arrived yesterday.'

(155) a. Jean a mangé six gateaux hier/jusqu'au présent.
b. Hans hat gestern/bis jetzt sechs Kuchen gegessen.
'John ate six cakes yesterday/Jean has eaten six cakes up to now.'
(based on Salkie 1989: 16, (33))

A straightforward solution to this puzzle emerges from the claim that the 'present'-tensed auxiliary forms in these sentences are 'temporally unspecified'. Given this claim, these forms can be seen to contribute no 'present' meaning, so that the 'past' and 'present perfect' readings available to these sentences are determined primarily on the

---

[99] Salkie (1989: 15) proposes to capture this difference between English and French and German in terms of the following statement:

(i) In English, the present moment is regarded as a point in time without duration, while in French and German the present is regarded as an interval of time. (Salkie 1989: 15, (30))

However, a cross-linguistic difference couched in such terms seems to suggest a very significant difference in the way time is conceived in the languages differentiated in this way, which inevitably raises questions about how such a difference could be learned. In contrast, the proposal given in the text ties the difference between the properties of the 'present' tense in English, on the one hand, and French and German, on the other, to a simple difference in the feature values of their respective tense forms, which could be learned rather straightforwardly through an observation of the respective syntactic patterns in which these tense forms appear. A proposal couched in terms of differences in feature values also avoids the empirical difficulties of Enç's (1987: 649) proposal, according to which 'present' tenses differ cross-linguistically with respect to whether they do or do not denote the speech time. We shall be considering this difficulty in our discussion of Enç 1987 in chapter 3.

basis of the temporal features encoded in their 'past' participles.[100] Since such features, as we have seen, do not function to locate 'R' with respect to 'S', we might attribute the determination of 'R' on an occasion as either before or at 'S' — corresponding to 'past' and 'present perfect' readings, respectively — to the interaction of the temporal information provided by the 'past' participle with that provided by temporal adverbials, lexical properties of the VP, and context. In this way, the notion of 'temporally unspecified' tense forms can be assigned a plausible rôle in the proposal, making it possible to preserve the basic feature analysis of tenses just presented.

3.1.2.2. MODAL AUXILIARIES

In the previous section, we saw how the temporal features [Anterior] and [Posterior] could describe various tenses in English; and how the claim that tensed verb forms may be 'unspecified' for these features may be applied to 'present' tense forms in French and German. Here, we shall seek to extend this feature analysis to the modal auxiliary system in English, and to apply this 'unspecified feature' description to certain of these forms. One plausible candidate for such a description is the auxiliary form *would*, which (as we observed in chapter 1 and in §1.1 above) has both 'tentative future' and 'future in the past' readings. These are illustrated in (156) (repeated from chapter 1):

(156) a. *Would* you lend me a dollar?
b. I felt sure that the plan *would* succeed.

(Quirk *et al.* 1985: §4.63, (b), §4.60)

What appears to unite these two readings, as we suggested in §1.1, is a constant 'posterior' value, which is computed from the time of speech in the former case, and from some past time in the latter. This constellation of properties is neatly encapsulated in the feature matrix [0 Anterior, + Posterior], which, in paralleling the specification of *will*, makes clear the close relation between 'conditional' and 'future' forms.

As such, this description of these forms offers a distinct advantage over that given in more standard 'Reichenbachian' analyses. Recall that Reichenbach (1947: 297) describes the 'future' in terms of the schema 'S-R,E', and the 'conditional' in terms of

---

[100] Salkie (1989: 16) notes that the French and German counterparts of the English 'present perfect' can be used only with 'events', and not with 'states', and thus do not have a use equivalent to the English 'perfect of persistent situation'. This suggests that the features associated with the 'past' participle in these languages may be different. Interestingly, only the French participle 'carries the sense of "completion"' (ibid., 16), contributing to the 'perfective past' meaning of the French '*passé composé*' form, which contrasts with the 'imperfective' meaning of the '*imparfait*' (ibid., 24). Such an aspectual dimension is absent in the German counterpart of the former, which may bear 'perfective' or 'imperfective' readings (Franz Beil, personal communication). The nature of such cross-linguistic differences in the specification of the 'past' participle is a topic of work in preparation, and will not be explored further here.

the schemata 'R-E-S', 'R-S,E', and 'R-S-E'. In 'neo-Reichenbachian' analyses that distinguish 'SR' and 'RE' relations, the former becomes 'S-R', 'R,E' and the latter 'R-S', 'R-E'. Notice, first, that neither the original nor the 'neo-Reichenbachian' version of the 'conditional' schema expresses its 'tentative future' reading, which appears to have the same temporal analysis as the 'future'. An even more problematic feature of each version, highlighted by the latter's identification of distinct 'SR' and 'RE' relations, is that they indicate a difference in the respective 'RE' relations expressed by 'future' and 'conditional' forms, even though such a difference has little empirical support. Rather, the difference in the temporal structure of these two forms seems to be related to the point from which 'R' and 'E' are seen as 'posterior'. In the case of the former, this is clearly 'S'; while in the case of (the 'future in the past' reading of) the latter, this appears to be another 'R', which goes surrogate for 'S' in this 'past' domain.[101] What this suggests is that the non-parallelism between 'future' and 'conditional' forms exhibited in these analyses is essentially an artefact of Reichenbach's descriptive apparatus, which does not include an additional 'R'.[102]

Of course, one might respond that the introduction of this additional 'R' is equally (or even more) undesirable than the non-parallelism in question. Yet such an element, as various authors have argued (see e.g. Comrie 1985: 128; Declerck 1991: 383–84), is required to describe the 'conditional perfect' in any case. Since Reichenbach himself does not analyse this form, his system can still make do with a single 'R'. However, brief consideration of this form reveals that it simply cannot be described without recourse to a second 'R' (as we noted in §1.3.3). This can be demonstrated with the following example:

(157) Mr Smith would have left the hotel at five o'clock. (ibid., 385, (122))

Here we see that the 'conditional perfect' form expresses (i) anteriority of some 'R' to 'S', making this a 'past' tense form; (ii) posteriority of another 'R' to the first, making this a 'posterior' form; and finally (iii) anteriority of 'E' to the second 'R', making this a 'perfect' form (see e.g. Declerck 1991: 383–84). What, of course, distinguishes the 'conditional perfect' from the 'conditional', and makes the need for a second 'R' in its description more salient, is the 'E-R' relation that it indicates as a 'perfect' form.[103] Since the 'conditional', in contrast, indicates 'E,R', the presence of this additional 'R' is obscured by its coincidence with 'E', lending plausibility to the claim that this form is

[101] This is not to suggest, however, that this 'R' assumes the referential function of 'S'; on the contrary, it is an interval at which the sentence locates an individual.

[102] Compare, however, Bouchard's (1984) temporal system, which does permit the introduction of an additional 'R' in a manner analogous to that proposed in the text.

[103] This relation, as suggested earlier, may not be the meaning actually encoded by the lexical features of the 'past' participle. However, since this relation does offer a useful description of the temporal interpretation of 'perfect' forms, I shall be appealing to it in this discussion.

associated with only one 'R', and that the relation of posteriority that it expresses is that of 'E' with respect to this 'R'. However, if we wish to give a parallel treatment to 'conditional' and 'conditional perfect' forms, then it is necessary to posit this additional 'R' in the temporal representation in each. Notice that this is the same argument that Reichenbach gives for including 'R' in the temporal representation of the 'past' tense: since the presence of this element is likewise obscured by its coincidence with 'E', its presence can best be demonstrated by comparison with a 'perfect' form — in that case, the 'present perfect'.

On the analysis being canvassed here, then, the 'conditional' and 'conditional perfect' are assigned the same feature matrix, namely [0 Anterior, + Posterior], the differences between them being attributed to their status as 'simple' and 'perfect' forms, respectively. Notice that this claim accordingly preserves a unitary treatment of the 'perfect' forms themselves and, in turn, of the differences between them and their 'simple' form counterparts. Notice, too, that the appearance of the additional 'R' introduced in this analysis is highly constrained, being permitted only in the case of a feature matrix in which the values of both [Anterior] and [Posterior] are interpreted as positive. This does not correspond to any possible 'SR' relation, since such a relation would be contradictory; nor to any lexical specification of this feature matrix. Rather, it arises only in cases in which the feature matrix contains an unspecified value — as in the case of the 'conditional' and of certain other modal auxiliary forms, as we shall see below — and only when the temporal information supplied by other linguistic elements and context requires that the 'unspecified' [Anterior] feature be interpreted as positive.[104] This contradiction in the values of the two features is resolved through the introduction of an additional 'R' into the temporal representation of the sentence that contains the 'conditional' form, the relation between the two 'Rs' being expressed by the feature value [+ Posterior].[105]

A similar analysis of the modal auxiliary forms *could*, *should*, and *might*, in terms of unspecified values for the feature matrix [Anterior, Posterior], also seems plausible, given the substantial similarities between these forms and *would* that our earlier examination of them revealed. The temporal properties of the latter two are

---

[104] This description of the conditions under which an additional 'R' may appear suggests the occurrence of three values of the [Anterior, Posterior] matrix — namely, [0 Anterior, + Posterior], [0 Anterior, 0 Posterior], and [+ Anterior, 0 Posterior] — which should give rise to the appearance of this 'R'. While the first two possibilities are indeed realized, the last simply does not surface in the tense system of English. This lacuna may be related to a significant difference in the status of the two features, including the possibility that they occur under different nodes. Such possibilities must, however, be left for future research.

[105] This suggests that it is the additional 'R' that serves the function of the single 'R' associated with most tenses. This appears, however, to be consistent with the temporal properties of the 'conditional', since this form is unspecified for the 'SR' relation, while at the same time being specified 'posterior' for a secondary 'R_1R_2' relation.

particularly close to those of *would*, as indicated by the following examples (repeated from (23) and (25)):

(158) a. Shall I open the window?
b. She asked me if she should open the window. (Quirk *et al.* 1985: §4.60)
c. You should do as he says. (ibid., §4.56, (5))

(159) a. You may do as you wish.
b. She said we might do as we wished. (ibid., §4.60)
c. There might be some complaints. (ibid., §4.53, (3))

Like *would*, *should* and *might* permit readings that are 'future-oriented' with respect to some 'reference time' in the past (as in the (b) examples) or to 'S' (as in the (c) examples). This contrasts with the readings available for *shall* and *may*, which like *will*, are restricted to those that express 'S-R'. This suggests the following specifications of these forms:

(160) a. *shall*: [- Anterior, + Posterior]
a'. *should*: [0 Anterior, + Posterior]

b. *may*: [- Anterior, + Posterior]
b'. *might*: [0 Anterior, + Posterior]

We might also note that the temporal behaviour of still another modal auxiliary — namely, *must* — appears to be the same as *will*, *shall*, and *may*, judging from the pattern in (161):

(161) Joe must leave $\left\{\begin{array}{l} \text{now} \\ \text{tomorrow} \\ *\ \text{yesterday} \end{array}\right\}$.

An analysis of this form, then, likewise calls for the temporal specification [- Anterior, + Posterior]. Note that the assignment of the same temporal feature values to these forms does not commit us to the claim that they have essentially the same meaning. This is because this assignment reflects only the 'future-oriented' character that these forms share, but not their differences in 'modal force' (Kamp & Reyle 1993: 534). These differences are presumably reflected in differences in other feature values associated with their respective lexical entries.

If we turn, finally, to the auxiliary forms *could* and *can*, we can see an interesting difference between these forms and those just examined. While *could* follows the pattern of *would*, *should*, and *might*, permitting [+ Anterior] and [- Anterior] readings, both *can* and *could* appear to permit [+ Posterior] and [- Posterior] readings. This is demonstrated in the following examples, in which *can* has 'present' and 'future' readings, and *could* has 'past', 'future in the past', and 'future' readings:

(162) [- Posterior]:
  a. [- Anterior]: Look! I can fly!
  b. [+ Anterior]: It was true: he could fly.

(163) [+ Posterior]:
  a. [- Anterior]: I can leave on Tuesday.
  b. [+ Anterior]: He could leave on Tuesday.

(164) [- Anterior, + Posterior]
  a. Could I see your driving license? (Quirk *et al.* 1985: §4.63, (b))
  b. Could you help me tomorrow?

These interpretative possibilities can be captured in the feature values given in (165):

(165) a. *can*: [- Anterior, 0 Posterior]
  b. *could*: [0 Anterior, 0 Posterior]

Notice, however, that the specification for *could* suggests one possibility that is not realized: namely, a 'present' reading. A possible explanation for this gap is the following one: that the reading in question is consistent with the 'unspecified' temporal structure of this form, but is rendered highly unlikely by the existence of *can*, which is 'more fully specified' for the same reading. Of course, whether this is also the most satisfactory explanation remains to be determined by further study.

In this section, we have considered an analysis of English modal auxiliary forms that exploits the temporal feature analysis proposed for tensed verb forms, and thus places modals squarely within the purview of the tense system. In analysing modals in this way, we have also witnessed the utility of one aspect of this system's descriptive apparatus — namely, its inclusion of an unspecified feature value —, which was instrumental in accounting for many of the peculiarities in the temporal behaviour of these forms observed earlier in this study. Admittedly, our discussion offered no detailed defence of these claims about the temporal specification of modals.

Nevertheless, the outlines of the treatment sketched here are arguably clear enough to guide a more thorough investigation.

3.1.3. TEMPORAL ADVERBIALS

In the previous two sections, we saw how tenses and modal auxiliaries could be described in terms of a simple feature analysis. Here we shall extend this analysis to a final class of elements that serve to locate 'R' and 'E' — namely, adverbials of temporal location —, following the classification of these adverbials given in Smith 1981.

Smith (1981: 218–21) identifies three types of adverbials in this class: 'deictic', 'clock-calendar' (CC), and 'dependent'. 'Deictic' adverbials, which include *yesterday*, *today*, and *tomorrow*, and (for many speakers) expressions with *ago*,[106] indicate a specific relation to 'S', and thus a past, present, or future time. CC adverbials, which describe such intervals as times of the day (*at five o'clock*), days of the week (*on Tuesday*), months (*in April*), and years (*in 1968*), have no such fixed relation to 'S', and may therefore be interpreted as anterior or posterior to it, depending upon the linguistic or non-linguistic context in which they occur. 'Dependent' adverbials, which include *afterwards*, *earlier*, *beforehand*, and *at the same time*, are like 'deictic' adverbials in expressing a fixed relation to some time, but unlike them in that this time is generally not 'S', but some other time previously established in the discourse.[107]

These descriptions can be readily translated into the terms of our feature analysis. Perhaps the simplest cases are past-, present-, and future-time-denoting 'deictic' adverbials, which can be specified [+ Anterior, - Posterior], [- Anterior, - Posterior], and [- Anterior, + Posterior], respectively. These all seem rather uncontroversial. However, there is a significant claim involved in the [- Anterior, - Posterior] specification of at least certain present-time adverbials: namely, those like *today*, *this morning*, or *this month*, which we described earlier as 'dissective'. This is because such adverbials can be used to locate a 'situation' in some subinterval that 'lies wholly in the past' or wholly in the future (Declerck 1991: 269). As such, they may be thought

---

[106] Smith (1981: 219) notes that, for some speakers, expressions with *ago* may have two readings in embedded contexts: a truly 'deictic' reading, and a 'dependent' reading equivalent to that associated with *before*. Such speakers would accordingly take the following sentence to mean that Vera left either three days from now or three days from last Tuesday:

(i) Sam said last Tuesday that Vera left three days ago. (ibid., (13))

Arguably the simplest account of this 'dependent' use is not (*pace* Smith) that some 'deictic' adverbials may be interpreted relative to some interval other than 'S', but rather that speakers who accept this use treat expressions with *ago* as 'dependent' rather than 'deictic'.

[107] Although Smith's claim that these adverbials are never interpreted relative to 'S' seems too strong, since the following instance of *earlier* is naturally interpreted in this way:

(i) Mary called earlier. [= 'earlier than now']

of as 'present, past, or future adverbial[s], depending on context' (Vlach 1993: 267). The claim embedded in the specification of all such adverbials as [- Anterior, - Posterior] is that they are not ambiguous or indeterminate in meaning, but consistently name an interval that includes the moment of speech. We shall be investigating the consequences of this claim below.

Assigning determinate values to 'deictic' adverbials, even those like *today*, also permits us to distinguish them reliably from CC adverbials, which pick out intervals whose identity is entirely dependent upon context. In contrast to the temporal values of 'deictic' adverbials, then, those of CC adverbials are truly indeterminate, and are thus naturally characterized in the proposed feature system as [0 Anterior, 0 Posterior].[108] 'Dependent' adverbials, according to the description of them above, appear to lie somewhere in between, expressing a constant relation of anteriority, simultaneity, or posteriority to some time, but leaving the identity of this time to be established elsewhere in the discourse. This discourse dependence signals a significant difference between the character of these adverbials and that of the other two types that we have been considering. Since a discussion of this dependence is beyond the scope of this study, we shall unfortunately have little to say about these adverbials. What is relevant to us here, however, is that they must still be assigned a rôle in the temporal system similar to that of the other two types, despite these differences. This is because they may also serve to indicate the time of the 'situation' described by the VP, which may or may not be distinct from 'R', as demonstrated, respectively, by the following sets of examples:

(166) a. The train leaves beforehand.
b. The train leaves tomorrow.
c. The train leaves at five.

(167) a. Joe finished his drawing afterwards.
b. Joe finished his drawing yesterday.
c. Joe finished his drawing at five.

What this means is these adverbials must also bear a value for the feature matrix [Anterior, Posterior]. Since the time that they establish, as we have noted, is entirely dependent upon some other time established in the discourse, we might take this value to be [0 Anterior, 0 Posterior]. The suggestion being made here, then, is that this value does not encode the constant temporal relations expressed by these adverbials. This is

[108] Smith (1981: 220) claims that these adverbials have 'dual relational values of anteriority and posteriority', which suggests that they are ambiguous, rather than temporally indeterminate. However, since these adverbials can refer to virtually any contextually-salient interval that they correctly name, their characterization as indeterminate seems the more plausible one.

because the relations in question are different in kind from those encoded by the other temporal elements that we have examined, holding only between intervals established in two different clauses, rather than between some interval and 'S', as in the case of the latter elements. Accordingly, these relations must be encoded by other lexical features associated with 'dependent' adverbials; and it is these features that distinguish them from CC adverbials and other 'unspecified' temporal elements. Note that this characterization is consistent with our discussion of the prepositional counterparts of these adverbials in §2, where we observed that the heads of these PPs did not establish an interval relevant to the temporal system distinct from that established by their NP complements. This observation might be taken to indicate that it is the heads of these NPs that are lexically associated with the feature matrix [Anterior, Posterior],[109] and that the prepositions that select them are associated with a different kind of temporal feature — namely, the kind just adumbrated for 'dependent' adverbials — which serves a non-deictic function. That the same kind of temporal feature is associated both with prepositions that head temporal PPs and with 'dependent' adverbials is lent considerable support by the fact that salient examples of the two categories of temporal elements, such as *before* and *after*, and *beforehand* and *afterward*, respectively, are cognates. Since these elements also have cognates within the class of temporal complementizers, such a characterization of their temporal properties seems to extend naturally to the latter elements, as we shall see in chapter 3.

Now that we have associated the [0 Anterior, 0 Posterior] value with so many different temporal elements,[110] a question inevitably arises: namely, whether the ubiquity of this value in the temporal system is plausible. An appropriate response to

---

[109] A less straightforward matter is that of lexical specification of these adverbials — in particular, how NP and PP adverbials receive their temporal specifications. Presumably these specifications are associated with the heads of these phrases. This seems simple enough in the case of NP adverbials; however, the matter is more involved in the case of PP adverbials, since prepositions themselves do not obviously carry such information. We might speculate that since these PPs have a temporal function only with certain NPs, the temporal feature derives from the N, which percolates to the PP (although see Dubinsky & Williams 1995: 135, where it is claimed that the P itself is specified [+ temporal]). This permits us to distinguish, for example, between the PP in (i), which has a temporal locational function, from that in (ii), which does not:

(i) a. on Tuesday
b. on Tuesdays

A similar suggestion is offered by Enç (1987: 640), who calls NPs like *every afternoon*, *Monday* and *yesterday* 'temporal NPs' and assumes that they bear the feature [+ Temp]. Note, however, that her suggestion does not distinguish between frequency adverbials like *every afternoon* and CC adverbials like *Monday* — a distinction which is crucial to the analysis being developed here.

[110] Another temporal adverbial that is plausibly assigned the value [0 Anterior, 0 Posterior] is the *wh*-question *when*. This is because this adverbial may coöccur with 'past', 'present', and 'future' tenses, as shown in (i):

(i) a. When do we arrive?
b. When did we arrive?
c. When will we arrive?

this question is simply to note that these feature assignments do not exhaustively describe the meaning — even the temporal meaning, as we have just seen — of the temporal elements that bear them; rather, they reflect only those aspects of an element's meaning associated with its ability to locate an interval in time. Since various temporal elements that we have considered may serve this function only through their interaction with other grammatical elements or context, it is not implausible for them to have the same value for [Anterior, Posterior], and thus to have lexical specifications that differ in other respects — much as different nouns or verbs would.

The foregoing descriptions of temporally specified elements — tense, modals, and adverbials of temporal location — thus identify some of the basic components of the temporal marking system of English, which determine the syntactic contribution to the temporal interpretation of simple sentences. One crucial component of this system, however, has been omitted: this is the verb itself, to which no temporal specification has been assigned. Yet this omission has been a deliberate one, reflecting an assumption that has been implicit in much of the discussion in this chapter. This is that verbs and their arguments describe 'situations', but have no inherent ability to locate them in time.[111] In terms of the feature analysis being proposed here, this means that the verb is not lexically associated with the feature matrix [Anterior, Posterior]. (Note that this applies to main verbs, auxiliaries, and participles, since none of them, by hypothesis, has a locational function.) Of course, since the verb is the syntactic foundation of our ability to refer to 'situations', and as such is the *sine qua non* of a theory of temporal reference, it is necessary to integrate it into our analysis of the temporal system, and to describe how it serves this important rôle. We shall be addressing the issue of how verbal elements are 'temporally located' in the next section, where we shall be canvassing a proposal based on Higginbotham's 'linking theory'.

3.2. THE 'LINKING' MECHANISM

We concluded the last section with the suggestion that the temporal elements described there must bear some relation to the VP (containing the verb and its arguments), given that the latter element's function of specifying a 'situation' is logically prior to the former elements' function of locating this 'situation' in time. Here we shall be exploring one means by which the temporal value of the VP might be determined, which involves a device of 'linking'. The claim to which this device gives form is that the VP is assigned a temporal value in virtue of the association of its head with an adverbial of

[111] This echoes Hornstein's (1990: 170) claim that 'the temporal contour of the E point is a function of the particular predicate that provides it'; and Zagona's (1990: §2.1.2) claim that the 'VP [is] the constituent that is evaluated with respect to Speech-time.'

temporal location, if there is one present, and otherwise by the temporal feature matrix under Infl.

This claim is consistent with the observation that 'E', the time of the 'situation' described by the VP, may be distinct from the time specified by the tense itself, as in the case of past and present 'futurates'; but that the availability of this distinct 'E' depends upon the presence of an adverbial. Interestingly, this is also consistent with the position of these temporal adverbials in a syntactic tree — which, according to standard constituency tests (as already noted in §1.3.1.3), is under VP:[112]

(168) a. * John will [$_{VP}$ leave] on Friday and Mary will [$_{VP}$ Ø] on Saturday.
b. John will report on Friday and Mary will [$_{V'}$ do so [$_{V'}$ on Saturday]].
c. John will report on Friday and Mary will [$_{V'}$ do so too].

Note that the results of these tests are at odds with, for example, Enç's (1987: 652) assumption that these adverbials are generated as sisters to I',[113] and as such lend no particular support to the claim driving this assumption, which is that adverbials of temporal location serve as the antecedents of tenses in such sentences. However, they

---

[112] Stroik (1990) also argues that temporal and locative adverbials are internal to VP. His claim, however, is that they are sisters to V — which is difficult to square with the results of the diagnostic given in the text. Note that this claim is an extension of Larson's (1988) treatment of double-object constructions, which has been criticized by Jackendoff (1989), among others. It should be noted that the precise position of these adverbials in the VP — whether they are, for example, adjoined to V' or to VP — is arguably not crucial to the analysis given being presented above, since what is crucial is only that these adverbials can be seen to locate the 'situation' described by the verb and its arguments. Of course, if we take the subject to be generated in the Spec of VP, then this claim is more compatible with the assumption that this adverbial position is adjoined to VP, since in that position it naturally modifies the entire VP. On the other hand, the results of the constituent tests shown in (168) give stronger support to the assumption that this position is adjoined to V'. Unfortunately, this problem cannot be resolved here, and must be left for future research.

[113] Admittedly, there are sentences like that in (i), which appear to exhibit a deletion of I', and thus to indicate that the adverbial is adjoined no lower than this node:

(i) John will leave on Friday and Mary on Saturday.

However, the effect of this example is blunted by those given in (ii)–(iii), which cannot be analysed in terms of I' deletion:

(ii) a. My mother met with the principal on Thursday, and the dean on Friday.
b. My sister spoke to Mrs. Wimble on Friday and the dean on Saturday.
(Sag 1976: 150, (3.2.7ab))

(iii) a. Joan will cook the meals today, and Barbara tomorrow.
b. Bob will interview some candidate this morning and Peter this afternoon.
(Quirk *et al.* 1972, cited in ibid., 158–59)

What the latter examples suggest is that these are not examples of constituent-driven 'deletion' after all, but of the phenomenon of 'gapping', which appears to be governed by different principles (see e.g. Sag 1976 for discussion). As such, they do not consitute counterevidence to the claims made in the text, and might be set aside here.

are in perfect accord with the claim that such adverbials locate the 'situation' described by the VP, and thus specify 'E'.

Having indicated the general form of this 'linking' proposal, we can now proceed to sketch in its details — in particular, those of the 'linking' mechanism itself, which is responsible for associating verbs with temporal elements. Both the device and the proposal more generally have their source in Higginbotham's (e.g. 1983) 'linking' approach to binding theory,[114] in which a device of 'linking' supersedes the device of coindexation found in standard binding approaches.[115] The former, like the latter, serves to indicate 'the assignment of the anaphor-antecedent relation to two positions in a syntactic structure', and is posited to 'appl[y] freely between argument positions at S-structure, and automatically in the case of movement rules' (ibid., 401–2). There is, however, a crucial difference between the two, as suggested by the latter's graphical representation — that of an arrow pointing from the anaphor to the antecedent (ibid., 401), as shown in (169):

(169) Y X

'X is linked to Y'

The difference is that the relation established by 'linking' is asymmetric, while that established by coindexation is symmetric. The former device can thus indicate referential dependence of one NP on another without implying, as the latter does, that the two NPs are coreferential. This offers 'linking' certain distinct advantages over coindexation. One of them — and arguably the chief motivation for 'linking theory' — is that it permits a straightforward account of instances of 'split antecedence', illustrated in (170):

(170) John told Mary they should leave. (ibid., 399, (11))

On the 'split antecedent' reading of this sentence, the pronoun *they* has two antecedents: namely, *John* and *Mary*. Of course, since coindexation indicates simply that NPs are coreferent, a binding theory that exploits such a device has no direct means to express this kind of 'anaphoric interaction' between singular and plural NPs, nor analogously in the case of plural NPs that merely overlap in reference (ibid., 399).

Higginbotham notes that this problem for coindexation is hardly an insurmountable one, and can be solved simply by enriching the device 'to distinguish

[114] This proposal also has important similarities with Zagona's (1990) binding-theoretic treatment of tense, which we shall be discussing in chapter 3.

[115] This approach has also gained currency in binding research conducted within the 'Minimalist' programme; see e.g. Hornstein 1995.

referential overlap from identity'. This could be done, for example, by 'assign[ing] to each argument a *set* of numerical indices, this set to be a singleton if and only if the argument is grammatically singular' (ibid., 400) This would result in an indexing of the sentence in (170) as shown in (171):

(171) John$_i$ told Mary$_j$ they$_{\{i,j\}}$ should leave. ($i \neq j$) (ibid., (12))

However, this move is at best a partial success, for many reasons. The most obvious is that it creates a far less transparent representation of antecedence. As Higginbotham (ibid., 401) argues, 'numerical indexing of structures', even in this more elaborate form, 'loses information in comparison with a direct assignment of antecedence, because indexing abstracts both from the particular choice of antecedents giving rise to the indexed structure, and from the direction in which the relation was assigned.' This loss of information results in some rather serious technical problems.[116] Among them is that associated with the procedure for indexing plurals that have more than two antecedents in the sentence. The problem here is that the membership of the set of indices for such plurals would appear to depend on their antecedents. Thus, the indexing procedure would either need access to all antecedents in the sentence in order to provide the correct number of indices for the plural — which would mean abandoning a 'free indexing' procedure — or would continue to index freely, giving rise to an infinite number of possible sets of indices, since any number of antecedents would have to be allowed for. Neither of these possibilities is desirable from a methodological standpoint. More than this, they appeal to an implausible view of the relation between syntax and reference: one according to which the syntactic representation of plural NPs is always sensitive to the cardinality of the sets to which they refer. This is implausible because the syntactic representation of NPs does not, in general, seem to be so sensitive — whence the existence of quantifiers, whose purpose is precisely to indicate the cardinality of the referents of NPs. This problem is also recognized by Higginbotham (1985: 573, cited in Lasnik 1989: 165), who remarks that

> [t]he interpretation could not be that the number *n* [the cardinality of the set of indices] gives the intended number of the referent; for it must be possible to wave at a crowd without knowing how many people one is waving at.[117]

---

[116] I wish to thank Carl Vogel for helpful discussion of some of the computational issues involved here.

[117] Curiously, Lasnik's (1989: 166) response to this very serious problem is to make the orthogonal observation that '[a]n individual integer index has no interpretation in standard versions of indexing. Choice of, say, 5 rather than 17 as the index for a particular NP is of no semantic import.' Of course, Higginbotham is referring to the number of indices in a set, not the symbol chosen to represent a given index.

In the light of Higginbotham's analysis, all of these difficulties with coindexation appear to be artefacts of this device's failure to encode a relation of antecedence. Since this relation is so basic to our knowledge of the meaning of anaphoric NPs, the fact that the 'linking' approach does encode such a relation lends it considerable credence.

The issues that we have just discussed are perhaps even more salient, and thus the case for 'linking' even stronger, in the domain of temporal anaphora. This is because the phenomenon of overlapping reference is more commonplace here than in the nominal domain, and the internal structure of the intervals to which temporal expressions refer even less plausibly treated in terms of sets of indices. A 'linking' approach, in fact, has just the right properties for analysing 'anaphoric interactions' between the verb and its 'temporal antecedents', since it can readily capture the observation that the former element has no temporal value of its own, and acquires one only in virtue of its relation to the latter elements; and that (as we saw earlier) the relation between the intervals respectively picked out by temporal 'anaphor' and 'antecedent' may be one of identity or non-identity, as the following sentences illustrate:

(172) a. Joe was here yesterday.
b. Joe was here at five o'clock.
c. Joe left at five o'clock.
c'. Joe left.

The relations in question, then, are those of (i) inclusion of the interval picked out by the VP 'anaphor' in that picked out by an adverbial 'antecedent', as in (172a); (ii) inclusion of the interval picked out by an adverbial 'antecedent' in that picked out by the VP 'anaphor', as in (172b); and (iii) identity of the two intervals picked out by VP 'anaphor' and 'antecedent', whether the latter is an adverbial, as in (172c), or the feature matrix in Infl, as in (172c').

Observe that neither of these two claims about temporal anaphora can be readily expressed in terms of coindexation. Since this device encodes no distinction in the grammatical status of various coindexed elements, it cannot capture the relevant asymmetry in the temporal value of verbs and their 'antecedents'.[118] Nor, as we just noted, can it encode a relation of 'referential overlap' without creating serious technical problems. These considerations thus clearly favour 'linking' over coindexation as a device to indicate anaphoric relations in this domain.[119]

---

[118] This suggests that there might also be a technical problem in implementing a coindexing procedure here, since it is unclear what sort of rule could ensure that all and only the relevant elements received a temporal index. Note that these elements do not form a natural class: V and Infl are heads, while adverbials are maximal projections; and the latter two bear temporal features, while the former does not.

[119] We shall also see further reasons in chapter 3 for favouring linking over coindexation.

Of course, we have yet to consider how 'linking' should be interpreted, and thus whether it can fulfil the semantic task assigned to it. As a start, we might say that 'linking' of X to Y indicates most generally that X is 'evaluated with respect to' Y. This echoes Higginbotham's (ibid., 404) claim that the 'linking' of X to Y indicates that X is 'dependent' on Y — the 'intuitive idea' here being that 'an item is dependent upon those elements from which it receives its interpretation.' In the case that we are examining here,[120] in which X, as the verb, has no temporal specification of its own, we might understand this relation of 'dependence' as one in which the reference of the phrase of which the verb is the head includes or is included in the reference of the phrase of which Y is the head (where Y is a tensed Infl); or to which Y is equivalent (where Y is a temporal adverbial).[121] Which of these relations of 'dependence' a sentence actually expresses is determined by the lexical properties of both the 'anaphor' and the 'antecedent' — a possibility consistent with the data of tense-adverbial interactions as presented throughout this chapter. What this means, then, is that 'linking' itself is silent about the precise relation between the interval occupied by the 'situation', as described by the verb and its arguments; that specified by a temporal adverbial, if there is one; and that representing 'R', as determined (at least in part)[122] by the tense form itself.

We might note, finally, that 'linking', as a notation on phrase markers, might be understood, given current 'Chomskyan' assumptions about grammatical representation (see e.g. Chomsky 1993), to be represented at the level of LF. Just how this assumption interacts with other claims about this level of representation — in particular, those about verb raising — is a difficult and important question, but one more which must await further study.

3.2.1. LINKING CONDITIONS

In the previous section, we saw that the 'linking' procedure can be taken to apply freely in simple sentences, and to serve to associate the verb, which was itself not specified for the feature matrix [Anterior, Posterior], to adverbials of temporal location

---

[120] We shall be considering cases in which one temporally specified element is 'referentially dependent' on another in chapter 3.

[121] We have already seen that this disjunctive formulation of 'dependence', which permits inclusion of ||X|| in ||Y|| and ||Y|| in ||X||, is required to capture the attested relations between temporal 'anaphors' and antecedents'. Note, however, that it also seems to be required in the nominal domain, given the possibility of 'referentially dependent' readings for the embedded NPs in each of the following sentences:

(i) a. John told Mary that they should leave.
b. The twins both said that it was Johnny who was the winner.
c. John said that he was tired.

[122] In fact, the determination of 'R' also involves a significant contribution from context, and commonly from temporal adverbials, as we have seen. We shall be giving more attention to this matter below.

or tensed Infl, which were. The result of this procedure was to establish a temporal value for the verb and its maximal projection,[123] which could either be distinct or non-distinct from that of tensed Infl. Let us now examine the structural conditions of 'linking' in somewhat more detail, to see if we can make some of its properties more explicit.

Given the phrase structure suggested by the pattern in (168), we might posit that 'linking' applies cyclically, targeting a temporal element within the projection of the verb in the first instance, and tensed Infl only when no such adverbial is available. We might also posit that this is not because of some principle favouring shorter 'chains', but rather because 'linking' serves to ensure that verbs are temporally associated with the temporal adverbials that 'modify' them, reflecting a significant asymmetry between the two elements that serve as the verb's 'temporal antecedents'. Note that tensed Infl is an obligatory constituent in a sentence, and its temporal function — namely, that of encoding the 'RS' relation expressed in a sentence — is a basic one. As such, it might be taken to discharge its 'temporal duties' without entering into a 'linking relation' with any other syntactic element, and thus consisting of the sole 'link' in a 'temporal chain'. Temporal adverbials, in contrast, are optional elements, and stand in a relation of both syntactic and semantic dependence on a particular head: namely, that of the projection in which they occur.[124] As such, a temporal adverbial may fulfil its 'temporal duties' only by being in construction with this head. Notice that this might help to explain why 'fronted' adverbials (as noted earlier) have 'R-oriented', rather than 'E-oriented' readings. If these adverbials are adjoined to IP, as we have been assuming, then they are outside the verbal projection, and thus in construction not with V, but with Infl. The question then arises whether the relation between a 'fronted' adverbial and Infl involves 'linking'. Let us say that it does not, given that neither element is dependent on the other for its temporal specification. Of course, since tensed Infl encodes no more than an 'SR' relation, the particular interval to which 'R' corresponds is ultimately determined by this 'fronted' adverbial. What is being suggested, then, is that there is no syntactic relation of dependence in either direction between the adverbial and Infl; and that when the two elements have the same temporal specification, the former is simply taken to locate 'R',

---

[123] Although the fact that it is the verb that actually links, and not the VP, makes this analysis compatible with Enç's (1981, 1986) claim that NPs may be assigned distinct temporal indices.

[124] While it is verbs that generally link to adverbials, nothing prevents a similar linking of nouns if we formulate linking in terms of the principle that adverbials are linked to the head of the projection containing them. This applies to obviously eventive nouns, such as those in (i), as well as to non-eventive, where the adverbial simply locates these in time:

(i) a. my birthday yesterday
b. my home last year
c. the destruction last year

as part of a general interpretative procedure.[125] The relevant analogy is to 'accidental' or 'non-presupposed' coreference between NPs, as discussed by Heim (1982: 315ff.) and others, and illustrated below, where coreference is determined by context, rather than by binding:

(173) a. He is John.
b. He must be John, because he put on John's coat. (ibid., 315, (1)–(2))

Accordingly, we might see the 'SR' relation encoded by Infl as capable of being 'contextually sharpened' in various ways (or otherwise left indeterminate), and 'fronted' adverbials as providing one means of doing so. The asymmetry that this entails in the 'linking' behaviour of temporal adverbials when they are associated with verbs and when they are associated with Infl inevitably complicates the temporal system somewhat. It nevertheless seems consistent with a difference both in the respective temporal values of these two heads and in the respective 'modifying' functions that adverbials have been argued to assume in these different positions — the temporal adverbial serving, when in the VP, to 'augment' the meaning of the VP by specifying its temporal location; and, when adjoined to IP, to 'affect the general modal structure in terms of which interpretation is specified' (McConnell-Ginet 1982: 180), determining the time for which the assertion made by the sentence is to be evaluated, as suggested in §1.3.3.1.

All of these properties of 'tense linking' in simple sentences may be captured in the conditions given in (174):

(174) CONDITIONS ON INTRACLAUSAL TENSE LINKING:
a. [+ V, - N] elements must be in a chain linked to an element lexically associated with the feature matrix [Anterior, Posterior].
b. No chain may contain α, a head, and β, a maximal projection, each lexically associated with the feature matrix [Anterior, Posterior].

The first condition serves simply to ensure that verbs are in a 'temporal chain', and thus that their projections are assigned a temporal interpretation. The second condition serves to rule out 'linking' between Infl and adverbials, whether they have identical or non-identical feature specifications. The central motivation for this condition is to capture 'futurate' readings of adverbially modified 'past'- and 'present'-tensed sentences, in which, as we have seen, temporal adverbials locate the 'situation' described by the VP

[125] This is also consistent with (and may ultimately explained in terms of) the claim of Hinrichs 1981, Partee 1984 and others that '[i]f a sentence begins with a past adverb... that adverb is processed before the main clause and serves to update the current reference time... provid[ing] a descriptive characterization of the new reference time' (Partee 1984: 257).

at a time distinct from that indicated by tensed Infl. Since the 'futurate' reading is available only when a temporal adverbial is present, and even when the adverbial has the same temporal specification as Infl, its analysis appears to require that each distinct 'temporal chain' produced by the temporal elements of a sentence be able to specify a distinct interval in the sentence's temporal representation. Of course, one such interval may be understood to include another whenever the temporal values of the elements that specify them are identical (this likely the 'default' reading of such identical specifications, as we suggested above).[126] However, this possibility is perfectly compatible with the specification of distinct intervals, and does not lessen the need for them in the case of 'futurates'. Note, finally, that this second condition, serves only to rule out 'linking' between Infl and adverbials. Significantly, it does not rule out 'linking' between two temporally specified elements in general — nor, in particular, between matrix and embedded Infl nodes, whose temporal function, as we have already suggested, is rather different from that of temporal adverbials. The possibility of such an interclausal 'linking' relation will, in fact, be the key to the explanation of tense-tense interactions in chapter 3.

So far, we have restricted our attention to sentences that contain a single verb form. A question thus arises of how 'linking' applies to complex verb forms, which contain auxiliaries and 'past' or 'progressive' participles (or both). An answer to this question might start with another fairly standard assumption that each element of these complex forms is a verb, and that a higher verb selects a VP whose head is a lower one. Given this assumption, an application of the '*do so*' test indicates that the participles but not the auxiliary verbs in these constructions may host temporal adverbials in their own projections:

(175) a. Joe is tending the bar on Monday and Seth is [$_{V'}$[$_{V'}$ doing so [on
a'. Joe is tending the bar on Monday and Seth is [$_{V'}$[$_{V'}$ doing so]], too.

b. Joe had tended the bar on Monday and Seth had [$_{V'}$[$_{V'}$ done so [on Tuesday]]].
b'. Joe had tended the bar on Monday and Seth had [$_{V'}$[$_{V'}$ done so]], too.

c. Joe had been tending the bar on Monday and Seth had [$_{V'}$ been [$_{V'}$[$_{V'}$ doing so [on Tuesday]]]].
c'. Joe had been tending the bar on Monday and Seth had [$_{V'}$ been [$_{V'}$[$_{V'}$ doing so]]], too.

---

[126] Although there are certainly clear cases in which two identically-specified elements do not pick out the same or even overlapping intervals, as we shall see in chapter 3.

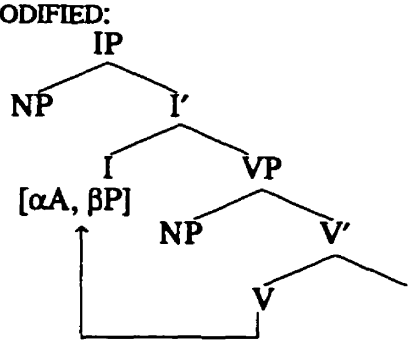
We might take these results to mean that temporal adverbials may be associated with thematic but not auxiliary verbs. A simple reason for this might be that an auxiliary verb, given its grammatical function, cannot serve to locate a 'situation' in time, and accordingly, cannot bear a temporal value distinct from that of the Infl which it supports. This possibility can be expressed in terms of the following condition:

(176) CONDITION ON AUXILIARY VERB LINKING:
Auxiliary verbs are obligatorily linked to the temporally specified Infl in their clause.

This condition captures the syntactic dependence of auxiliary verbs, and correlates it with a temporal dependence. It also permits us to treat the 'past' participles contained in 'perfect' forms, which represent their thematic verbs, in a fashion parallel with other verbs; accordingly, they, too, link to temporal adverbials or Infl. In other words, the special properties that 'past' participles have, as described in §1.3, derive from lexical specifications which are irrelevant to the operation of the 'linking' mechanism.[127] In particular, their positive specification for a [Perfect] feature, posited in §1.3.3, is not recognized by this mechanism, since the feature in question is not one of temporal location, and as such is not within the scope of its operation. What this means is that there is no incompatibility between the specification of 'past' participles for a [Perfect] feature and the requirement that they be 'linked'.

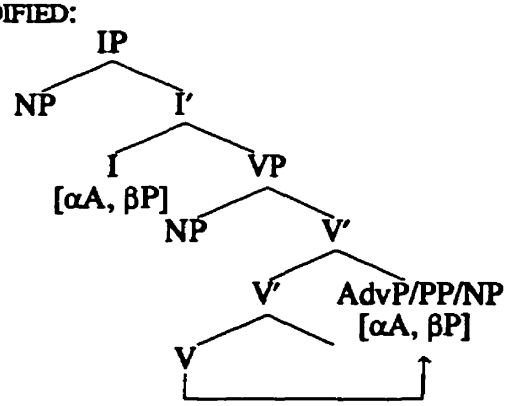
The proposed system thus produces two basic 'linking' configurations: one associated with unmodified VPs, in which the verb is 'linked' to and thus temporally located by Infl; and one associated with modified VPs, in which the verb is 'linked' to and thus located by a temporal adverbial. These configurations are indicated by the tree diagrams in (177) and (178), respectively:

(177) UNMODIFIED:



[127] The precise status of these forms — and the possibility that their representation involves a functional category that selects a VP (see e.g. Travis in preparation), on analogy with finite verb forms — is a topic for future research.

(178) MODIFIED:



3.3. APPLYING THE ANALYSIS

We are now ready to observe the operation of this 'linking' mechanism on the syntactic elements — verbs, temporal adverbials, and Infl — that lie in its domain. As we shall see, this mechanism yields straightforward results for a range of configurations, including those that contain 'simple' and 'perfect' verb forms, and those in which temporal adverbials are present and absent.

3.3.1. 'PAST', 'PRESENT', AND 'FUTURE'

Let us begin with the simplest cases: namely, unmodified 'present'-, 'past'-, and 'future'-tensed sentences like those in (179).

(179) a. Joe is here.
b. Joe was here.
c. Joe will be here.

Since there are no adverbials to satisfy the 'linking conditions' in these cases, the verb is 'linked' to (the feature matrix under) Infl — this 'chain' expressing the 'R,E' relation that characterizes these unmodified sentences (with the respective specifications of Infl expressing 'S,R', 'R-S', and 'S-R'). Note, however, that a 'linking' of the verb to Infl does not indicate that 'E' is identical to 'R'; in fact, as we saw above, it is the lexical properties of the VP, together with context, that determine the relative length of these two intervals. Note, too, that 'R' itself must be contextually determined, since the temporal features of Infl do not specify a precise location for it.

From here we can turn to more complex cases of 'linking' involving temporal adverbials. These cases yield a considerable range of readings, given the temporal properties of adverbials — in particular, the temporal indeterminacy of CC adverbials,

which gives rise to 'habitual' and 'futurate' as well as 'semelfactive' readings; and the 'dissective' nature of many 'deictic' adverbials, which permits them to coöccur with different tenses, and to be used in the description of 'situations' of long and short duration. As we shall see, a 'linking' analysis, in concert with the feature system proposed earlier, provides a plausible account of this range of readings.

3.3.1.1. 'MATCHING' INFL-ADVERBIAL COMBINATIONS

Let us first examine sentences with temporal adverbials whose temporal value is the same as that of Infl. Instances of such sentences, which respectively illustrate matching [- Anterior, - Posterior], [+ Anterior, - Posterior], [+ Anterior, - Posterior] adverbial-Infl combinations, are given in (180):

(180) a. Joe is at home now.
b. Joe was at home yesterday.
c. Joe will be at home tomorrow.

In each of these cases, the verb is 'linked' to the adverbial, satisfying the 'linking conditions'. As suggested above, the grammar itself establishes no relation between the adverbial and Infl; instead, their identical specifications simply lead to a reading of the sentence in which 'R' is taken to have the same value as the adverbial. Note, however, that 'E' need not correspond to the interval specified by the adverbial, despite the existence of a 'chain' linking the verb to this adverbial. This is because the verb is merely 'dependent' on the adverbial — a relation which, as we have seen, permits 'E' to properly include, be identical to, or be properly included in the interval specified by the adverbial, the determination of one of these possibilities being a matter of context and the lexical properties of the verb and its arguments and of the adverbial itself.

3.3.1.2. 'COMPATIBLE' INFL-ADVERBIAL COMBINATIONS

Let us turn next to what we might call 'compatible' combinations of tensed Infl and adverbials: that is, combinations in which 'present', 'past' and 'future' tenses are modified by 'temporally indeterminate' [0 Anterior, 0 Posterior] CC adverbials, as exemplified in (181):

(181) a. The team leaves on Tuesday.
b. The team left on Tuesday.
c. The team will leave on Tuesday.

Because of the unspecified temporal value of the adverbial in such sentences, a range of readings is available for them. Thus, all of the sentences in (181) have both 'semelfactive' and 'habitual' readings. These are represented by the 'linking' of the verb to the adverbial, the difference between them lying, by hypothesis, only in the value of the CC adverbial as supplied by context. More specifically, the 'semelfactive' reading depends upon the contextual determination of a single interval, while the 'habitual' reading involves a 'universal' reading of the adverbial, which includes all of the contextually relevant intervals that the adverbial names. Note also that the occurrence of a 'dissective' adverbial like *on Tuesday* with a VP that describes a punctual 'situation' like the team's leaving means that the adverbial does not specify the precise time of the 'situation' but only the interval that includes the time of this 'situation'. (The importance of a relation of inclusion between the interval specified by a 'dissective' adverbial and the interval in which the 'situation' is located will also emerge in our discussion of 'mismatching' Infl-adverbial combinations in §3.3.1.3.1.)

Also worthy of note is that the 'semelfactive' reading of the 'present'-tensed sentence in (181a) is a 'futurate' reading. Deriving such a reading, however, requires only the 'linking' of the verb to the adverbial; the reading follows from the assumption that the latter specifies an interval distinct from the present time given by Infl, in accordance with our claim in §1.2.5 that the 'present futurate' describes a present 'scheduling' of a future 'situation'. (Of course, this interval must be determined by context to be subsequent to, rather than prior to, the present time in order for the 'futurate' reading to obtain; we shall be discussing this matter in greater detail in §3.3.1.2.2.) The 'futurate' reading is likewise available for the 'past'-tensed sentence in (181b), and is derived in the same manner. Moreover, given the temporally underspecified nature of the CC adverbial in this and the other sentences in (181), as just noted, this reading might be distinguished from the 'standard' past reading in terms only of the different intervals picked out by the adverbial, as determined by context: in the case of the 'standard' reading, this interval includes 'R', while in the case of the 'futurate' reading, it is subsequent to 'R'. (A purely contextual distinction between these two readings also suggests a reason why the 'futurate' reading of sentences like this one is not salient: namely, that such a reading requires the contextual availability of two distinct intervals, rather than the single interval that figures in the 'standard' reading, which expresses 'R,E'. The former, we might guess, is simply less accessible, given its greater complexity.)

3.3.1.3. 'MISMATCHING' INFL-ADVERBIAL COMBINATIONS

From what we have seen so far, a 'linking' analysis is able to account for a number of different readings that arise with sentences containing temporal adverbials. We shall now consider some sentences that offer a more challenging test of the empirical adequacy of this analysis: those that exhibit 'mismatches' between the respective temporal specifications of the Infl and temporal adverbials that occur in them. We shall be examining both 'mismatches' that yield unacceptable sentences and those that yield acceptable ones, each of which, as we shall see, raises important questions for the analysis.

3.3.1.3.1. ACCEPTABLE 'MISMATCHES'

We shall start with sentences that display 'acceptable mismatches' between adverbial and Infl. Those that fall into this category include 'present'-tensed sentences with future-time-denoting adverbials; 'past'-tensed with present- and future-time-denoting adverbials; and 'future'-tensed sentences with present-time-denoting adverbials, as illustrated in (182):

(182) a. The team leaves tomorrow.
b. The team left tomorrow.
b′. The team left today.
c. The team will leave today.

Notice that these sentence do not receive a 'natural class' of readings: the first two receive only 'futurate' readings, the third both 'futurate' and 'semelfactive' readings, and the last only a 'semelfactive' reading.

The 'futurate' readings here have essentially the same analysis as those associated with the sentences in (181a–b), involving the 'linking' of the verb to an adverbial whose feature specification is distinct from that of Infl. (The only difference between these examples and those in (181) is that the 'deictic' character of the former adverbials determines only a single interval on an occasion, while the 'temporally unspecified' character of the latter ones permits a range of intervals, as we have seen.) The more difficult cases here are the 'semelfactive' readings of the sentences in (182b′, c), since these appear to locate a past 'situation' and a future 'situation', respectively, in the present. A solution to this problem, as we noted earlier, rests on a recognition of the 'dissective' character of the adverbials that appear in these sentences. It is this character that permits the two sentences in question to locate 'situations' at subintervals of today that are respectively prior to and subsequent to the time of speech. We might posit,

then, that the verb in each sentence is 'linked' to the adverbial, the interpretative consequence of which is only that the 'situation' described by the VP is included in the interval specified by the adverbial. The interpretation of the sentence demands that the hearer reconcile the present time in which these sentences apparently locate the 'situation' with the past and futures 'Rs' at which they respectively locate an individual. Since the 'dissective' character of the adverbial makes such a reconciliation possible, both sentences are perfectly acceptable. This analysis of 'mismatching' Infl-adverbial combinations, though admittedly sketchy, does at least give some suggestion of how we are able to interpret sentences that contain seemingly incompatible sources of temporal information. Moreover, it does so by assigning unitary temporal specifications to 'deictic' adverbials like *yesterday*, *tomorrow*, and *today*, instead of treating them, rather implausibly, as ambiguous.

3.3.1.2.2. UNACCEPTABLE 'MISMATCHES'

Of course, 'mismatching' Infl-adverbial combinations are not always acceptable, and thus not all amenable to the foregoing analysis. Among the combinations that are unacceptable are those exemplified in the following sentences:

(183) a. * Joe will leave yesterday.

b. * Joe $\left\{\begin{matrix}\text{is leaving}\\ \text{leaves}\end{matrix}\right\}$ yesterday.

A plausible response to the unacceptability of such sentences is to attribute it to non-grammatical sources. We might claim, then, that the occurrence of a past-time-denoting adverbial with a 'future'-tensed sentence is infelicitous simply because, given the referential resources available to a speaker, the choice of such a sentence to locate a 'situation' in the past seems either less than fully informative if, for example, the speaker knows that Joe has left yesterday; or too strong a claim if the speaker does not know this, in which case a 'future perfect' form, which explicitly locates 'E' before 'R', would serve to express his or her knowledge about Joe more perspicuously:

(184) Joe will have left yesterday (if his plans didn't fall through).

In other words, a sentence like that in (183a) seems to disregard the basic function of 'future'-tensed sentences to make assertions about 'situations' that are not yet verified. Even the sentence in (184) performs this function, since the 'situation' that it describes

(as suggested by our discussion of 'perfect' forms in §1.3.3) is not that of Joe's leaving, but of his having left.

One might offer similar remarks regarding the unacceptability of the 'present'-tensed sentences in (183b): the availability of the 'past' tense makes it odd for a speaker to use a 'present' tense to locate a 'situation' in the past. In this case, however, there is a more compelling reason for attributing unacceptability to a non-grammatical source. This is that the unacceptability disappears when the relevant sentences are placed in 'narrative present' contexts, such as that illustrated in (185):[128]

(185) So, Joe is leaving the house yesterday, and he steps on a nail...

What this suggests, then, is that the grammar itself does permit a 'present' tense to occur with a past-time-denoting adverbial, although the contexts in which such a combination is felicitous are rare. As it happens, we have seen other cases — including certain 'past futurate' and adverbially modified 'perfect' sentences — whose marginality or infelicity is plausibly attributed to non-grammatical factors. This is perhaps to be expected in a complex process like language use, in which particular effects commonly have multiple sources.

3.3.2. 'PERFECT' TENSES: HANDLING UNACCEPTABILITY AND AMBIGUITY

As a final test of the 'linking' analysis, let us consider the readings available to sentences containing 'perfect' forms. Unfortunately, our treatment of these sentences — and in particular, those with adverbial modification — must be somewhat tentative, given the tentative nature of our remarks about the 'perfect' feature itself. Nevertheless, the basic 'linking' conditions given in (174) appear largely adequate to the task of describing the various readings in question.

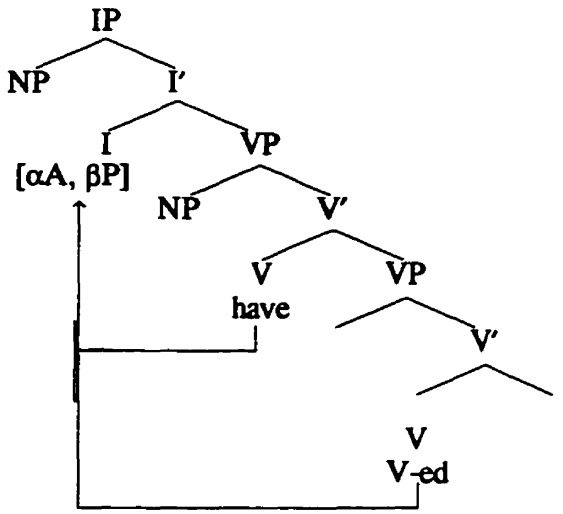
Since finite 'perfect' forms, according to the analysis given in §1.3.3, derive their basic temporal value from Infl, we might posit that the 'linking' structure for sentences like those in (186), in which 'perfect' forms occur without adverbial modification, is that given in the tree diagram in (187):

(186) a. Seth has finished.
b. Seth had finished.
c. Seth will have finished.

---

[128] Such 'narrative present' sentences have also been discussed by Wachtel (1982) and Hornstein (1990: 198–99, n. 12).

(187)



That is, both the auxiliary form *have* and the 'past' participle are 'linked' to Infl — the former as required by the condition on auxiliary verbs given in (176), and the latter as required by our 'Linking Condition A'. Recall that the [Perfect] feature associated with the 'past' participle is irrelevant to the operation of the 'linking' mechanism, so that this form has the same 'linking' status as other verbs. However, it is the [Perfect] feature that has the effect of locating 'E' prior to 'R'; and the 'linking' of the 'past' participle to Infl that ensures that 'E' is located relative to the 'R' determined by the particular value of the temporal features associated with Infl. Accordingly, 'E' is prior to a present 'R' in (186a), a past 'R' in (186b), and a future 'R' in (186c).

The analysis of 'perfect' forms in sentences with temporal adverbials is a less straighforward matter, as the discussion in §1.3 has already suggested. This is because the adverbials in these sentences receive both 'R' and 'E' readings, according to which they respectively specify the interval that represents 'R' and the interval in which the 'situation' itself is located, as illustrated in (188):

(188) a. Joe had left yesterday.

b. Joe will have left yesterday.
= as of yesterday, Joe's leaving has occurred ('R')
= the time of Joe's leaving is yesterday ('E')

In addition, 'temporally unspecified' CC adverbials yield 'indefinite' counterparts of these two readings, whereby the adverbial does not pick out a contextually salient time, but specifies a time that is part of the 'situation' itself. This reading can be brought out by the continuations given in the following examples:

(189) a. Joe had left at five o'clock (before).

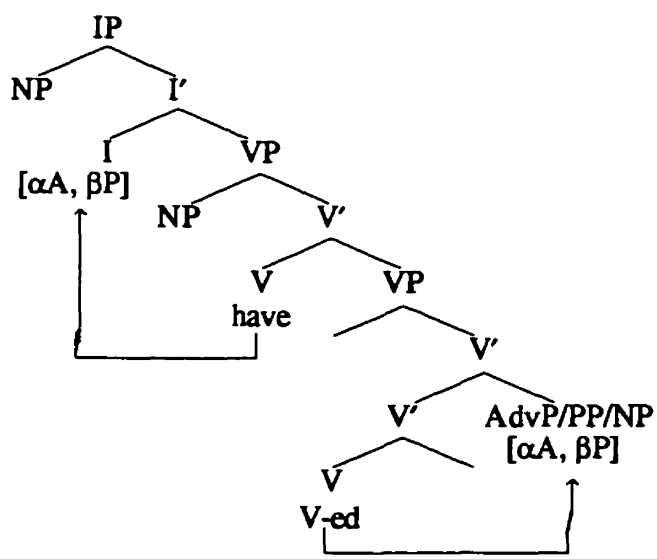
b. Joe will have left at five o'clock (before).

Note that the 'present perfect', though unable to occur with 'deictic' adverbials that specify past intervals, as discussed in §1.3.3.1, may occur with those that specify present ones; in this case, it seems liable to the same 'E'/'R' ambiguity as its 'past perfect' and 'future perfect' counterparts. It may also occur acceptably with CC adverbials, the result of which is an 'indefinite' reading for the adverbial, as just described. These possibilities are all exemplified in (190):

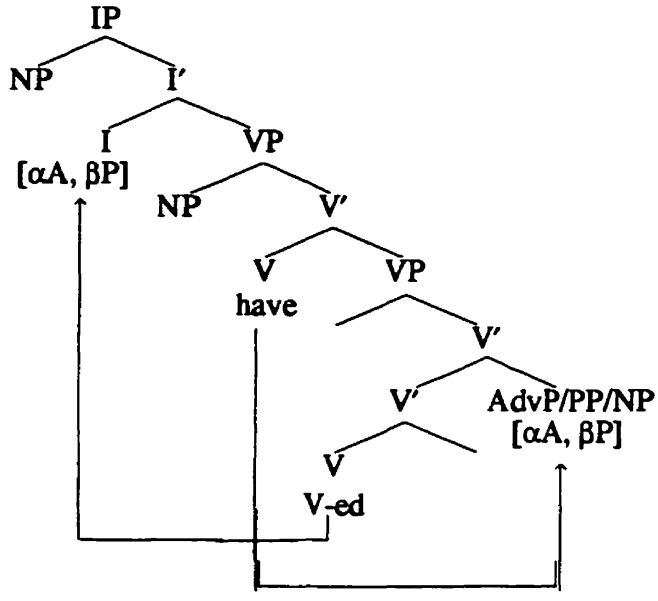
(190) a. I have not played chess this year. (= (122b))
b. * Joe has left yesterday.
c. Joe has left at five o'clock.
* = Joe's leaving is at a specific five o'clock
√ = Joe's leaving is at some unspecified five o'clock in the past ('E')
√ = Joe's having left is at some unspecified five o'clock in the past ('R')

Capturing all of these readings is thus a real challenge to any account of 'perfect' forms. As we saw in §3.3.1.2, our feature analysis alone is able to distinguish 'deictic' from 'non-deictic' readings of the adverbials in these sentences, by associating the former, but not the latter, with specific contextually determined intervals. A distinction between 'E' and 'R' readings, however, cannot be achieved so readily. The 'linking' mechanism does nevertheless suggest a clear possibility: this is that 'E' and 'R' readings are associated with different 'linking' configurations. We might posit that the former reading involves 'linking' of the 'past' participle and the latter 'linking' of the auxiliary to the adverbial. These two possibilities are illustrated in the following tree diagrams:

(191) 'E' READING:



(191) 'R' READING:



Notice, however, that the latter possibility creates a difficulty for the analysis in that it violates the 'auxiliary verb condition': the auxiliary verb is not only 'linked' to an adverbial rather than to Infl, but also receives a value distinct from Infl in the case of 'future perfect' sentences like the following one, repeated from (187b):

(192) Joe will have left yesterday.

What this suggests, then, is that auxiliary *have* does not have any special 'linking' status, and is subject to the same 'linking conditions' as thematic verbs.[129] A more serious problem still remains, however, for the proposed representation of the 'E' reading. This is that the two 'linking' possibilities for the 'past' participle — namely, 'linking' to Infl and to an adverbial — seem to result in substantially different interpretations: according to the former, 'E' is placed prior to the interval given by the 'antecedent'; while according to the latter, it is placed within the interval given by its 'antecedent'. However, it is not entirely clear that this represents a real problem. This is because tenses and temporal adverbials do not have the same temporal properties, as we noted earlier, so that asymmetries in their interactions with other temporal elements

[129] This does not seem to be true, however, for auxiliary *be*, given the readings available for sentences like that in (i):

(i) He had been working at five o'clock.

This sentence has no reading that indicates the ability of *be* to host a temporal adverbial, so that it must, given the claims of our 'linking' analysis, be 'linked' to Infl.

might not be unexpected. But, perhaps more importantly, this is also because the temporal properties of the 'past' participle itself lead to different results when this element interacts with different temporal expressions. Recall, for example, that the coöccurrence of durational adverbials with 'perfect' forms of 'telic' VPs does not result in a reading according to which the adverbial specifies some interval after the completion of the 'situation':

(193)

a. * Joe {has / had / will have} eaten the cake for ten minutes.

b. ≠ 'It {has / had / will have} been ten minutes since Joe ate the cake.' (= (119))

Such patterns indicate quite clearly that the 'past' participle cannot be taken simply to express 'E-R', as was already suggested. However, a more precise characterization of its lexical properties, and the nature of its interaction with different temporal expressions, must await further study.

4. SUMMARY

In this chapter, we investigated the forms and meanings of English tenses in simple sentences, focussing on the range of meanings available to sentences with 'future', 'present', and 'perfect' forms. What we observed was that the meanings of tenses could be described, in 'Reichenbachian' terms, as relations between 'S' and 'R'; and that the 'RE' relation that tensed sentences also expressed was not determined by tenses themselves, but rather by a host of other factors, both grammatical and non-grammatical. Accordingly, the various interpretations that tensed sentences received were most plausibly attributed to these other factors, and not to the ambiguities inherent in tenses themselves. We examined syntactic rendering of this description, which made use of a simple feature system and a 'linking' device. The resulting 'linking' analysis was able to capture a range of readings of sentences with different tense forms and with and without temporal adverbials.

CHAPTER 3

EXTENDING THE ANALYSIS: TENSE LINKING IN COMPLEX SENTENCES

> Why must tenses be something else? Cannot they just be tenses?
>
> Dahl 1992: 649

In chapter 2, we examined the behaviour of tenses in simple sentences; and saw how a syntactic analysis of tenses and time adverbials, which consisted of a feature analysis of these elements and a 'linking' mechanism, could account both for the range of interpretations that different tenses were observed to receive, and for certain restrictions on their ability to combine with temporal adverbials. In this chapter, we shall see how such an approach can be extended to the analysis of tenses in complex sentences — in particular, to the peculiar patterns of interaction between matrix and embedded tenses that have long been a subject of linguistic inquiry.

The theory that we have developed so far has considered only clause-internal or even VP-internal interactions between elements. When we venture beyond the domain of the clause we find interactions of far greater complexity — ones, in fact, which many of the devices of current syntactic theory were designed to explain. Since these devices are often sensitive to a particular type of grammatical element — for example, case checking is relevant only to NPs —, it is natural to ask what type of grammatical elements tenses are, and under what structural principles they might interact. In this way, we may determine whether these interactions can be subsumed under principles that are already in place, or whether new ones must be devised to explain them.

Unfortunately, the possibility that the interclausal behaviour of tenses is guided by such principles has not been pursued in much of the syntactic research on this subject. Indeed, the most common analyses have been derivational ones, which often give little insight into how tenses interact, and suffer from all of the difficulties already detailed for 'futurate' constructions in chapter 2. Another kind of analysis, explored in Rigter 1986 and other studies, brings the interclausal behaviour within the purview of lexical description simply by attributing it to a lexical property of particular tenses; but this strategy, too, appears to be highly problematic. In fact, the weaknesses of such analyses will provide strong arguments in favour of the structural analysis that we shall be canvassing here, which extends the 'linking' analysis presented in chapter 2.

This analysis of tense interactions will seek to develop the claims made in a number of earlier studies regarding the structural principles operating in the domain of tense. These include Smith's (1978, 1981) claim that tenses are *sui generis*, and the relevant principles are 'orientation' and 'sharing'; Hornstein's (1990) claim that tenses

are adverbs, and interact under government; and Enç's (1987) and Zagona's (1990) claim that tenses are referential expressions, and the principles are binding-theoretic. The claim to be explored in this chapter is that tenses cannot be assimilated to any other grammatical category; but that they bear striking similarities to NPs, which may be expressed in terms of 'tense linking' principles analogous to, but distinct from, those of binding theory. These principles will serve to characterize various anaphoric properties of tenses displayed in complex sentences, including those with complement, relative, and temporal clauses. As we shall see, many of the arguments for treating tense-adverbial interactions as instances of clause-internal linking apply equally to the treatment of tense-tense interactions as instances of interclausal linking.

1. Tenses in embedded clauses

To begin, let us once again familiarize ourselves with the data under consideration: in this case, those involving the interaction between tenses in complex sentences with complement and relative clauses. Our objective here, as in chapter 2, will be to assemble a coherent picture of the behaviour of tenses in these contexts by determining which patterns are properly attributable to tenses and which to other factors. It is this picture that will serve as the study for the 'linking' analysis to be presented in §3, which we shall, in turn, apply to a third class of complex sentences: those involving temporal clauses.

1.1. Complement clauses and 'sequence of tense'

Surely the most extensively discussed tense-tense interactions are those occurring between tenses in matrix and complement clauses, and commonly placed under the rubric of 'sequence of tenses' (SOT) in classical grammars and modern grammars that follow them (see e.g. Binnick 1991: 86–93 for discussion). This term, as Dahl (1992: 649) notes, 'may actually be used to cover two kinds of relations: dependencies between the temporal interpretations of different clauses in a sentence, and interclausal dependencies in the choice of tense markings (e.g. past-tense marking in indirect speech in English).' Traditional treatments have tended to focus on the latter, particularly in the context of reported language.

The rule that governs SOT, which is commonly referred to as 'backshift', operates in contexts in which 'the time reference of the original utterance (or mental activity) no longer applies at the time that the utterance (or mental activity) is reported' (Quirk *et al.* 1985: §14.31); and serves to change the tense forms of the verbs in these contexts. That is, 'backshift' is one of the rules — which in English may also include a 'shifting' of other deictic elements such as personal and demonstrative pronouns, and deictic

temporal and locational adverbials; an altering of the form of an original question, command, or request; and the addition of complementizers such as *that* and *whether* to introduce the reported discourse (ibid.; Jespersen 1924: 292; Banfield 1982: 25) — that derive an indirect discourse from a direct discourse construction.

Thus, if the present time serving as the 'deictic centre' in direct discourse becomes a past time in indirect discourse, the embedded tense forms of the former are correspondingly shifted into 'past', 'past perfect', or 'conditional' forms in the latter, in accordance with the mapping given below:

(1)

DIRECT DISCOURSE	INDIRECT DISCOURSE
present	past
future	conditional
future perfect	conditional perfect
past	past or past perfect
present perfect	past perfect
past perfect	

(based on ibid.)[1]

This is illustrated in (2)–(5), where the sentences in (b) are the 'backshifted' counterparts of those in (a):

(2) a. 'I am being paid by the hour,' she said.
b. She said she was being paid by the hour.

(3) a. 'The exhibition finished last week,' explained Ann.
b. Ann explained that the exhibition had finished the preceding week.

(4) a. 'I've been waiting over an hour for you,' she said.
b. She told him that she had been waiting over an hour for him.

(5) a. 'I had studied French for four years at school,' I said.
b. I said that I had studied French for four years at school.

(based on ibid., (5)–(8))

1.2. Problems with the 'quotative analysis'

While the rule of 'backshift' is certainly useful in describing one of the tasks involved in a speaker's translation of direct discourse into indirect discourse, there are many reasons

[1] I have altered Quirk *et al*'s rather idiosyncratic use of the term 'perfective' for the 'have + past participle' construction to the more standard 'perfect'.

to believe that this rule plays no rôle in the grammar. That is, it does not appear to describe a grammatical process whereby indirect discourse is derived from direct discourse, as claimed by the 'quotative analysis' (see Declerck 1991: 158). Perhaps the most compelling of these reasons is that a considerable range of indirect discourse constructions simply have no plausible direct discourse source. These include sentences whose matrix verbs are 'verbs of consciousness' (Banfield 1982: 35), and describe various mental 'states', 'events', and 'processes'; those whose matrix verbs describe 'indirect' means of communication; and those whose embedded clauses include first and second person pronouns and various other deictic elements, and NPs that are liable to 'transparent' and 'opaque' readings.

Consider the indirect discourse sentences given in (6), which are reports of mental 'states', 'events', and 'processes', respectively:

(6) a. Joe still *believed* that Trish loved him.
b. Seth *noticed* that Joe was more morose than usual.
c. Chester *was thinking* that the room was too small for such big egos.

Because such states and activities are 'private', they do not involve verbalization. Reports about them, then, can only be indirect, and as such can find no explanation in terms of the 'quotative analysis' proposed for their 'true' indirect discourse counterparts (that is, those formed from actual verbs of communication).[2]

Given this conclusion, the 'quotative analysis' is rendered even less plausible by the observation that 'true' indirect discourse sentences and sentences like those in (6) do not display any syntactic differences appreciable enough to suggest that they are the result of distinct processes. One interesting difference between them, however, has been noted by Banfield (1982: 23–24): this is that only the matrix verb of a 'true' indirect discourse sentence can take an indirect object, which refers to the addressee of the original discourse. This contrast is illustrated below:

(7)

She { said / sang / yelled / muttered / swore } to him { 'I am tired.' / that she was tired. }

(ibid., 23, (1))

(8) a. * I wondered to you if the train would be late.

[2] Similar data are discussed in McGilvray 1991: 67, *q.v.*

b. * John realized to Mary that he was wrong. (ibid., 24, (2))

Despite the suggestiveness of these examples, closer inspection reveals that the contrast between verbs of communication and other clause-taking verbs is not as sharp as the examples purport to demonstrate. Instead, the availability of these indirect objects appears to depend on much subtler properties of certain clause-taking verbs than their status as verbs of communication alone. For example, the verb *think*, as Banfield herself notes, behaves like a verb of communication in being able both to introduce direct speech and to take a reflexive indirect object:

(9) a. Mary thought to herself: 'I must be late.' (ibid., 35, (25))
b. Joe thought to himself that he really was a bastard.

These observations lead her to identify *think* as a verb of 'self-communication' (ibid., 35). Yet in doing so, she obscures the considerable similarities between this and other 'verbs of consciousness'[3] — in particular, *wonder*, which is among the verbs that she cites as being unable to take indirect objects. Perhaps the most salient similarity, as we have already noted, is that these verbs all describe activities that do not generally involve explicit verbalization; so that they cannot be used (except perhaps in very exceptional circumstances) to describe communication with another. It is thus no surprise that substituting *think* for *wonder* in Banfield's example likewise results in an unacceptable sentence:

(10) a. * I wondered to you if the train would be late.
b. * I thought to you that the train would be late.

But it should similarly be no surprise that the sentence in (10a) has an acceptable counterpart, just as that in (10b) does: one that contains a reflexive indirect object, and which is thereby compatible with the implicature that wondering is a silent activity:

(11) a. I was wondering to myself if the train would be late.
b. I was thinking to myself that the train would be late.

It is significant that the silent nature of thinking and wondering is really no more than an implicature, since we can speak of thinking or wondering aloud. Accordingly, we should be able to adduce other acceptable sentences in which *think* and *wonder* take indirect objects, which in this case succeed by cancelling, rather than conforming to, the

[3] Other such verbs include *contemplate* and *ponder*, to which remarks similar to those offered in the text also apply.

implicature in question. Examples of such sentences are given in (12) below.[4] While these are admittedly not as felicitous as the sentences in (11),[5] they are certainly far more acceptable than those in (10):

(12) a. ? I was thinking aloud to you that the train would be late.
b. ? I was wondering aloud to you if the train would be late.

What this suggests, then, is that there is little to distinguish *think* from *wonder* syntactically: the difference claimed by Banfield in their respective ability to take indirect objects simply does not survive scrutiny.[6] Of course, since it is true that only these and a small number of other 'verbs of consciousness' can take indirect objects, the possibility still remains that a syntactic distinction between 'verbs of consciousness' and 'verbs of communication' does exist, and that the verbs just examined are simply exceptional. However, there are good reasons for rejecting this possibility, too, which are related to the situation type of the verbs in question. That is, *think*, *wonder*, and other 'verbs of consciousness' that take indirect objects appear to describe 'processes'; while 'verbs of consciousness' that do not do so — for example, *believe*, *feel*, *find*, *notice*, and *realize* — appear to describe 'states' or punctual 'events'. While the scope of this study precludes a detailed analysis of the rôle of situation type in the licensing of these indirect objects, we might speculate, following Jackendoff (e.g. 1990: 89–90) and others, that the former group of verbs can be analysed as basically verbs of movement, with their clausal complements (which describe intentional objects) representing the entities that are moving. Given this characterization, it seems relatively straightforward to associate this movement with a 'goal', expressed by the indirect object. In contrast, neither the 'state' nor the punctual 'event' verbs of the latter group can plausibly be analysed as verbs of movement; and it is thus difficult to conceive of the objects of these intentional 'situations' as moving, let alone as moving toward some 'goal'. This difference in the 'situation' types of verbs might arguably be called 'syntactic', inasmuch as it contributes to the construction of different LFs for sentences respectively

---

[4] Note that *think* and wonder have been given 'progressive' forms, which appears to enhance their acceptability by making their 'process' readings more salient.

[5] Part of the reason for this might be that neither thinking nor wondering aloud suggests the communication of something so straighforward and 'linear' as the time of a train's arrival. Compare the sentences in (12) with the following ones, which are arguaby more acceptable:

(i) a. I was thinking aloud to you that Joe might not really be the right man for the job.
b. I was wondering aloud to you whether Joe might really be the right man for the job.

[6] In fact, it is not even clear that *wonder* cannot introduce direct discourse, as Banfield claims; the sentence in (i) is arguably no less acceptable than its counterpart with *think*, given in (9a):

(i) Mary wondered (to herself), 'Will I be late?'

formed from verbs of different 'situation' types (see e.g. McGilvray 1995c for discussion of this point). By the same token, it is also clear that no large-scale syntactic differences underlie the behaviour of these different 'verbs of consciousness' — and certainly none that would underwrite their derivation by different syntactic processes.

One final argument that the ability to take indirect objects cannot be seen as criterial for some class of 'true' indirect discourse verbs is that the indirect objects in question appear not to be subcategorized by verbs of communication, but rather to be adjuncts introduced by a lexical rule (see e.g. Jackendoff 1990: 197–200 for discussion of such rules). This claim rests on the following observations: (i) that these PPs are optional; (ii) they they cannot be considered basic to the meaning of these verbs, inasmuch as the 'situations' that these verbs describe require only a speaker, and not a hearer; and (iii) that they conform to the pattern of spatial PPs that may be realized with any verb that describes motion along a 'path' but does not specify the 'goal' or endpoint of this motion. Such verbs include those given in the sentences below:

(13)

Sam { sent / threw / kicked / hurled / hit } the ball { to Sandy / out the window / into the park / away }.

(Jackendoff 1990: 198, (38b))

That the PPs in (7) and (13) have a similar status is lent further credence by the fact that all of the verbs in (7) but one — interestingly, the verb *say* itself — can take PPs that describe entities other than the addressee of the original discourse:

(14)

She { * said / sang / yelled / muttered / swore } into her coffee mug { , 'I am tired.' / that she was tired. }

What we might conclude from the unacceptability of *say* with the PP in (14) is simply that even these 'verbs of communication' do not form a coherent syntactic class, but exhibit differences amongst themselves that are arguably as great as those — like their

ability to take PPs — that distinguish them from other clause-taking verbs.[7] This gives us still more evidence that this ability to take PPs rests on a host of quite minor lexical properties that characterize certain verbs of the clause-taking class and not others, but which do not define a coherent class of 'verbs of communication'.[8]

This rather long excursus has demonstrated quite plainly that the evidence adduced in favour of a distinct class of 'verbs of communication' is very weak; and — in the absence of new evidence — that no plausible basis exists for analysing indirect discourse sentences formed from 'verbs of communication' and 'verbs of consciousness', respectively, as products of distinct syntactic processes.

The same kinds of arguments apply to a class of verbs adduced by Ogihara (1989: 90–91), and illlustrated in (15) below. While these are undoubtedly 'verbs of communication', they may be distinguished from the more common ones that we have been discussing in that they describe the achievement of some perlocutionary effect by means of verbal indirection:

---

[7] Other 'verbs of communication' whose behaviour offers support for this contention include the 'non-factive' verbs *allege*, *assert*, *claim*, *charge*, *conjecture*, *deem*, and *maintain* (Kiparsky & Kiparsky 1970: 145), which apparently cannot take any kind of PP:

(i)

* The detective { alleged / asserted / charged / claimed / conjectured / deemed / maintained } { to O. J. / into his beer } that he was the murderer .

[8] This view is given further support from a subclass of clause-taking verbs identified by Partee (1973a: 324) as 'verbs of inference', some of which readily take indirect objects, and some of which do not:

(i)

John { proved / showed / * deduced / * discovered / * established } to us that all left - inverses in a group are right - inverses.

(based on ibid., (18))

This pattern seems explainable in terms of the 'verbs of motion' analysis outlined in the text, rather than, say, in terms of the claim that some of these are 'verbs of communication' in some sense and others are not.

(15)

John {implied / insinuated / suggested} that Bill was incompetent.

(based on ibid., 90, (21))

As Ogihara points out, a speaker uttering one of these sentences is reporting not what John actually said about Bill — hence the use of one of these 'verbs of indirection' — but rather what he or she believes John intended to communicate about Bill.[9] This kind of mismatch between what is actually said and what is reported constitutes another argument against the 'quotative analysis' — again given that the syntactic affinity between sentences like that in (15) and more 'accurate' reports like those in (2)–(5) is at least as close as in the cases that we examined above, thus ruling out distinct syntactic derivations.

Two other sources of evidence against the 'quotative analysis' pertain to paraphrase relations between NPs in direct and indirect discourse. The first concerns the many-to-many relation that holds between coreferential NPs in direct and indirect discourse, respectively. That is, a given NP in direct discourse may correspond to any member of an infinite set of coreferential NPs in indirect discourse, and vice versa. This fact presents serious problems for the 'quotative analysis'. One of these, adduced by Banfield (1982: 26), centres upon sentences like those in (16):

(16) a. Smith remarked that I was a writer of your caliber.

b. Smith remarked, '{You / Dorothy / The author} {are / is} a writer of {his / Sam's / that idiot's} caliber.'

(ibid., 26, (4))

Here, the indirect discourse sentence contains first and second person pronouns, which are the only NPs that (in general) may be acceptably used in a discourse to refer, respectively, to the speaker and hearer. Banfield points out that if indirect discourse were actually derived from direct discourse, 'an obligatory transformation would be required' in order to ensure that NPs like those in (16b) were converted into first or

[9] Partee (1973a: 326) makes the same point about the sentence given in (i) (her example (24)), noting that it 'would be regarded as false, or at least misleading, if what Nixon actually said was "the new South Vietnamese government will include Communists"':

(i) Nixon hinted that the new South Vietnamese government would include Communists.

second person pronouns. However, as (16) makes clear, it would be 'formally impossible to specify the source in direct speech for such pronouns of indirectly quoted speech in the structural description of this transformation' (ibid., 26).

Of course, this problem of mismatch between NPs in direct and indirect discourse is a very general one, which arises whenever an NP in one type of discourse is lexically distinct from its counterpart in the other type. Thus, in addition to the many-to-one relation between NPs in direct and indirect discourse, as illustrated by Banfield, we also have the one-to-many relation illustrated in (17), in which the two pronouns in (a) could, on the 'quotative analysis', respectively serve as the direct discourse 'source' of any member of the first and second sets of NPs in (b):

(17) a. Smith remarked, 'You are a writer of his caliber.'

b. Smith remarked that $\left\{\begin{matrix}\text{you}\\\text{Dorothy}\\\text{the author}\end{matrix}\right\}$ $\left\{\begin{matrix}\text{were}\\\text{was}\end{matrix}\right\}$ a writer of $\left\{\begin{matrix}\text{his}\\\text{Sam's}\\\text{that idiot's}\end{matrix}\right\}$ caliber.

(ibid., 26, (4))

Finally, it should be noted that the problem just outlined is not confined to NPs, but also extends to such elements as deictic temporal and locative adverbials.[10] Since adverbials of this type determine their referents from the discourse context, these referents will differ from direct to indirect discourse to whatever extent the time and place of the original discourse differ from those at which it is subsequently reported. Banfield illustrates this point with the following sentences:

(18) a. 'Where is he this morning?' Clarissa asked.

b. Clarissa asked where he was $\left\{\begin{matrix}\text{this morning}\\\text{at 11 a.m.}\\\text{the other morning}\\\text{when Jack arrived}\end{matrix}\right\}$.

(ibid., 26–27, (5))

If Clarissa uses the deictic temporal adverbial *this morning* to ask about his whereabouts at the time of her utterance, then the same temporal adverbial can be used to report her original utterance only if this report is given on the same day. However, the same adverbial need not be used even in this case: any of a host of others may also be used,

[10] An illuminating disucssion of these issues is also offered in Heny 1982: 118–19, *q.v.*

so long as they are coreferential with the one present in the original utterance. We thus see the same problem of mismatch here as we saw with NPs in direct and indirect discourse.

A final problem for any attempt to derive indirect from direct discourse is related to the 'principle of extensionality', and the observation that the behaviour of these two types of discourse with respect to this principle is not symmetrical (e.g. Banfield 1982: 27). More specifically, indirect discourse appears to license both 'transparent' and 'opaque' readings, which respectively obey and violate this principle; whereas direct discourse appears to license only the latter. This can be demonstrated with the sentences in (19), adduced by Banfield:

(19) a. Oedipus said that his mother was beautiful.
b. Oedipus said, 'My mother is beautiful.' (ibid., 27, (6))

Accordingly, the indirect discourse sentence in (19a) has (i) a 'transparent' reading, in which the NP *his mother* (which picks out an individual identified by the reporter of the original discourse as Oedipus' mother, irrespective of Oedipus' actual words) can be substituted *salva veritate* by any other coreferential NP; and (ii) an 'opaque' reading, in which the NP in question is the one which Oedipus himself has used (modulo differences in deictic elements, as described earlier), and for which substitutivity fails. In contrast, the direct discourse sentence in (19b) can only have the latter reading, given that it is a report of Oedipus' original words. Since the 'transparent' reading, then, is associated only with indirect discourse, it cannot be derived from the properties of direct discourse, and must have a different source. But if this is true, then it is not obvious what this source could be, unless direct and indirect discourse are not derivationally related.

Banfield argues that even the 'opaque' reading shared by direct and indirect discourse cannot be seen, in general, to have its source in the former construction. This is for the same reason that we have been rehearsing throughout this discussion: namely, that many of the indirect discourse constructions that have 'opaque' readings have no plausible direct discourse source from which this reading could be derived. A clear example of such a construction is one formed from the verb *believe*, as shown below:

(20) a. Oedipus believed that his mother was beautiful.
b. * Oedipus believed, 'My mother is beautiful.' (ibid., 27, (7))

What this and the other cases of 'mismatch' that we have just seen clearly demonstrate is that indirect discourse is not a reliable guide to what (if anything) has

originally been written or spoken.[11] In other words, 'there is no straightforward, regular syntactic relation between the two types of quotation' (Banfield 1982: 37). This is not to deny that in many instances an exact correspondence does hold between the form and content of direct and indirect discourse, modulo the alterations in deictic elements discussed earlier. But to take such instances as typical or representative of the relation between these two types of discourse is simply to misrepresent the phenomenon. Moreover, to pursue what is ultimately a weak analogy between 'verbs of communication' and other clause-taking verbs is inevitably to overlook more promising analogies between finite complement structures.

Arguably the most promising of these analogies is the one expressed by the term 'finite complement structure' itself. This is because the complementation properties of the 'indirect discourse' verbs that we have been examining appear to be the most reliable guide to their syntactic and semantic behaviour, predicting a range of regularities which cut across the various semantic categories into which they are commonly placed. As we have seen, sentences like those in (6a–b), (8b), (12b), (15), and (20a), all of which clearly lack direct discourse counterparts, nevertheless exhibit the same behaviour with respect to dependencies between matrix and embedded tenses, dependencies of other deictic adverbial elements on context, and substitutivity of embedded NPs. Since the properties of such sentences must be accounted for in any case without recourse to a derivational relationship with direct discourse sentences, a single analysis for both 'true' and 'spurious' indirect discourse sentences is a highly desirable one (ibid., 28, 35). And, of course, just such an analysis becomes available once we recognize that the complement structure that all of these indirect discourse sentences share can serve as its foundation.

1.3. More recent derivational analyses

This insight is indeed the point of departure for many, if not most, recent analyses of indirect discourse — and in particular, analyses of the dependencies between matrix and embedded tenses which we described earlier under the rubric of 'SOT phenomena'. In other words, considerations similar to those that have guided the foregoing discussion have led many researchers to abandon the 'quotative analysis' of indirect discourse, in favour of ones that are more congenial to current assumptions about derivational processes. Such analyses, for example, do not countenance the possibility that sentences in direct discourse can be the derivational source of those in indirect discourse, given that both are surface forms (Ogihara 1989: 78–79).[12] Nor do they argue for a one-to-

[11] This echoes Partee's (1973a: 320) remark that 'there is no general way to recover a unique direct quotation form from a given indirect quotation.'

[12] Comrie's (1985: 111–17) analysis of SOT phenomena appears to be an exception. However, because his discussion is rather informal, it is difficult to tell whether he actually subscribes to the view

one relation between the two forms of discourse, given the 'wild' rules that would be required to do so, as already suggested (see also e.g. Comrie 1986). However, while such analyses thereby discount the specific proposals of the 'quotative analysis', many of them still retain its derivational strategy, thus affirming its claim that indirect discourse sentences are in some sense derived from more 'basic' structures.

The structures in question, according to these analyses, are 'd-structures' of indirect discourse sentences, whose tense forms have the same temporal values as those in the direct discourse counterparts of these sentences, and which are the targets of transformations in the derivation to S-structure. (The temporal values of tense forms are, in fact, the only vestiges of the differences between direct and indirect discourse admitted into these reformulated derivational analyses; other, more problematic differences — between direct and indirect discourse counterparts of other deictic elements and of the person and number agreement on verbs — are simply eliminated, through the assumption that the form of these elements as they appear in indirect discourse directly reflects their 'D-structure' properties.) By exploiting the device of 'd-structures' in this fashion, these analyses can claim two advantages for their general approach. First, by positing that the respective verbs in the 'reported' clauses of direct and indirect discourse sentences have the same temporal specifications, they can capture the intuition that these two types of discourse do have a real, though indirect, syntactic relation. Then, by positing that 'shifted' and 'unshifted' versions of indirect discourse have the same 'd-structure', and ascribing the differences between them to an optional 'backshifting' transformation, they can claim a more direct syntactic relation between these formally more similar sentences. In this way, SOT phenomena are assimilated to the vast range of linguistic phenomena, syntactic, semantic, phonological, and morphological, which have been analysed in terms of a mapping from some 'underlying' to some 'surface' representation.

It is important to note, however, that there are no conceptual or methodological grounds for favouring such analyses in general, nor for favouring such analyses of SOT phenomena in particular. If anything, there are good reasons for scepticism in each case, many of which were raised in our discussion of the 'futurate' construction in chapter 2. One of these reasons pertains to the rôle of synonymy in these analyses. As Banfield (1982: 24–25) points out, a relation of synonymy between two sentences can certainly be explained in terms of a transformational relation between them; but synonymy alone does not establish the latter relation, since two paraphrases may equally have distinct d-structures. Contrariwise, the claim of a common 'd-structure' imposes a strict requirement of synonymy (modulo interpretative differences that can be linked to

---

that the tense of an embedded verb in indirect discourse has its derivational source in the tense of its direct discourse counterpart, or is simply describing the source of the tense in question from the perspective of a speaker translating direct into indirect discourse.

differences in scope, given movement to different positions in a syntactic tree), which many paraphrases — including those that once lent the most credence to a transformational approach — have ultimately failed to meet. Jackendoff (1990: 194–95) emphasizes this in his discussion of the 'dative alternation', in which he notes the conclusion of a number of studies[13] that members of pairs like that in (21) 'are not semantically equivalent, casting doubt on any putative relationship between them that involves only syntactic movement':

(21) a. Beulah, peel me a grape! [from a Mae West movie]
b. Beulah, peel a grape for me! (ibid., 195, (28d), (29d))

Of course, such difficulties argue strongly against the applicability of a 'derivational strategy' to cases like this one, in which non-equivalence between two sentences purported to share d-structures is well documented. Yet because so few pairs of alternations do bear out the kind of synonymy required for such an analysis to go through — and this seems as true of more recent derivational proposals, such as those for 'floating quantifier', 'dative', and 'incorporation' structures, as it is for earlier ones, such as passive and 'equi' structures — it is unclear whether this analysis has any applicability to alternations beyond those like *wh*-movement, which are by and large a matter of word order.

These more general doubts about the 'derivational strategy' are deepened when we consider its specific application to SOT phenomena. Here, too, the task of demonstrating synonymy between sentences for which a common d-structure is claimed — in this case, those with matrix past tenses and 'shifted' and 'unshifted' embedded tenses, respectively — often cannot be met, arguably depriving such proposals of their strongest motivation. But even deeper doubts accompany the basic claim of these analyses, which is that one tense (though admittedly in rather abstract form) is simply transformed into another in certain contexts. Granting that languages often display rather surprising formal features, this claim still seems rather an implausible one, with no close parallels in morphology or syntax.[14] Such doubts about derivational analyses of SOT take on particular significance given the direction (as we have already noted) in which the analysis of indirect discourse has otherwise gone: namely, away from the use of transformations as a device to relate pairs whose alternation is not describable in terms of very general syntactic principles, and toward the 'base generation' of each member of this pair. Since the elimination of such transformations in the domain of indirect

[13] The two that he cites are Green 1974 and Oehrle 1975, *q.v.*

[14] Perhaps the closest parallels are instances of case neutralization, in which a noun that, by hypothesis, bears certain morphosyntactic features is systematically realized with an ending that does not match these features. But the differences between these processes and 'backshift' are rather striking. We shall be discussing some of these differences in §1.3.2.2 below.

discourse is so widely accepted, even in studies that go on to propose a derivational analysis of tense in this domain, it seems crucial to examine the arguments offered by these studies for preserving such an analysis for tense alone.[15] It should be emphasized, however, that the plausibility of the 'derivational strategy' as an explanation of SOT phenomena has rarely been called into question;[16] and the many conceptual and methodological issues that it raises have commonly been set aside as peripheral rather than central to the analysis — just as they have been in other domains.[17]

Admittedly, this claim does receive empirical support from the following sources: (i) the appearance in certain contexts of 'unshifted' embedded tense forms, which by hypothesis have not undergone a 'tense-shifting' transformation and have thus preserved their 'D-structure' specifications; and (ii) the existence of 'non-SOT' languages, in which embedded tenses display no sign of 'shifting', and thus also appear to have preserved their 'D-structure' specifications. However, what appear to be highly cogent arguments stumble over the very difficulty that we have just been discussing: namely, the lack of synonymy between sentences purported to have the same d-structure. Thus, while we have just dwelled on conceptual and methodological grounds for doubts about derivational analyses of SOT phenomena, the analyses that we shall be examining below make strong enough empirical claims that we shall be able to decide this matter on empirical grounds alone. As we shall see, these clearly favour a non-derivational approach to these phenomena.

1.3.1. Issues for derivational analyses of SOT

It should be noted that in speaking of 'derivational analyses' so far, we have glossed over the substantial differences in goals, tools, and methods that characterize the various studies that fall into this category, which reflect a range of attempts to account for the data of SOT in derivational terms. Of course, what these studies do share is the claim that the realization of embedded tenses in SOT constructions does not perspicuously represent their temporal values, but is the result of some systematic alteration of these values, conditioned by a rule of 'backshift'. In this section, we shall be considering some of the ways in which this claim has been cashed out, by examining a varied

---

[15] This doubt about the plausibility of analysing tenses differently from deictics has already been raised by Declerck (1991: 176), in his discussion of Comrie 1986. Since, as he notes, Comrie 'argues that the "adaptation" of deictics other than tense... in indirect speech is not the result of a formal rule... it is hard to imagine that the verbal deictics should be analysed in a totally different way.'

[16] A noted exception is Declerck 1991.

[17] Jackendoff (1990: 297, n. 3) furnishes one example of such a response to these issues in the form of Larson's (1988) syntactic 'neo-dative shift' analysis of datives. This analysis, as Jackendoff argues, 'pointedly disregards' documented differences between double-object and PP datives, 'on the grounds (1) that there are languages that lack these irregularities and (2) that a movement theory permits uniform assignment of θ-roles to D-structure.' The result is that the analysis 'never accounts for the irregularities of English', and as such does not achieve any real measure of empirical adequacy.

sample of recent derivational solutions. What we shall be most interested in is their respective answers to certain key questions in the analysis of SOT. These concern (i) the morphosyntactic representation and the interpretation of 'unshifted' embedded tenses; (ii) the nature of the grammatical mechanism that, by hypothesis, alters the morphological form of 'shifted' tenses; and (iii) the nature of the elements that serve as 'triggers' for 'backshift'. As we shall see, the soundness of the answers proferred by these studies varies considerably; however, even the most successful of these fall far short of providing adequate empirical support for the approach in question.

1.3.1.1. 'UNSHIFTED' TENSES

Perhaps the greatest support for, and greatest challenge to, derivational analyses of SOT phenomena are the many instances in which 'backshift' fails to apply. On the one hand, such instances call to mind the form of tenses in 'direct discourse', and hint at the possibility that 'unshifted' tenses are analogously more 'basic' — in this case, reflecting the 'D-structure' representations that they share with 'shifted' tenses in a way that the latter do not. On the other hand, the peculiar range of interpretations that 'unshifted' tenses sustain, which are simply unavailable to their 'shifted' counterparts, point decidedly to a distinct 'D-structure' source. A crucial task for derivational analyses, then, is to find some way to reconcile what appear to be incompatible results. In what follows, we shall be investigating both the kinds of interpretations available to 'unshifted' tenses and the various attempts that have been made to square these with a derivational claim.

1.3.1.1.1. 'PRESENT' UNDER 'PAST'

We might begin with what are arguably the best-known non-applications of 'backshift': those in which the 'present' tense is retained under a 'past' tense. Some examples of these, from Quirk *et al.* 1985: §14.31, are given below:

(22) a. Their teacher told them that the earth moves around the sun.
b. Sam told me last night that he is now an American citizen.
c. A Yale professor has said that the Brooklyn Bridge is the most majestic embodiment of the American experience of the road.
d. They thought that prison conditions have improved.
e. I didn't know that our meeting is next Tuesday.
f. She said that they are being discriminated against.
g. The waiter told me that lunch is now being served. (ibid., (11)–(18))

One ready observation we can make about such sentences is that they are structurally indistinguishable from their 'shifted' counterparts, and thus give no indication that the non-application of 'backshift' has any syntactic basis. Of course, this raises the question of when a 'present'-tensed verb can in fact appear under a 'past'-tensed one. By general consensus, the correct answer to this question is one that invokes some notion of the 'current validity' of the reported statement, although various formulations of this criterion have been offered. For example, Quirk *et al.* (ibid.) suggest that an embedded 'present' tense may emerge whenever 'the time-reference of the original utterance is valid at the time of the reported utterance.' Although their language here is somewhat obscure — just what do they mean by a 'valid' time reference? — their point becomes clear from their remarks about the sentence given in (23):

(23) Socrates said that nothing can harm a good man. (based on ibid., (10))

They observe that the embedded clause in this sentence describes 'a universal rule which, if it was true for Socrates' lifetime, should also be true today' — a context which makes 'backshift' optional. In this context, then, 'validity' must mean 'continuing validity'. In fact, consideration of their examples in (22) strongly suggests that such continuity is crucial to all acceptable uses of a 'present' under a 'past'. This point is brought out even more strikingly by the following example:

(24) * Yesterday at noon John pointed out that the sun is straight overhead.
(Abusch 1988: 7, (18))

As Abusch (1988: 7) remarks, this sentence is unacceptable even if it is uttered at noon with the sun again straight overhead. This is because of a requirement, well known in the linguistics literature,[18] that 'the event described in the complement must be a continuous event spanning the utterance time and the time of the higher verb.'[19] This requirement has been expressed in terms of a criterion of 'continuing applicability' (Comrie 1986: 284ff.; see also Baker 1989: 458ff.) of the reported 'situation' at the time of speech, and illustrated with pairs such the following:[20]

---

[18] See e.g. Huddleston's (1969: 794) observation the 'situation' must '[last] long enough to be present both for the original speaker and for the reporter.'

[19] For further discussion of this point, see Ogihara 1989: ch. 4.

[20] Another well-known example of the relevance of continuity is the following one from Enç 1987:

(i) * John heard two years ago that Mary is pregnant. (ibid., (30))

The unacceptability of this sentence is, of course, due to the impossibility, assuming that Mary is human, of her pregnancy encompassing a two-year period.

(25) a. Kit said that he was sick, but now he claims to be better.

b. * Kit said that he is sick, but now he claims to be better.

(based on ibid., 285, (77)–(78))

Here, the sentence in (25b), with its 'unshifted' embedded tense, suggests that the 'situation' of Kit's being sick continues up to the time of speech, and is therefore incompatible with Kit's current claim that he is better. In contrast, the sentence in (25a), with a 'shifted' embedded tense, is silent on the matter of continuing applicability, and is therefore compatible with Kit's claim.

However, even this stronger 'continuing applicability' criterion turns out to be insufficient to account for the attested patterns of application and non-application of 'backshift'. Alongside the examples we have already considered are ones like the following, which meet this criterion but are nevertheless unacceptable with 'unshifted' embedded tenses:

(26) a. This is John's wife. — Yes, I THOUGHT he $\left\{\begin{matrix} \text{was} \\ *\ \text{is} \end{matrix}\right\}$ married.

b. I knew you $\left\{\begin{matrix} \text{liked} \\ *\ \text{like} \end{matrix}\right\}$ her. (based on Oakeshott-Taylor 1984: 4)

In other words, these sentences clearly describe 'situations' whose truth the speaker takes for granted, making 'continuing applicability' too weak a criterion to rule out such unacceptable uses of 'present' tense forms (Declerck 1991: 167–68). An explanation of such examples appears to lie in the types of matrix verbs that they contain. These are non-factive 'verbs of cognition', which — as suggested by the examples in (27) — are generally[21] unacceptable with embedded 'present' tenses, and not merely in the special contexts just illustrated:

(27) a. * Sam believed that Bill has been here.

b. * Bill thought that Latin America has had its New Deal.

(Declerck 1991: 190, (49))[22]

The requirement that such verbs impose, as many authors have noted (e.g. Costa 1972: 46; Heny 1982: 126; Declerck 1991: 184), is that the object of the mental state or activity that they describe be located at the same time as, or at a time that intersects with the time of, the state or activity itself.[23]

---

[21] I say 'generally' because even some of these verbs appear, in certain contexts, to accept 'unshifted' embedded tenses, as we shall see below.

[22] While Declerck judges these sentences marginally acceptable (i.e., '?'), the judgements of unacceptability given in the text seem warranted.

[23] We shall be discussing this restriction in much greater detail in §1.4.1.2 below.

In fact, the verbs subject to such a requirement extend beyond this class of 'verbs of cognition'. As Costa (1972: 46) points out, they include (i) 'verbs of manner of saying', such as *murmur* and *whisper*; (ii) certain non-factive 'verbs of linguistic communication', such as *allege* and *insist*; (iii) certain factive verbs, such as *know*, and (iv) 'pleonastic' verbs, such as *seem*. What seems to unite all of these verbs is their strong association with the time of the reported 'situation', which 'establish[es] a distance between speaker and sentence' that prevents the speaker from 'identify[ing] with the complement' (ibid.). These are illustrated in (28):

(28) a.

Bill {(i) whispered / (ii) insisted / (iii) knew} that the new President {was / * is} really a CIA agent.

b. It seemed that the new President {was / * is} a CIA agent.

(based on ibid., (31)–(32))

The nature of the relation between speaker and reported content that Costa adumbrates is given clearer form in McGilvray's (1991: 68–75) discussion of SOT phenomena. What the non-application of 'backshift' signals, according to McGilvray, is a shift in responsibility for the truth of this reported content. The embedded clause of a propositional attitude construction presents a 'stance' that is 'attributed to someone.' A 'stance', as he explains, is a content together with a 'force', or form of instruction regarding how this content is to be included in a story. Now, in a language like English, which makes both 'shifted' and 'unshifted' embedded tenses grammatically available, the former option 'seems to assure that a speaker's description of another by means of a picture of a stance gets read in such a way that the person described is held solely responsible for that stance'. This prevents confusion, because this device makes it plain that the stance 'cannot be [one] the speaker takes him- or herself' (ibid., 68–69). Contrariwise, non-application of 'backshift' serves to signal that 'a person us[ing] a propositional attitude sentence' is assuming some or all of the responsibility for the recommendation made by the producer of the embedded content (ibid., 70).[24] McGilvray provides some interesting support for this claim, which concerns how we might determine the truth of embedded clauses with 'unshifted' tenses in sentences like that in (29):

[24] To avoid confusion, I shall be using the expressions 'speaker' and 'producer of the reported (or embedded) content' to describe the referents of the subjects of the matrix and embedded verbs, respectively, in propositional attitude constructions.

(29) Harry realized that Mort will be in Toledo tomorrow. (ibid., 73)

McGilvray notes that an appropriate way to do so would be to ask: 'How do you know?' (ibid.). Of course, this question singles out the speaker's responsibility in guaranteeing the truth of the embedded content, and thus vouches for the plausibility of seeing this shift in responsibility as determining the acceptable use of an embedded 'present' tense.[25]

An explanation of why the clause-taking verbs that Costa has catalogued do not readily license this shift in responsibility comes from consideration of another aspect of McGilvray's description of these verbs. This is that their meaning includes a 'commentary' on the 'stance' expressed by the embedded clause. This may be commentary on, for example, the 'manner of saying', as in verbs like *mumble*; or on 'strategy', as in verbs like *hint*; or on 'the place of the stance in the storytelling enterprise', as in verbs like *interject*. What is important for our purposes is that verbs that offer these kinds of commentary 'demand variable amounts of knowledge concerning the story context' of the original speaker at the original time of speech (ibid., 67). This suggests that these verbs cannot readily be used in such a way that their 'commentary' becomes a peripheral part of their meaning — but this is precisely the effect created by the use of the 'present' tense in their complements, and accounts for the oddity of the sentences in (28a). Significantly, the resistance of most of these verbs to embedded 'present' tenses is not an absolute one. Rather, it appears to weaken in circumstances where the speaker may appropriately 'enlist' the commentary in defending the truth of the embedded content.

(30) a. But Joe INSISTED that you are a member of the club!
b. But Chester literally SHOUTED that it's a briliant idea!
c. But they KNEW that you don't like broccoli!

Since Costa associates the resistant behaviour of these verbs with 'narrative non-conversational discourse', it seems no coincidence that these sentences are most plausibly understood as contributions to a conversation, where the speaker is using them not merely to report past events, but to make a point. This also seems to be what lies behind the contrast that she observes in the following sentences (ibid., 45):

[25] Similar points are made by Smith (1978: 66), Heny (1982: 121), and Rigter (1986: 117–18, 127).

(31) a.

A: Did Sarah have any ideas about what might be wrong with my marriage?

B: Well, she mentioned that married couples often $\left\{\begin{array}{l}\text{discover}\\ *\text{ discovered}\end{array}\right\}$ that they wrongly $\left\{\begin{array}{l}\text{think}\\ *\text{ thought}\end{array}\right\}$ that their sex - life $\left\{\begin{array}{l}\text{is}\\ *\text{ was}\end{array}\right\}$ perfect.

b. On the occasion of the first conference on 'Modern Marriage', Sen. Sarah Bigam (Dem.–Ohio) mentioned that married couples often $\left\{\begin{array}{l}\text{discovered}\\ *\text{ discover}\end{array}\right\}$ that they wrongly $\left\{\begin{array}{l}\text{thought}\\ *\text{ think}\end{array}\right\}$ that their sex – life $\left\{\begin{array}{l}\text{was}\\ *\text{ is}\end{array}\right\}$ perfect.

That is, the use of embedded 'present' tenses in the discourse in (31a) reflect B's willingness to recommend Sarah's suggestion to A; the oddity of embedded 'past' tenses may thus be attributed to their implication that B is simply reporting Sarah's suggestion, but not vouching for it. In contrast, the use of embedded 'past' tenses in (31b) reflects the very different purpose of this passage, which is simply to report, and not to vouch for, Sen. Sarah Bigam's remarks, whence the oddity of embedded 'present' tenses here.

It is thus also no coincidence that verbs with a stronger resistance to embedded 'present' tenses, such as certain 'manner of saying' verbs like *whisper*, and non-factive 'verbs of cognition' like *believe* and *think*,[26] have less obvious utility in the defence of their embedded content, given the kinds of 'commentary' that they present. We might note, finally, that this explanation of the behaviour of 'propositional attitude' verbs appears to generalize to 'pleonastic' verbs, inasmuch as these verbs, unlike those of 'propositional attitude', do not attribute a 'stance' to anyone, so there is no sense in which the speaker can 'take over' responsibility for their embedded content. The function of their 'past' tense forms, then, is essentially narrative, and is inextricably tied to a past time.

---

[26] McGilvray (1991: 74) also notes that *believe* and *think* are particularly resistant, 'probably because these verbs get read as "used to believe or think".' This explanation seems compatible with the one given in the text. Notice, however, that even these verbs do allow a shift of reponsibility in certain contexts, as the sentence in (i) shows:

(i) Last summer Jane still didn't believe that the world is round. (Heny 1982: 121, (32a))

As Heny (1982: 121) emphasizes, the acceptability of such a sentence 'seems to depend in part on how far the speaker is prepared to accept independent responsibility' for the truth of the embedded content. This might explain the acceptability of this sentence, since the truth of this content here is particularly obvious.

The foregoing analysis of 'backshift', couched in terms of a shift in responsibility, thus offers a plausible account of certain instances in which it is obligatory. But it also give us a plausible way to understand the phenomenon of 'backshift' generally, which extends to a range of more refractory examples cited in the literature, for which the criterion of 'continuing applicability' provides little insight. These examples include ones like those in (32), in which the speaker explicitly denies the truth of the embedded clause:

(32) a. Harry told me that the world is flat, but of course I did not believe him. (Declerck 1991: 186, n. 21)

b. John said that Mary is in the room. But that's not true. The one that's in the room is Sue. (Ogihara 1989: 287, (17))

c. Fred said that his girlfriend is stubborn, but I think it's the other way round. (based on Riddle 1978: 27)

In these examples it is difficult to say whether the embedded contents have 'current applicability', since on the one hand, they are clearly false, but on the other, they involve entities that are still relevant to the speaker. Given McGilvray's analysis, however, we can say that in both cases the speaker assumes responsibility for 'recommending' the embedded content, and makes a 'negative' recommendation — that is, asserts that they are false.

Another class of examples amenable to a similar explanation is that adduced by Riddle (1978)[27] and explained in terms of the 'current involvement' of the referent of the matrix subject in the situation described by the embedded clause. One such example is given in (33):

(33) Jack told me that his room-mate has blue eyes. (Riddle 1978: 11)

The use of an embedded 'present' tense suggests, among other things, that 'the person in question is still Jack's room-mate' (Declerck 1991: 187). This possibility follows straightforwardly from an account in terms of shifting responsibility. Notice, however, that both this possibility and the claim about blue eyes may be denied, without affecting the acceptability of the embedded 'present' tense:

(34) a. Jack told me that his room-mate has blue eyes, but he doesn't even have a

[27] See also Declerck 1991: 186–88, where these examples are discussed at some length.

This offers clear support for the relevance of the speaker assuming responsibility for the content that he or she is reporting. Like the other examples we have just seen, then, this one serves to highlight the rôle of the speaker in licensing 'present' tenses embedded under past ones.[28]

Our discussion of 'present under past' constructions has thus suggested a particular understanding of them which is largely at odds with a derivational account of them. These constructions, we found, receive interpretations very distinct from those of their 'shifted' counterparts, which makes it unlikely that are derived from the same d-structure. We saw that these interpretations could be described in terms of a shift in responsibility for the reported content, from the producer of this content to the speaker

---

[28] The relevance of the speaker's responsibility is further highlighted by Hornstein's claims about the 'present under past' (and 'future under past') construction, which are at odds with the analysis developed in the text. Hornstein discusses several examples of the former construction. One of these is given in (i):

(i) John heard that Mary is pregnant. (Hornstein 1990: 120, (1a))

Apropos the sentence in (i), Hornstein claims that 'what John heard was that Mary was with child *at the moment of utterance* of [(i)] as a whole. If John's information is accurate, then Mary is still pregnant' (ibid., 121). This seems to suggest that John has heard something like 'Mary is pregnant and will continue to be so' — which is clearly false (see Ogihara 1989: 315–18 for a discussion of this very point). Of course, Hornstein's claim can be readily falsified by sentences like those in (ii):

(ii) a. John heard that Mary was pregnant, but that was before her appointment with Dr Morgentaler.
b. * John heard that Mary is pregnant, but that was before her appointment with Dr Morgentaler.

In other words, the truth of this report of John's original statement does not depend only on the accuracy of John's information, but on what has occurred in the time between his statement and the report of this statement given in (i). Thus, John's accurate information is not sufficient to license the use of an embedded present tense in this context.

Another 'present under past' sentence that Hornstein discusses is that given in (iii):

(iii) I heard from a reliable source that John knows the killer's identity.

Hornstein claims 'it does not follow' from the former sentence 'that John had this knowledge when I spoke to my source. I may have heard from my source that John was about to find out who the killer was but had not yet done so. Nonetheless, by the time I utter [(iii)] John has made his discovery' (ibid., 163). Hornstein's claim about this sentence is, again, simply false: if his 'reliable source' has said, for instance, that John has been about to discover the killer's identity, but does not yet know it, then Hornstein has simply not heard that John knows the killer's identity, but something quite different.

A third example that Hornstein discusses is the sentence in (iv):

(iv) John said that today is a blue moon.

Here he claims, similarly, that the latter sentence might actually be a report of John's saying 'Tomorrow we will have a blue moon'. But this also seems false; indeed, the only plausible readings of this sentence have John originally saying 'Today is a blue moon' (which the speaker then reports on the same day) or 'Tomorrow [or some other day in the future] is a blue moon' (that is, describing a 'scheduling state'). In both of these cases, the speaker is in a position, at time of speech, to assume responsibility for the original statement. Hornstein seems to be led astray in all of these cases because his analysis of the 'present under past' construction overlooks this rôle of the speaker — even though it is a natural consequence of his own claims about the syntactic structure of this construction.

him- or herself, the possibility of this shift thus determining the acceptability of this construction. These observations lead inevitably to the conclusion that 'shifted' and 'unshifted' constructions are two distinct structures that the grammar of English (and other languages) makes available, and the choice between them is one made by the speaker. As such, this choice belongs to the domain of language use, and is not one that 'the grammar makes' — in other words, it does not represent a condition on the application of a grammatical rule (in this case, 'backshift'). That this is the conclusion to be drawn from the foregoing examples — and not the alternative drawn by Comrie (1986: 284–86) and others, according to which 'backshift' is 'a purely formal operation' (ibid., 290) that is nevertheless sensitive to the 'continuing applicability' of the 'situation' described by the embedded clause — is strongly suggested by the highly pragmatically determined conditions of application that these examples have demonstrated. Since it is far from obvious how the grammar could have access to such information, which is simply not expressible in grammatical terms, the choice between the 'shifted' and 'unshifted' embedded tenses that we have been examining here could only be one that a speaker makes in the course of exercising his or her linguistic knowledge. Reconciling this observation with a derivational analysis thus presents a major challenge for the proponent of such an analysis. This holds for other non-applications of 'backshift', as we shall see below.

1.3.1.1.2. 'PAST' UNDER 'PAST'

In the last section, we investigated one type of non-application of 'backshift' — that in which 'present' tenses were retained under matrix 'past' tenses — and the conditions governing its availability. That these conditions turned out to be largely 'pragmatic' cast serious doubt on a grammatical rule of 'backshift', whose application and non-application were held to be responsible for 'shifted' and 'unshifted' tenses, respectively. In this section, we shall find further cause to doubt the existence of 'backshift', in the form of another purported type of non-application, in which 'past' tenses are retained under matrix 'past' tenses. More specifically, the embedded 'past' tense in this construction — like the 'past' tense in direct discourse — indicates that the 'situation' described by the embedded clause is anterior to (rather than simultaneous with) that described by the matrix clause. While these examples are perhaps not as striking as their 'present under past' counterparts, in that they lack the peculiar interpretative properties of the latter, they nevertheless present an equally serious challenge to the derivational analysis of SOT phenomena. This is not only because the conditions governing the availability of this 'anterior' reading are at least as complex as those that we have just seen for 'present under past' constructions, but because this construction is structurally identical to the 'past under past' construction that is claimed to reflect the application of

'backshift'. We are thus led to question the grammatical basis for distinguishing two 'past under past' constructions: one in which the embedded 'past' tense is a 'backshifted' form of an 'underlying' 'present', and the other in which this tense is an 'unshifted' form reflecting the temporal value of the 'underlying' tense.

Consider the example of the 'past under past' construction given in (35a), which is contrasted with its 'shifted' 'past perfect' counterpart, given in (35b):

(35) a. Chester said that he enjoyed the party.
b. Chester said that he had enjoyed the party.

What is readily apparent about 'past under past' sentences like this one, and which clearly distinguishes them from their 'present under past' counterparts, is that they are quite common and appropriate — perhaps even more appropriate than their embedded 'past perfect' counterparts — in informal registers. Moreover, we can see on brief reflection that the acceptability of these 'unshifted' versions requires only that 'the temporal relation of anteriority' between the respective situations described in matrix and embedded clauses 'is not blurred' (Depraetere 1995: 14). This can be demonstrated by comparison of the 'unshifted' sentence just given with a sentence like that in (36b):

(36) a. Chester said he enjoyed the party.
b. * Joe said that he loved Trish. [on 'anterior' reading]

In the latter sentence, there is no information presented to establish a relation of anteriority, so that the reading in question is not available. It is important to note, however, that this unavailability is not absolute; for example, it becomes more salient (if perhaps not fully acceptable) if the discourse is continued as in (37):

(37) ? Joe said that he loved Trish — but that was long ago.

What this indicates, then, is that while the general conditions under which an 'anterior' reading becomes available are easy enough to state, the actual availability of this reading reflects the contribution of a range of linguistic and non-linguistic factors. These include information supplied by the matrix verb, the embedded verb and its arguments, temporal adverbials, and the hearer's contextual and other 'pragmatic' knowledge (see e.g. Declerck 1991: 160).

A key linguistic determinant of this availability is the 'situation' type — more specifically, the 'boundedness' — of the embedded VP. That is, an embedded 'past'-tensed clause whose VP describes a 'situation' as 'bounded' (making linguistic reference to its 'temporal boundaries'), and thus as complete in the past, is generally

understood as locating this 'situation' prior to the 'situation' described by its 'past'-tensed matrix clause,[29] just in case the meaning of its verb is compatible with such a reading (see e.g. Depraetere 1995: 2, 14).[30] This effect is demonstrated in the following examples, whose embedded VPs are all 'bounded':

(38) Joe said that
- a. the bullet hit the target.
- b. Trish collapsed.
- c. he met Seth.
- d. he drew a great picture.
- e. Trish deliberately swam for 2 hours.
- f. Chester was sitting in the café until midnight.
- g. he was living in Philadelphia until a few years ago.

(based on ibid., 3, (1a–c), (2a–c); 11, (16a))

What these examples also demonstrate is that the effect of 'boundedness' has many linguistic sources, including the 'telicity' of the verb itself (as in (a)–(c)); the properties of certain NPs and PPs, which create 'bounded' predicates from 'atelic' verbs (as in (d)–(g)); and the properties of simple past forms, which preserve the 'boundedness' of the predicates with which they are associated (as in (a)–(e)) (see ibid., 9–13). We can gauge the effect of these various grammatical elements by comparing the interpretations of the sentences in (38) with their counterparts in (39), in which these elements are absent:

(39) Joe said that
- a. the bullet was hitting the target.
- b. Trish was collapsing.
- c. he was meeting Seth.
- d. he drew great pictures.
- e. ? Trish was deliberately swimming.
- f. Chester was sitting in the café.
- g. he was living in Philadelphia.

---

[29] A clear exception to this is embedded IPs that are liable to the 'scheduling state' readings discussed in chapter 2, which can thus bear both 'anterior' and 'posterior' readings. Such an IP is given in the example below:

(i) Joe said that the train left at 5 o'clock.

This sentence can mean that Joe said that the train either had already left, or was scheduled to leave, at 5 o'clock.

[30] This additional proviso, as we shall see momentarily, is a crucial one.

Without these elements, the 'anterior' reading is lost, and each of the sentences in the latter set receives a 'simultaneous' reading.

Despite this sharp contrast between VPs that describe 'bounded' and 'unbounded' situations, it turns out that 'boundedness' alone is not sufficient to license an 'anterior' reading in these 'past under past' constructions. We have already acknowledged the rôle of the matrix verb in ensuring this reading, noting that its meaning must be compatible with such a reading. However, further consideration of the relevant data reveals that these remarks significantly understate this rôle, which is almost as great as that of 'boundedness' itself. Observe, for example, what happens when we replace *say* with *hope* in the sentences that we have been considering:

(40) Joe hoped that
  a. the bullet hit the target.
  b. Trish collapsed.
  c. he met Seth.
  d. he drew a great picture.
  e. Trish deliberately swam for 2 hours.
  f. Chester was sitting in the café until midnight.
  g. he was living in Philadelphia until a few years ago.

These examples all seem to allow either an 'anterior' or a 'posterior' reading,[31, 32] the salience of one or the other determined by contextual factors.

Since a 'prospective' verb like *hope*,[33] as we have just seen, may reduce the availability of an 'anterior' reading, it is perhaps no surprise that 'retrospective' verbs like *forget*, *regret*, and *remember* may increase its availability:

---

[31] For the sentences in (c) and (d), the 'anterior' reading becomes particularly obscure — although not impossible — if *Joe* and *he* are coreferential. (The relevant reading of the former might involve a situation in which, say, Joe did not hear Seth's name very well when he was introduced to him; that of the latter a situation in which Joe was, for some reason, unable to assess the quality of his picture at the time he originally drew it.) For the sentence in (g), the relevant reading is not available — but this is clearly for pragmatic reasons associated with a coreferential reading. Since these difficulties disappear, at any rate, when the requirement of coreferentiality is lifted, we can take the degraded acceptability of the 'anterior' reading of these sentences to be orthogonal to the point at hand.

[32] The sentence in (f) also has a reading in which the 'situation' described by the embedded clause overlaps with the time of Joe's hoping and continues until midnight.

[33] Note that the 'prospective' nature of the verb *hope* does not require that its complement describe a 'situation' located later than the 'hoping' situation that it describes. This is clear from sentences like the following ones, adduced by Baker (1989: 442):

(i) a. John hopes that he was in the correct room.
  b. John hopes that he is in the correct room.
  c. John hopes that he will be in the correct room. (ibid., (13))

On the other hand, instances in which the complement of *hope* describes a 'situation' anterior to or concurrent with the hoping 'situation' seem to involve an implicit appeal to some sort of evaluation procedure, much like that associated with 'present situation' readings of *will*, as described in chapter 2. In other words, the implication of sentences like those in (ia) and (ib) is that John will seek to

(41)

Joe { forgot / regretted / remembered } that the party was great.

(based on Declerck 1991: 191)

The 'anteriorizing' effect of these verbs, however, is not so pronounced, since their meanings also make them compatible with a relation of 'simultaneity' between matrix and embedded clause 'situations', as the sentences below illustrate:

(42)

Joe { forgot / regretted / remembered } that the stove was on.

So far, we have discussed linguistic determinants of this 'anterior' reading whose effects are rather indirect, inasmuch as their function is not primarily to specify either the temporal values of clauses or the temporal relations between them. Yet there are linguistic elements whose function is to do just that: namely, temporal adverbials. And, as the examples below demonstrate, these are able to ensure that the 'situation' described by a 'past'-tensed embedded clause is understood as anterior to that described by a 'past'-tensed matrix clause, despite the presence of other elements that would otherwise block such a reading:

(43) Joe hoped that

a. the bullet was hitting the target last week.
b. Trish was collapsing last week.
c. he was meeting Seth last week.
d. he drew great pictures last week.
e. ? Trish was deliberately swimming last week.
f. Chester was sitting in the café last week.
g. he was living in Philadelphia last week.

---

determine, in the near future, whether he respectively is and was in the correct room. Whether this property of *hope* should be described in strictly lexical terms or in terms of a particular 'linking' configuration is a topic I leave for future research.

The data that we have just seen, then, make it clear that an 'unshifted' embedded 'past' tense may readily be assigned an 'anterior' reading on the basis of various linguistic factors that interact closely with tense.

Of course, non-linguistic factors — more specifically, contextual and other pragmatic information — play a decisive rôle in making an 'anterior' reading more salient in many contexts. We have already made this observation apropos the data presented in (40), where context was arguably all that served to foreground one of two readily available readings. But contextual and other pragmatic cues may also serve this 'foregrounding' function even in the case of a less accessible 'anterior' reading. For example, the two sentences in (44), with their 'unbounded' embedded predicates, would tend, out of context, to be assigned readings in which the time of the matrix 'situation' was concurrent with that of the embedded 'situation':

(44) a. Joe said that he drove his father's car.
b. Joe told me today that he was sick.

Yet the following contexts make an 'anterior' reading for each sentence by far the more salient one:

(45) a. A: How did Joe get to the party?
B: He said that he drove his father's car.

b. A: Why wasn't Joe at work yesterday?
B: He told me today that he was sick.

What all of these considerations point to is that in constructions with one 'past' tense embedded under another, the temporal relation between clauses is not fixed by the tenses themselves, but rather by a host of other factors, as just enumerated. Both the complex interaction of these factors, and the effect of this interaction — which is to make it possible for the hearer to recover a particular temporal relation between two (or more) clauses — raise the same suspicions that the 'present under past' cases left us with. These are a matter of the simple difficulty of imagining how such factors could condition the (non-)application of a particular grammatical rule. Moreover, given our observation of 'past under past' constructions that have either a 'simultaneous' or an 'anterior' reading depending only on their context, the claim that the two readings reflect two different d-structures — the former containing a 'present' tense that undergoes 'backshifting', the latter a 'past' tense that does not — seems rather implausible. Of course, derivational analyses do not lack the means to address these difficulties, and we shall be examining some of the ways in which they have done so later in our discussion.

Whether their solutions are ultimately satisfying, however, is quite another matter, as we shall also see below.

1.3.1.1.3. TENSES UNDER 'PRESENT' AND 'FUTURE'

In the previous sections, we examined two complement clause constructions — those with matrix 'past'-tensed clauses and embedded 'present'- and 'past'-tensed clauses, respectively — that have been claimed to represent non-applications of a grammatical rule of 'backshift'. Admittedly, the similarity of the embedded clauses of these constructions to the quoted clauses of direct discourse constructions — more specifically, to the reports of present and past 'situations', respectively — lent considerable appeal to the claim that the tenses in these embedded clauses reflected their 'original' values, which were shared by their 'backshifted' counterparts, but obscured by the application of 'backshift' itself. Unfortunately, the readings associated with these 'unshifted' forms, and the factors that determined the availability of these readings, seemed to give little support to this claim.

Still, the existence of formally distinct structures expressing similar temporal relations — as was the case with 'anterior' 'past under past' and 'past perfect under past' constructions, respectively — was highly suggestive of a derivational relation between them. Once we turn, however, to constructions in which complement clauses appear under 'present' and 'future' tenses, we find no analogous contrast between 'shifted' and 'unshifted' embedded tenses, and thus little obvious support for a derivational analysis. In other words, there are no data suggesting that tenses under 'present' or 'future' tenses be analysed in terms of a rule like 'backshift', which alters the form of these embedded tenses. While this lacuna is not incompatible with the existence of 'backshift' in the domain of 'past' tenses, it does reveal an asymmetry in the tense system which, in the absence of subsidiary claims about the characteristics of different tenses, is both unexpected and unexplained. Moreover, it leaves us with a grammatical rule which not only has very peculiar properties, as we have already seen, but also has a suspiciously limited domain of application.

In order to understand this difference in the effect of matrix 'past' tenses, on the one hand, and matrix 'present' and 'future' tenses, on the other, it is necessary to take a close look at the data pertaining to the latter tenses. We might begin with the more straightforward case of embeddings under 'present' tenses. As the examples below demonstrate, there is 'harmony'[34] of 'present' tenses only when the clauses that contain them each describe 'situations' holding at the time of speech (Declerck 1991: 34):

---

[34] The term 'tense harmony' is due to Higgins 1976.

(46) a. I am just saying to the others that I think John does not mean what he is saying.

b. I am just explaining that I did it last night.

c. I am just explaining that I have not been able to do it.

d. I know John will be in London tomorrow.

(Declerck 1991: 34–36, (34b), (35a), (36a), (39a))

Sentences like these thus display no signs of 'shifting', even when, as in examples (b) and (d), the presence of temporal adverbials would ensure that temporal relations between clauses are preserved. This might give us more reason to doubt the existence of 'backshift' as an explanation of the effects that we observed with past tenses — particularly if 'backshift' is seen as a 'purely formal operation' (Comrie 1986: 290) applying mechanically to produce morphological uniformity of tenses in complex sentences. In this case, however, defenders of 'backshift' could plausibly attribute the absence of 'shifting' effects to a significant difference between 'past' and 'present' tenses themselves. This is that matrix 'present' tenses always describe 'situations' as holding at the time of speech, so that there would be no discernible difference between an embedded tense temporally dependent on a matrix 'present' tense and one related directly to the time of speech. What this means is that 'shifting' effects might not emerge simply because no temporal dependency exists between matrix 'present' tenses and the tenses under them.

However, this kind of motivation for the absence of 'shifting' disappears when we turn to embeddings under 'future' tenses, since here we find clear evidence of interclausal temporal dependencies unaccompanied by morphological 'shifting' effects. More specifically, we find sentences with matrix 'future' tenses and embedded 'present', 'past', and 'future' tenses in which the respective times expressed by the latter forms are determined with respect to the time expressed by the former. This is illustrated below, with sentences whose embedded clauses describe 'situations' respectively concurrent with, anterior to, and posterior to the 'situation' described by the matrix clause:

(47) a. Chester will know that he is drunk.

b. The police will find out that you were staying here today, and not in London. (Declerck 1991: 36, (40b))

c. Chester will say that he will be finished soon.

Interestingly, we also find complementary cases in which no temporal dependency exists between matrix and embedded tenses, and the latter are related directly to the time of speech:

(48) a. One day John will regret that he is treating me like this. (Dowty 1982: 50)

b. The police will believe that he was killed yesterday.
(Declerck 1991: 36, (40a))

c. Chester will admit that none of his friends will buy Joe's comic books.[35]

In fact, the availability of these temporally 'dependent' and 'independent' readings under 'future' tenses suggests a striking similarity between sentences with matrix 'past' and matrix 'future' tenses, once we put aside the claim of a common d-structure for each of the two pairs of 'shifted' and 'unshifted' 'past' constructions that we have examined. The similarity is this one: 'unshifted' tenses under 'past' tenses appear to be 'temporally independent' of the matrix tense, and 'shifted' ones to be dependent on it, echoing the effects that we have just seen with the 'future' (see Declerck 1991, esp. 21–76). If this is what 'backshift' actually represents — that is, a formal marking of temporal dependency — then the differences between 'past' and 'future' tenses (and 'past' and 'present' tenses, given that the latter's inability to license 'dependent' and 'independent' readings may have an independent explanation, as already noted) may be less dramatic than suggested by the claim that only 'past' tenses trigger a rule of 'shifting'. This points again to the possibility that the device of 'backshift', whose function appears ultimately to be rather meagre, may itself be dispensed with. We shall be exploring this possibility and its implications in §1.3.1.3 below, and throughout the rest of this chapter.

1.3.1.2. 'NON-SOT' LANGUAGES

Before we do so, however, we must examine another very important source of evidence for a grammatical rule of 'backshift': namely, the existence of languages that display no effects of such a rule. A range of languages from various families fit this description

---

[35] It should be noted that 'future under future' constructions with an 'independent' reading, like that in (48c), are much rarer than their 'past'- and 'present'-tensed counterparts in (48a–b). This appears to be related to the restrictions imposed by propositional attitude verbs on their complements — as we discussed in the context of 'present under past' constructions in §1.3.1.1.1 — rather than to those imposed by the 'future' tense itself. (We shall be discussing this restriction further in §1.4 below.) However, they are not so rare: what is required is that the embedded clause describe some 'situation' that can plausibly be construed as holding independently of that described by the matrix 'situation'. This requirement seems to be met by the sentence in (48c), and by the sentences in (i):

(i) a. Little Wilt will regret that he will be tall.
b. Chester will say that five beers will make him drunk.

The relevant reading of (ia) might be paraphrased as 'Little Wilt will be tall, and he will regret it' (we shall be describing this reading in more detail in §1.4.1); that of (ib) indicates a general tendency of Chester's that he will report at the some future time.

(see e.g. Comrie 1985: 107ff.; Enç 1987: 636; Hornstein 1990: 217–18, n. 6).[36] Two of these most frequently discussed in the recent literature are Russian (e.g. Comrie 1986) and Japanese (e.g. Ogihara 1989). Some relevant data from these languages, originally presented in chapter 1, are repeated below:

(49) JAPANESE

a. John-wa Mary-ga byooki-da to it -ta
John-TOP Mary-NOM be-ill-PRES that say PAST
'John said that Mary was ill.'

b. John-wa Mary-ga byooki-dat-ta to it -ta
John-TOP Mary-NOM be-ill-PAST that say PAST
'John said that Mary had been ill.' (Ogihara 1989: 73, (2))

(50) RUSSIAN

a. Tanja skazala, čto ona tancuet.
Tanja say-PAST that she dance-PRES
'Tanja said that she was dancing.'

b. Vera skazala, čto ona pridet na sledujuščij den'.
Vera say-PAST that she come-FUT on next day
'Vera said that she would come on the next day.'
(based on Comrie 1986: 275–76, (33), (38))

What we find in these examples, in striking contrast to English and other 'SOT' languages, are 'simultaneous' readings associated with 'present under past' and not 'past under past' constructions; and 'anterior' readings associated with 'past under past' and not 'past perfect under past' constructions. Such examples offer compelling evidence that SOT is a syntactic phenomenon, since it is subject to parameteric variation, like many other dependency-marking mechanisms, and thus does not fulfil a necessary semantic function.[37] They also suggest an interesting reason for seeing the 'shifted' embedded tenses of 'SOT' languages as having different D-structure specifications: this

[36] These languages include Bahinemo, Bulgarian, Ancient Greek, Hebrew, Hindi, Imbabura Quechua, and Polish, in addition to those mentioned in the text, as noted in Comrie 1985: 103f., Enç 1987: 649, Smith 1981: 225, n. 11, and elswhere.

[37] Hornstein (1990: 218, n. 6) seems to draw a rather different conclusion from these data, taking them to 'indicate that semantic/interpretive phenomena can be parametrized.' If we understand differences in the latter phenomena simply to be underwritten by syntactic differences, as I have been arguing throughout this study, then the conclusions turn out to be the same. If, on the other hand, Hornstein is making a stronger claim about the nature of 'semantic/interpretive' differences — namely, that they may arise independently of syntactic (including lexical) ones —, then it is not obvious that the data in question give any support to such a claim.

is that embedded tenses in these 'non-SOT' languages display the very specifications posited to be borne at 'D-structure' by their 'shifted' counterparts in 'SOT' languages.

While these examples certainly do confirm the syntactic nature of SOT phenomena, the case that they present for a derivational account of them is rather less convincing. This is because further consideration of these data offers another interpretation of them, just as we found with the data of matrix 'past' tenses in English. On this second interpretation, these data demonstrate only that 'non-SOT' languages require embedded tenses to be temporally dependent on matrix tenses.[38] However, it is not clear that such a constraint even holds in 'non-SOT' languages generally. Comrie (1986: 294, n. 3) notes that in Russian, clauses selected by 'verbs of perception' may violate this constraint, and make use of 'past'-tensed verbs:[39]

(51) Zina slyšala, kak Yzot poet/pel
hear-past sing-PRES/sing-PAST
'Zina heard how Yzot was singing.'

---

[38] This claim may appear to be counterexemplified by the possibility of 'continuing applicability' readings of the kind associated with 'present under past' (often called 'double-access') constructions in 'SOT' languages, as in the following sentence in Japanese:

(i) John-wa Mary-ga heya-ni ir-u to it-ta.
John-TOP MARY-NOM room-at be-PRES that say-PAST
'John said that Mary was/is in the room.' (Ogihara 1989: 358, (7))

However, there are many reasons to believe that these readings are really no more than implicatures of such indirect discourse sentences, just as we find with their 'shifted' counterparts in English. One is that Ogihara himself admits having found 'no conclusive evidence' that Japanese has double-access sentences' (ibid., 357). Another is that a 'continuing applicability' reading is also available for the following Russian sentence, even though there is actually no verb in the embedded predicate:

(ii) Dick skazal Jane beremenna.
say-PAST be pregnant
'Dick said that Jane was/is pregnant.'
(Olga Prochorova, Frank-Uwe Martens, personal communication)

A third reason is that the implicature can be cancelled, as demonstrated by this example from Comrie 1986:

(iii) Včera Nataša skazala, čto ona pridet poslezavtra, no ona srazu že peredumala.
say-PAST come-FUT
'Yesterday, Natasa said that she would arrive the day after tomorrow, but she immediately changed her mind.' (ibid., 287, (82))

We might say, then, that while such sentences always present the possibility of continuing applicability, unless it is explicitly denied (so that there is no contradiction if we continue these sentences 'and X still is...'), this fact does not give us license to equate them with 'present under past' sentences in 'SOT' languages.

[39] This does not seem to be possible in Japanese, where a 'simultaneous' reading with 'past'-tensed 'verbs of perception' requires clausal complements with 'present'-tensed verbs (Brendan Gillon, personal communication, reporting the judgements of Hosoi Hironobu).

Such examples are very difficult to square with the claim that languages like Russian do not have a rule of 'backshift' while languages like English do, since the former languages display the very effects claimed to exist only in the latter. If these effects do appear in the former languages, even in more limited contexts, then a rule of 'backshift' must be part of their grammars too. Of course, such a conclusion considerably weakens the appeal of the original contrast between 'SOT' and 'non-SOT' languages, and assigns this rather powerful rule — which simply transmutes one tense form into another — an extremely (and implausibly) limited domain of application in the latter languages. Once more, empirical (and methodological) considerations point us away from a rule of 'backshift'.

1.3.2. Implications for derivational analyses

In the last several sections, we examined a number of empirical issues that present an particular challenge to derivational accounts of SOT phenomena. The question that naturally arises now is: What responses have these accounts offered to these problematic issues? As we shall see below, these responses have varied greatly, from de facto avoidance of the issues to serious attempts to deal with them.

This range of responses is most evident in the treatment of non-applications of 'backshift' — in particular, the case of the 'present under past' construction, which, as noted earlier, is perhaps the most widely discussed. The basic questions that this construction raises for derivational accounts of SOT are (i) how it is produced; and (ii) how it receives its peculiar interpretation, given the assumption of 'backshift'. The answers that particular analyses have offered to these questions give some indication both of their own strengths and weaknesses and of those of the derivational approach to SOT more generally, which favours certain possibilities over others. What we shall see, then, is that the possibilities favoured by this approach — in particular, that surface similarities between different tense constructions mask underlying differences, and surface differences mask underlying similarities;[40] that tenses are ambiguous rather than indeterminate in meaning — are not well suited to the elucidation of SOT phenomena. The suggestion, in other words, will be that the derivational approach does not have the right properties to produce an accurate picture of these phenomena.[41]

---

[40] These remarks echo Enç's (1987: 636) doubts about this rule, 'whose only function seems to be rendering meaning opaque.'

[41] It is no coincidence that the language of these remarks echoes that used to describe the problems of the operator account of tenses in chapter 1: in both cases a device originally used to explain one class of phenomena is applied to another class, with results that arguably reflect the divergence in the nature of the two classes.

1.3.2.1. TRADITIONALLY-ORIENTED ANALYSES: COMRIE 1986, BAKER 1989

Let us turn our attention first to a very straightforward response to the 'present under past' problem, as figures, for example, in Comrie's (1986) and Baker's (1989) analyses of SOT. This response is simply to treat the construction as an exception to the general operation of 'backshift'. Recall that for Comrie, 'backshift' is a 'a purely formal operation' (Comre 1986: 290) in the production of indirect discourse from direct discourse, which takes 'non-past'-tensed verb forms from the reported clause of the latter and converts them into 'past'-tensed forms. His statement of this rule is given in (52):

(52) SEQUENCE OF TENSES RULE (PRELIMINARY VERSION):
If the tense of the verb of reporting is non-past, then the tense of the original utterance is retained; if the tense of the verb of reporting is past, then the tense of the original utterance is backshifted into the past.

This (rather traditional) view of 'backshift' is also espoused by Baker (1989), who couches it in terms of a 'Past-harmony rule' and a 'Time-assignment principle', as given in (53) (where the 'past-harmonic' counterpart of a 'non-past' form 'is just the corresponding past-tense form' (Baker 1989: 454, (65)):

(53) a. PAST-HARMONY RULE:
In the portion of a temporal structure that lies below an 'earlier' element, replace every form predicted by the Time-Assignment Principle with its corresponding past-harmonic form. (ibid., 456, (77))

b. TIME-ASSIGNMENT PRINCIPLE:
When a rule assigns a time to a complement phrase, it does so in relation to the time assigned to the larger phrase of which the complement is a part. (ibid., 445, (31b))

As they stand, these formulations of 'backshift' make no allowance for the possibility of the rule's non-application. Of course, all that is required to correct this is a stipulation that the rule is optional under certain conditions, which is precisely what each author provides. Comrie revises his rule by adding that 'backshifting is optional... if the content of the indirect speech has continuing applicability' (1986: 285, (69)). Baker (1989: 457–61) similarly qualifies his rule, but in a more informal fashion, simply describing the circumstances under which 'the past time of some lower clause can be "usurped" by a nonpast time from the clause above it' (ibid., 457).

We have already seen in §1.3.1.1.1 that a description couched in terms of 'continuing applicability', as both Baker and Comrie provide,[42] is not explicit enough to account for many acceptable uses of the 'present under past' construction; and that one couched in terms of 'shifts in responsibility' achieves better results. But such a problem of execution can also be easily corrected, by a simple reformulation of the conditions under which 'backshift' does not apply. What is a more serious problem for these analyses, however, is the limited power of direct discourse to explain the peculiar properties of indirect discourse — in particular, those properties associated with the 'present under past' and other 'unshifted' constructions. That is, because these analyses claim that embedded tenses in indirect discourse are derived, by the operation of 'backshift', from those in direct discourse, they can see these constructions only as the result of the non-application of this rule to direct discourse sentences. But viewed in this way, these constructions have no status independent of their direct discourse sources; and any properties not attributable to these sources can receive no explanation. All that these analyses can point to are the conditions under which these 'unshifted' constructions may surface, but not how the distinctive syntactic properties of these constructions give rise to particular interpretative effects. Of course, we have already seen that the characteristic effect of the 'present under past' construction — namely, its shifting of the responsibility for the reported content from its original producer to the speaker — is possible only because its syntactic and semantic properties are not identical to those of its direct discourse counterpart. And we have also seen that the circumstances under which it is appropriately used follow directly from these syntactic and semantic properties.[43] Thus, any description of these circumstances, as we have already noted, is properly seen not as part of a statement of 'backshift', but rather as part of a description of the meaning and use of this construction. Similar remarks apply to the other 'unshifted' matrix past tense constructions discussed earlier, which must likewise be seen as possessing properties independent of any purported direct discourse 'source', and not simply as the result of an exceptional non-application of 'backshift'. The approach that Baker and Comrie take, then, turns out to give little insight into the nature of indirect discourse.

---

[42] Baker (1989: 458–59) describes his version of 'continuing applicability' as follows, using the sentence in (i) as an illustration:

(i) John told me on Sunday that Marsha doesn't like the plan. (ibid., 458, (81))

He notes that the situation described by the embedded clause 'is a state of affairs that exists not only at the time when John is speaking but also at utterance time.... The state of not liking the plan extends far enough through time to include utterance time as well as the earlier time of telling.... Time relations are then calculated with respect to utterance time rather than with respect to the time of telling.'

[43] We shall be exploring this idea in much greater detail in the next section and elsewhere in the chapter.

1.3.2.2. 'BACKSHIFT' AS 'MERELY MORPHOLOGICAL': HORNSTEIN 1990

A derivational analysis of indirect discourse that fares better in explaining its properties is proposed by Hornstein, as part of his (1990) 'neo-Reichenbachian' study of tense. However, as we shall see, its commitment to the view of 'past under past' constructions as containing 'underlyingly present' embedded tenses also leads to serious conceptual and empirical difficulties.

Many aspects of Hornstein's study have already been presented in the previous chapters. As noted in chapter 1, the basic devices that Hornstein employs in his analysis of tenses in complex sentences are Reichenbachian temporal schemata (or 'basic tense structures' (BTSs)) and rules that operate on the elements of these schemata, subject to the 'constraint on derived tense structures', repeated for convenience in (54):

(54) CONSTRAINT ON DTS (CDTS): DTS must preserve BTS.
  a. BTS is preserved if and only if:
    i. no points are associated in DTS that are not associated in BTS;
    ii. the linear order of points in DTS is the same as that in BTS.
  b. X associates with Y $=_{def}$ X is separated from Y by a comma.

(based on Hornstein 1990: 15, (12)–(13))

The rule relevant to 'shifted' sentences, which Hornstein calls the 'SOT rule', associates 'S_n', the 'speech-time' of an embedded BTS, with 'E_{n-1}', the 'situation-time' of an immediately higher BTS (ibid., 127, 169). This rule captures the insight that such a sentence describes 'the event time of the embedded clause [as] temporally relative to the utterance time' (ibid., 121). The result is a structure like that in (55b') for a sentence like that in (55a):

(55) a. John heard that Mary was pregnant. (ibid., 126, (12a))
  b. SOT RULE: Associate S_n with E_{n-1}. (ibid., 137, (32))
  b'. $E_1, R — S_1$ $\quad E_1,R,—S_1$

SOT

S_2,R,E_2 $\quad S_2,R,E_2$ (ibid., 127, (13))

'Unshifted' sentences are treated, as in other derivational accounts, as instances of the same structures to which this rule does not apply. This leaves 'E_1' and 'S_2' 'unassociated', as shown below:

(56) a. John heard that Mary is pregnant.

b. $E_1, R — S_1$

S_2, R, E_2

With its 'Reichenbachian' apparatus, then, Hornstein's 'SOT rule' certainly looks very different from the more traditional rules of 'backshift' examined earlier. In fact, these differences are more than superficial: crucially, Hornstein's rule, unlike these others, does not function by altering the morphological form of embedded tenses, but rather by establishing a temporal dependency betweeen matrix and embedded tenses by associating 'S_2' with 'E_1', as just noted. Given Hornstein's claim that this rule operates freely between adjacent tenses, his analysis is able to capture the temporally 'dependent' and 'independent' readings associated with tenses under both 'past' and 'future' tenses,[44] as we observed in §§1.3.1.1.2–3 — and even the neutralization of this distinction with the 'present', as we also observed (see ibid., 130).

But the distinct problems of Hornstein's analysis — and his claims about 'present under past' and 'past under past' constructions in particular — arise precisely because he takes the 'past' form of 'shifted' embedded tenses to be a 'superficial feature of SOT phenomena' (ibid., 122): observe that the 'Reichenbachian' structure of the embedded tense in (55b) remains that of a 'present' tense, even after the 'SOT rule' has applied. His claim, in other words, is that the 'past'-tensed form in SOT is 'a mere morphological alteration' that 'signals a shifted temporal dependency on the matrix-event time' (ibid., 123), but 'leaves the underlying tense form the same' (ibid., 161).

Hornstein adduces as evidence for this claim a range of data that appear to bear out a distinction between 'real' 'past' tenses and the 'superficial' ones claimed to be the product of this 'morphological alteration'. There are good reasons, however, to be sceptical about both these data and the conclusions that Hornstein draws from them. In particular, his judgements are often rather idiosyncratic; and when they are not, they are often liable to alternative interpretations that provide no support for his claim. The nature of each of these difficulties will become clear as we examine his examples below.

One set of data that Hornstein presents in support of his claim is given in (57) (the judgements are his). These data hinge on the contrast in the acceptability of 'past' tenses in embedded and independent clauses with the future-time-denoting adverbial *tomorrow*:

---

[44] Although the highly pragmatically-conditioned readings of 'past under past' constructions, which we observed in §1.3.1.1.2, casts some doubt on Hornstein's claim that they are structurally ambiguous, rather than indeterminate in meaning. Rather more dubious is his related claim of ambiguity for sentences with embedded 'past perfect' forms, like that in (i):

(i) John thought that Harry had run. (ibid., 120, (1h))

We shall be discussing this claim in the text below.

(57) a. John said that Harry was leaving tomorrow.
b. John said that Montreal played Boston tomorrow.
c. * Harry was leaving tomorrow.
d. * Montreal played Boston tomorrow.
e. Harry is leaving tomorrow.
f. Montreal plays Boston tomorrow. (ibid., 122–23, (7))

Hornstein accounts for these contrasts as follows: given that the coöccurrence of 'past' tenses with future-time-denoting adverbials 'is generally prohibited', the only acceptable sentences must be those in which *tomorrow* is not modifying verbs with 'real' 'past' tenses. This, of course, describes the embedded verbs in (57a–b), which are 'underlyingly' 'present'-tensed, their 'past-tense form being just the morphological manifestation' of the 'SOT rule' (ibid., 123). In contrast, the verbs in (57c–d), which must have 'real' 'past' tenses, since they appear in independent clauses and thus cannot be subject to this rule,[45] cannot be acceptably modified by *tomorrow*.

While Hornstein's account does seem to capture the observed patterns, further investigation shows that his generalization is a spurious one. This is because the sentences on which he bases it, as just given, all describe 'scheduling states'; and the availability of this reading with 'past'-tensed verbs (as we have already seen in chapter 2) commonly requires contextual support. This is particularly true with a deictic future-time-denoting adverbial like *tomorrow*, since the 'situation' described by such a construction must be one scheduled before the time of speech for some time after it, and tied closely enough to this past time to make the 'past' tense more appropriate than the 'present'. Since such a rarified situation is difficult to supply for uncontextualized sentences like those in (57c-d), their unacceptability is no surprise. However, the explicit provision of such contexts improves their acceptability dramatically, as (58) shows:

(58) a. Since Harry was leaving tomorrow, we thought we should have dinner with him tonight. But now it turns out that he's leaving on Thursday.
b. Since Montreal played Boston tomorrow, they thought they'd have no chance of buying tickets today. But somehow they managed.

This considerably weakens the support for the distinction that Hornstein claims between 'real' and 'superficial' 'past' tenses.

Support for this distinction is further weakened when we consider another set of data that Hornstein provides, this one pertaining to his claim that '*would* is simply the

[45] In fact, this assumption is difficult to maintain in the face of the data of 'free indirect speech', as we shall see in §1.3.3.

morphological form of *will* in SOT structures' (ibid., 123). These involve the coöccurrence of *would* with past- and future-time-denoting adverbials:

(59) a. * John said that Harry would leave for New York yesterday.
b. John said that Harry would leave for New York tomorrow.
c. John said that Harry would leave for New York.
d. John will leave for New York tomorrow.
e. * John will leave for New York yesterday. (ibid., 123, (8))

Hornstein's claim is that the behaviour of *would* here — which displays its 'future-denoting properties' in being acceptable with *tomorrow* but not with *yesterday* — is precisely what one would expect if it were the 'backshifted' form of *will*. But this behaviour is also what one would expect if the meaning of *would* were simply that of a 'future in the past' (as traditionally assumed), or involved a specification for posteriority but not anteriority (as suggested in chapter 2), independent of any 'SOT rule'. In fact, since *would* may appear in independent clauses — where it would be inaccessible to such a rule, as just noted —, its independent status must be recognized in any case. An example of just such an independent sentence with *would* — which Hornstein curiously omits from his paradigm — is given below:

(60) John would leave for New York tomorrow/* yesterday...
a. and he could hardly wait. [*would* = past of *will*][46]
b. but he can't. [*would* = 'wishes to']

This independent occurrence of *would*, given its behaviour with respect to *tomorrow* and *yesterday*, appears to have the same properties that Hornstein has claimed for its embedded counterpart. It thus seems difficult to maintain — short of appealing, rather implausibly, to homophony — that *would* is merely an 'SOT rule'-conditioned variant of *will*. Moreover, since this case exactly parallels those in (59), which purport to bear out a contrast between 'real' and 'superficial' 'past' tenses, such a contrast loses even more of its plausibility. (Of course, as we have noted in our earlier discussions of *would*, even the claim that its meaning is essentially that of a 'past of a future' is cast into some doubt by the possibility of a sentence like that in (60) being continued with a clause like that in (60b).)

A final set of data that Hornstein presents as evidence for his claim about 'shifted' tenses is the following one, which concerns contrasts related to the aspectual properties of verbs:

[46] This reading seems to require a 'free indirect discourse' context.

(61) a. Sally said that John left.
a'. Sally said that John was leaving.
b. John thought that Harry now understood our problem.
c. * Harry now understood our problem.
d. Harry now understands our problem. (based on ibid., 123, (9))

Hornstein notes that the embedded verb in (61a) does not receive a 'shifted' reading, according to which John's leaving is concurrent with Sally's saying, but rather one according to which his leaving is prior to her saying. This, he claims, is because the verb in question is non-stative. Since 'the present-tense form of nonstative verbs in English is the present progressive, not the simple present'; and since SOT, by hypothesis, 'leaves the tense unaffected', the 'shifted' forms of non-stative verbs should have only a 'past progressive' form, as in (61a'), and not a 'simple' form, as in (61a). In contrast, the embedded verb in (61b), which is stative, and thus generally has a 'simple' form, does receive a 'shifted' reading. Again, this means that its tense must be 'underlyingly' 'present'. This conclusion is buttressed by its acceptability with the 'present-oriented' adverb *now*, which — according to the pattern that he presents in (61b–d) — Hornstein takes to modify only 'present'-tensed verbs.

It is very difficult to accept Hornstein's conclusions here, for many reasons. One is that non-stative verbs certainly do have 'simple present' tense forms, as we noted in chapter 2; and thus, on Hornstein's assumptions, should be able to appear in the 'past' tense in the complements of 'past'-tensed clause-taking verbs. In fact, they do; but in this form — and without the 'overriding' effects of certain kinds of adverbial modification — they receive 'perfective' readings.[47] (All of these effects, as we also noted in chapter 2, result from interactions between verbs and their arguments, 'simple' verb forms, and optional adverbials.) This reading is the very one that Hornstein would predict from the application of his 'SOT rule' to an embedded 'past' tense: namely, one in which the 'situation' described by the embedded clause is anterior to the past 'situation' described by the matrix clause. In this case, however, the reading is not accompanied by 'morphological alteration', contrary to prediction — a fact which weakens the connection that Hornstein claims between 'morphological alteration' of embedded tenses and their 'temporal dependence' on matrix 'past'-tensed verbs. This

[47] Hornstein seems to admit as much earlier in his discussion (ibid., 122), when he observes that the sentence given in (i) has two readings, corresponding to the two sentences in (ii):

(i) John thought that Harry ran.
a. John thought, 'Harry ran.'
b. John thought, 'Harry runs.' (ibid., 120, (1g), 122, (5))

seems to be the conclusion that follows from the behaviour of non-stative verbs under 'past' tenses, and not the one that Hornstein draws.

As for his claims about stative verbs, these are less problematic, since it is true that these verbs do contrast with non-statives in displaying a 'shifted' reading. However, the evidence that he takes them to offer for a distinction between 'real' and 'superficial' 'past' tenses is no more convincing than that from non-stative verbs, simply because his judgements — in this case, pertaining to the acceptability of 'past'-tensed verbs with *now* — are again highly idiosyncratic. For example, Kamp and Reyle (1993: 595–96) give the following contexts in which such a coöccurrence is perfectly acceptable:

(62) a. Mary had been unhappy in her new environment for more than a year. But now she felt at home.

b. Bill had come home at seven. Now he was writing a letter.

(ibid., (5.163), (5.165))

What all of this reveals, then, is that there is ultimately little empirical support for Hornstein's claim that the 'past' tense morphology of 'backshifted' verbs is 'merely the morphological reflex' of his 'SOT rule'. Moreover, consideration of its implicit claims about morphological processes gives us broader theoretical grounds for doubt. These claims are related to the nature of the mismatch between morphosyntactic features and morphophonological realizations that this 'morphological alteration' represents. While other morphological phenomena have also been analysed in terms of such a mismatch, these phenomena have all been very different in character from 'backshift'. One example which highlights this difference is the phenomenon of 'case neutralization', which involves a systematic neutralization in a case-marking system of certain morphosyntactic case distinctions. This process, like those associated with other such mismatches, is entirely local to the morphological representation of the word that it targets; and, like most of these, results in a simplification of features (Mark Baker, personal communication). In contrast, 'backshift' is optional; produces forms that are at least as morphologically complex as those with which they alternate; and, perhaps most importantly, operates on a domain larger than the clause — too large to be the conditioning environment for any plausible morphological rule. Of course, none of these deviations from better-known morphophonological processes makes Hornstein's claim inconceivable; but they do free us of any obligation to accept this claim without a more specific proposal about how it might be cashed out.

Now, if the claim for a 'merely morphological alteration' of tenses under 'past' tenses is empirically suspect, then so too is Hornstein's analysis of SOT phenomena, which depends crucially on this claim to predict the 'past' tense morphology of 'backshifted' forms. In fact, there appear to be an empirical problem with his 'SOT rule'

itself, independent of this one pertaining to morphology. This is that it predicts two readings, temporally 'dependent' and 'independent', for every tense form that may appear under a 'past' tense. We have already seen that this leads to the prediction of unattested readings in the case of non-stative verbs, simple 'past'-tensed forms of which always have 'perfective' readings when they are unmodified. The same problem arises for 'past perfects', since, on Hornstein's assumptions, these represent either 'real' 'past perfects' or 'shifted' 'present perfects'. Accordingly, Hornstein claims that the sentence in (63) has two readings, corresponding to these two different structures, as indicated in (63a) and (63b), respectively (ibid., 122):

(63) John thought that Harry had run.
  a. John thought, 'Harry has run.'
  b. John thought, 'Harry had run.'

While the existence of these two readings for embedded 'past perfects' certainly follows directly from Hornstein's 'SOT rule', it is not obvious what independent support there is for it. This issue was already raised in our discussion of the 'past perfect' in chapter 2. There we echoed Declerck (1991: 356) in noting that the ambiguity claimed for the 'past perfect' follows only if it is understood in derivational terms, as either the 'past' of a 'past' tense or the 'past' of a 'present perfect'; and that the ambiguity disappears once we take it to express only 'anteriority in a past domain.'[48] Thus, like many of the other distinctions that Hornstein has posited, this one appears to be an artefact of his analysis.

We have thus seen that Hornstein's 'neo-Reichenbachian' analysis, while offering important insights into the nature of 'backshift' — particularly the connection between 'unshifted' readings and temporal independence, as manifested in the 'present under past' and other constructions — nevertheless founders on its derivational claim. However, since the insights of this analysis transcend the limitations of the analysis itself, they will play a crucial rôle in the proposal to be offered later in the chapter. The challenge will be to incorporate them into this proposal while avoiding the difficulties associated with Hornstein's derivational assumptions.

1.3.2.3. AN 'INTERPRETATIVELY SENSITIVE' ACCOUNT: OGIHARA 1989

The last derivational analysis that we shall examine, that presented in Ogihara 1989, forms part of what is basically a semantic treatment of tenses in complex sentences. As such, it is the most sophisticated attempt to address the interpretative issues of 'present under past' constructions within a derivational analysis. Ogihara recognizes a central

[48] We shall be taking up this point again in our discussion of Rigter 1986 in §2.1 below.

problem in standard derivational treatments of this construction (like those proposed by Comrie and Baker). This problem — which our earlier examination also revealed — is that the interpretation of this construction is substantially different from that of its 'backshifted' 'past under past' counterpart, whose d-structure it is purported to share. This is illustrated in the two pairs of examples, corresponding to the surface and D-structure representations of these two constructions, given in (64):

(64) a. John said that Mary was pregnant. [with a simultaneous reading]
a'. D-S: John PAST say that Mary PRES be pregnant.
b. John said that Mary is pregnant.
b'. D-S: John PAST say that Mary PRES be pregnant. (ibid., 84, (14))

The problem, then, is that the semantic component of the grammar has no basis for distinguishing between sentences like those in (64a) and (64b), since their d-structures (and corresponding logical forms) are the same. Ogihara's solution is a simple one: he proposes that the tense node in English may be specified for one of three different values: 'present', 'past', and 'null' ('Ø') (ibid., 85). This provides distinct syntactic representations for such sentences, to which the semantic component can then assign distinct interpretations.

The mechanism that Ogihara proposes[49] to cash out this distinction is that of 'tense deletion', a rule which applies at LF (after 'quantifier raising', for reasons which we shall be discussing in §1.4), 'delet[ing] a tense under identity with the immediately higher tense' (ibid., 100). His formulation of this rule is given in (65):

(65) TENSE FEATURE DELETION:
At the level of Logical Form, a tense morpheme α can be deleted if and only if the following conditions are satisfied: there are tense features α and β, α has the feature γ, β and γ have the same features, and β is the local tense feature of γ. This rule applies after QR has applied. (ibid., 252–53)

'Tense deletion' thus operates on embedded IP structures as follows: it targets an embedded tense with the same D-structure tense specification — 'past' or 'present' — as the matrix tense, and deletes the embedded tense morpheme, leaving its tense node with a 'Ø' value. This operation is shown in (66):

[49] He considers two other proposals, both involving transformations that apply before S-structure — one a rule of tense deletion and copying (ibid., 78–83), the other a rule of tense copying (ibid., 83–88) — before arriving at this one.

(66) John said that Mary was sick.

a. D-STRUCTURE: John PAST say that Mary PAST be sick

b. TENSE DELETION: John PAST say that Mary Ø be sick

(based on ibid., 123, (49))

The effect of this rule is to create an LF configuration that represents a 'simultaneous' reading; Ogihara's idea here is that the 'Ø' value indicates a present time with respect to the matrix tense, recalling traditional logical representations of tense, in which the 'present' tense is given no expression (ibid., 90). As such, the rule preserves the insight of standard 'backshift' analyses of SOT 'that the complement clause is interpreted relative to the matrix tense' (ibid., 90). (The rule even preserves the basic 'shifting' operation of 'backshift', though now executing it 'backwards', so that the tense value signalling simultaneity of matrix and embedded clause 'situations' appears at the end, rather than the beginning, of the derivation (ibid., 100).)

Given the rule's requirement for a matching of tenses, it can readily account for the absence of a 'simultaneous' reading with 'present under past' constructions (in which Ogihara includes the 'perfect perfect' and other tenses, as we shall see), as well as with the 'past under present' construction (ibid., 276). The different specifications of the two tense nodes in the 'present under past' construction, for example, prevent the lower tense from being subject to tense deletion, as indicated in (67):

(67) John said that Mary is sick.

a. D-STRUCTURE: John PAST say that Mary PRES be sick

b. [$\alpha \neq \beta$; TENSE DELETION does not apply]

The 'present' morpheme in the embedded tense node accordingly remains part of the LF representation of the sentence, triggering another LF rule which ensures an interpretation distinct from that assigned to its 'Ø'-tensed counterpart.[50]

In addition, simply by stipulating that 'tense deletion' is optional, Ogihara's analysis is also able to account for non-applications of the rule in which matrix and embedded tenses do match, as in the 'anterior' 'past under past' construction. Here, just as in constructions with 'unmatching' matrix and embedded tenses, the rule's non-application leaves the embedded tense with its original value, and thus with a logical form distinct from the 'simultaneous' 'past under past' construction:

[50] The details of this second rule, an 'Aux copying rule' which applies to the 'present'-valued but not to the 'Ø'-valued tense node and of the translation of the two LFs into intensional logic will not concern us here; for further discussion, see ibid., 327–28, 342.

(68) John said that Mary left.

a. D-STRUCTURE: John PAST say that Mary PAST leave

b. [TENSE DELETION does not apply]

One 'matching tense' construction, however, presents a significant complication for this analysis. This is the 'future under future' construction, which, as we saw earlier, does not have a 'simultaneous' reading — this reading being available, instead, for a 'present' tense embedded under a future. Ogihara deals with this complication by positing that *will* does not represent a distinct 'future' tense, but rather the catenation of a 'present' tense morpheme with what he calls '*woll*', 'the future auxiliary'. (This auxiliary may also combine with a 'past' tense morpheme, resulting in *would*.)[51] This solves the problem handily: since *will* is analysed as a 'present' tense form, a 'future under future' construction like that in (69) is assigned a D-structure representation like that in (69a), which may or may not undergo 'tense deletion', as shown in (69b) and (69b'), respectively:

(69) John will say that Mary will leave.

a. D-STRUCTURE: John PRES+woll say that Mary PRES+woll leave

b. TENSE DELETION: John PRES+woll say that Mary Ø+woll leave

b'. [TENSE DELETION does not apply]

Since the 'future auxiliary' is preserved in both derivations, each is associated with a reading according to which Mary's leaving is after John's saying.[52]

Conversely, the 'simultaneous' reading available to the 'present under future' construction arises straightforwardly from the deletion of the embedded 'present' tense, as shown in (70):

(70) John will say that Mary is sick.

a. D-STRUCTURE: John PRES+woll say that Mary PRES be sick

b. TENSE DELETION: John PRES+woll say that Mary Ø be sick

In addition, the possibility of a temporally 'independent' reading of the embedded 'present' tense, which we observed in §1.3.1.1.3, may be captured in terms of the non-application of 'tense deletion' to this tense.

---

[51] Essentially the same proposal is made in Heny 1982: 123, 129.

[52] Although the difference in the values of the respective embedded tenses will signal a slight (and rather implausible) difference in their interpretations. While Ogihara does not treat this example explicitly, his discussion of the difference between 'present' and 'Ø' tense values suggests that the sentence containing the former morpheme will be read as a *de re* attitude report of Mary's leaving, and the sentence containing the latter as a *de dicto* report. (See Ogihara's discussion of such a *de re* reading for the 'anterior' 'past under past' construction at ibid., 348.)

Thus, here as elsewhere, the syntactic representations that Ogihara posits ensure results that are appropriate for his semantic analysis. However, these results are purchased at the cost of some plausibility to the syntactic foundations of this analysis. This is most evident in his treatment of *will* forms. Despite the utility of his claim that they are 'present'-tensed forms of an auxiliary *woll*, Ogihara offers no independent support for this claim. This is a serious omission, given that we have already seen many reasons for treating it as a 'future' tense marker. In fact, there is little reason to believe that such a non-finite 'future' auxiliary exists in English. If it did, then we would expect it to appear in such contexts as that given in (71b), on the analogy of non-finite *have* and *be*. But such a form is, of course, unattested:

(71) a. It seems that Joe will stay for the weekend.
b. * Joe seems to woll stay for the weekend.

(72) a. It seems that Joe has left for the weekend.
b. Joe seems to have left for the weekend.

(73) a. It seems that Joe is gone for the weekend.
b. Joe seems to be gone for the weekend.

Nor does the claim for such an auxiliary, or for the 'tense deletion' analysis of the 'present under future' construction which it guarantees, stand up well to cross-linguistic scrutiny. The markers of the 'future' in French, for example, are clearly integrated into its tense morphology, and are thus not amenable to Ogihara's analysis as 'present'-tensed auxiliaries. Yet just like their English counterparts, they may have a 'simultaneous' reading in construction with a lower 'present'-tensed verb (Pascal Amsili, personal communication), as the gloss of the sentence in (74) suggests:

(74) Joe dira que Trish est malade.
'Joe will say that Trish is sick.'

Since there is no plausible 'matching' of matrix and embedded tense forms here, it is difficult to attribute the availability of this reading to a rule of 'tense deletion'.[53]

[53] The facts about French are even more complicated, since a sentence like that given in (71) above is the only one available to express the 'posterior with respect to a future' reading assigned to a sentence like that in (69), the 'future under future' construction being unacceptable (Pascal Amsili, personal communication). While the analysis of these French constructions must be left for future research, we might note here that this 'posterior' reading of the embedded 'present' provides some support for the claim in chapter 2 that the French 'present' tense is unspecified for either anteriority or posteriority.

Issues of plausibility likewise arise with respect to Ogihara's treatment of the 'past' tense. We saw earlier that the temporal relation between clauses in a 'past under past' construction may be determined on the basis of information contributed by the lexical properties of matrix and embedded verbs (and the latter's arguments), the latter verb's aspectual morphology, temporal adverbials, and context. Yet Ogihara's account of these constructions, like Hornstein's, makes the availability of 'simultaneous' and 'anterior' readings for this construction a matter of distinct syntactic representations for each reading, and thus independent of these factors, despite the evidence (as reviewed in §1.3.1.1.2) that each reading correlates with particular factors, and is not available for every 'past under past' sentence. In other words, on Ogihara's (and Hornstein's) account, the availability of these two readings becomes an instance of ambiguity rather than indeterminacy, making the absence of one or the other reading in a given context essentially a coincidence requiring special explanation. (We shall be considering this issue in more detail below.) It seems, then, that Ogihara's treatment of 'past'-tensed constructions also does not offer a convincing picture of their structure.

Of course, one might respond that such issues are largely orthogonal to Ogihara's purpose, which is simply to capture the readings available to a class of sentences; and that such a one-sided attention to the syntactic assumptions and claims of his analysis, to the exclusion of his semantic analysis, is simply unfair. To this we might respond in turn that such a view overlooks an obvious fact about linguistic explanation: this is that its goal is to explain natural language; and to the extent that it relies on devices that are poor models of the natural language phenomena to be explained, it cannot achieve this goal. Thus, if, as in the case that we have just examined, an account of some phenomenon has appealed to ambiguity rather than the more plausible alternative of indeterminacy, then in an important sense it has not truly explained the interpretations of those sentences, since it has offered a poor model of how these sentences come to have the interpretations that they do. (This is, of course, a clear implication of the McGilvray's theory of meaning, canvassed in chapter 1, according to which the meanings of expressions are determined by their syntax.) In Ogihara's analysis, however, the appeal to ambiguity is not always so innocuous; and we have noted instances in which the ambiguities that it generates are rather implausible ones. (This problem of 'artefactual' ambiguities besets Ogihara's treatment of relative clauses, in particular, as we shall see in §1.4 below.)

In sum, Ogihara's derivational analysis of SOT, despite its sophistication, remains mired in the same sorts of empirical and methodological problems that we have already witnessed with other analyses. Perhaps the greatest problem that these analyses face, however, is one which we have yet to discuss. This is the problem of determining the 'triggers' for 'backshift', which will be the topic of the next section.

1.3.3. THE PROBLEM OF 'TRIGGERS'

In the previous sections, we examined a number of constructions in which embedded tenses were either temporally 'dependent' or temporally 'independent' of matrix tenses, and a number of derivational analyses of these constructions. These analyses, we saw, all posited some kind of 'SOT rule', to account for the properties of the former constructions; and allowed for the possibility of its non-application, to account for those of the latter. Such claims were sufficient to handle 'backshifting' effects observed in verb complement clauses. As it happens, however, such effects are not confined to these contexts; and thus require explanation in terms of a more general formulation of their conditioning environments. Various studies that have considered this problem have offered just such a formulation. Yet the most adequate among them give us the most reason to doubt that these are the conditioning environments of a syntactic rule. In other words, the occurrence of 'backshift' appears, in many instances, to be 'triggered' by non-syntactic factors; so that the claims made in some studies that it is confined to a small number of well-defined syntactic contexts are highly problematic ones. What this means, as we shall see below, is that the 'triggering' problem is probably the most intractable one for a derivational analysis of SOT.

In all of the examples considered so far, the 'trigger' for the application of 'backshift' to a given verb form has been a 'past'-tensed verb form in an immediately higher clause. This accords with Hornstein's (1990: 137–38) claim that the rule applies only to 'neighboring' clauses — a claim given further support by the possibilities for 'shifting' in multiply embedded structures, illustrated in (75):

(75) a. * John said that Harry believes that Frank would be here.[54]
b. John said that Harry believed that Frank would be here.
c. John said that Harry believed that Frank will be here.
d. John said that Harry believes that Frank will be here.

(Hornstein 1990: 137, (33))

The fact that a verb form intervening between two 'shifted' forms must itself be 'shifted' demonstrates the 'locality' of the rule's application.

It turns out, however, that there are instances of 'backshift' that do not obey Hornstein's 'neighbouring clause' principle. These include sentences like those in (76)–(77), in which the rule appears to have 'skipped over' non-finite clauses, either

[54] Note that this sentence (which arose in our discussion of tense operators in chapter 1) does have an acceptable reading if *would* is not taken to be a 'future in the past', or is taken to be in the matrix clause of a more deeply-embedded sentence (James McGilvray, personal communication).

infinitival or gerundial (see e.g. Rigter 1986: 127; Baker 1989: 455–56; Declerck 1991: 175):[55]

(76) a. Rachel {hoped / intended / used} to tell us, 'I won't be able to attend the meeting.'

b. Rachel {hoped / intended / used} to tell us that she wouldn't be able to attend the meeting.

(based on ibid., 455, (72)–(74))

(77) a. Bill regretted telling Mary: 'I feel depressed.'
b. Bill regretted telling Mary that he felt depressed.

(based on Declerck 1991: 175, (30))

As it happens, Hornstein's treatment of SOT does offer an solution to these examples, as we shall see in §2.3. However, it has little to say about more problematic examples like the sentences in (78)–(79), whose matrix clauses contain no explicitly 'past'-tensed forms, but instead 'present'-tensed forms whose meanings signal 'anterior' readings for the clauses embedded under them:

(78) a. Joe has never said, 'I will be faithful.'
b. Joe has never said that he would be faithful.

(based on Decerck 1991: 29, (20))

(79) a. Bill regrets telling Mary: 'I feel depressed.'
b. Bill regrets telling Mary that he felt depressed. (Declerck 1991: 175, (30))

One generalization that brings these examples within the purview of 'backshift' is that of Baker (1989), who proposes that the rule is induced 'whenever there is an

---

[55] Note, too, that more than one non-finite clause may intervene, as the sentence in (i) shows:

(i) John hoped to be able to say that Peter wouldn't swallow any more goldfish.
(Baker 1989: 455, (73b))

Given that a sentence with more than two adjacent non-finite clauses is difficult to understand, we might assume that there is no syntactic constraint on the number of non-finite clauses that may intervene between the 'triggering' 'past' tense form and its target.

"earlier" time assignment associated with a phrase higher up' (ibid., 456). This informal characterization of the rule's environment certainly accounts for all of the 'triggers' we have seen so far, and bridges the formal differences between them. The difficulty arises, however, with the attempt to translate this notion of 'earlier' into syntactic terms.

This difficulty is evident in Ogihara's (1989: 128–32) treatment of 'triggers', which attempts to do just this, by means of the claim that all 'triggers' of 'backshift' are positively specified for the feature [Past]. This means, for example, that the 'present perfect' is specified for this feature — a rather implausible view of this form, as we saw in chapter 2. It also means, even less plausibly, that temporal adjectives like *earlier* are likewise specified for this feature. This claim follows from Ogihara's observation that they may serve as 'triggers' for 'backshift' (Ogihara 1989: 130–31, 251), given contrasts like that in (80):

(80) a. This contradicts John's earlier claim that Mary would win the prize.
b. * Everyone is amused by John's current claim that Mary would win the prize.
(ibid., 131, 132, (60a), (61))

Ogihara observes correctly that the acceptability of *would* in (80a) but not (80b) is related to 'the fact that the time of the claim is earlier than the time of the matrix verb' in the former but not the latter example (ibid, 131). However, by tying the acceptability of the sentence in (80b) directly to the presence of *earlier*, Ogihara appears to have misstated the contribution of this adjective to the sentence's acceptability, given the acceptability of the following sentence:

(81) This contradicts John's claim that Mary would win the win.

All that is required, as Ogihara himself has already noted, is that we understand John's claim to have been made before the time of speech — which is precisely how we understand the 'situation' described in (81). In fact, the addition of an adjective like *earlier* is acceptable only when we wish to set up a contrast between some earlier and some later claim of John's. This is because an earlier claim is not merely a 'claim made before now', but one that entails a later claim, which itself may have been made before the time of speech. Hence the acceptability of (82):

(82) This contradicts John's later claim that Mary would win the win.

Given these considerations, Ogihara's attempt to give the various contexts of 'backshift' a syntactic substrate is not a successful one. More than this, his citing of instances of 'backshift' in noun complement clauses reveals a context in which the rule would have

no obvious syntactic 'trigger', and thus does not appear to be the correct explanation of the 'shifting' effects observed.

We could still save Ogihara's claim by positing a [+ Past] counterpart for all nouns that take clausal complements — although such a move would not be a desirable one, since it would mean that such nouns are ambiguous, and not that they simply describe events that may be understood to take place at any contextually-salient time. However, there is yet another class of problematic 'shifting' data which are not amenable even to this ad hoc solution. These are the data of 'free indirect speech' (Declerck 1991: 89),[56] in which 'the speaker represents things from the point of view of someone else', describing speech and thoughts without his or her mediation (ibid., 90). An example of such indirect discourse is given in (83a); its 'standard' indirect discourse counterpart is given for sake of comparison in (83b):

(83) a. (One day Mary's father asked her about her plans for the future.) What did she intend to do after the summer holidays? Would she be going to university? He and Mother had always hoped she would go to Oxford.

b. (One day Mary's father asked her about her plans for the future.) He wanted to know what she intended to do after the summer holidays. He asked if she would be going to university. He added that he and Mother had always hoped she would go to Oxford. (Declerck 1991: 90, (148b, a))

As the passage in (83a) shows, clauses in 'free indirect speech' are temporally subordinated to some 'orienting' discourse (in this case, given in parentheses) without being syntactically subordinated to it; whereas their counterparts in (83b) are all embedded under 'past'-tensed verbs. The former group of clauses, however, exhibit the very same 'shifting' effects as the latter. In other words, what we find here are 'backshifted' verbs in unembedded clauses, for which no syntactic 'trigger' can exist that does not apply across sentential boundaries. Unless we are willing to countenance an ad hoc 'discourse rule' with precisely the same effect as 'backshift',[57] or to abandon, at great cost to syntactic theory, the assumption that the sentence is the domain of syntactic rules, then the only conclusion that we can draw from these data is that

[56] This is a translation of Bally's (1912) coinage, '*style indirect libre*'. (See Declerck 1991: 89, n. 98.)

[57] Jackendoff offers the same reasoning for taking binding to be 'a relation stated over conceptual structure' (Jackendoff 1990: 70). That is, since binding effects exist that must be expressed in terms of 'conceptual structures' in any case, the simplest theory would be one that treats both these and more clearly 'syntactic' binding effects in terms of a single set of conditions. For discussion, see e.g. Jackendoff 1990: 66–70.

'backshift' is ultimately not a syntactic rule, and that the SOT phenomena that it has been enlisted to explain must have a different source.[58]

1.4. RELATIVE CLAUSES

The data that we have just encountered, then, pose virtually intractable problems for the claim that 'backshift' applies only in well-defined syntactic environments; and thus cast serious doubt on the empirical adequacy of the derivational approach to SOT as a whole. Given these difficulties, we might be inclined to view with some suspicion the subsidiary claims that have been offered to buttress a claim for 'backshift'. One of these concerns the types of syntactic environments that license 'backshift': the claim is that the rule does not apply to all embedded clause structures, but only to the class of complement clauses. Though we have seen evidence that noun as well as verb complement clauses pattern similarly, the focus of this claim as it appears in the literature has been the contrast between verb complement clauses and finite relative clauses, with their gross structural differences — in particular, the presence of an NP intervening between tensed IPs in the latter but not the former — being posited as the source of observed differences in their respective temporal interpretations. As it happens, this claim is not specific to derivational analyses of SOT phenomena, but is also shared by non-derivational analyses such as Enç 1987.[59] Accordingly, this claim must be assessed independently of any particular claims about SOT itself.

By way of broaching this issue, we might note that there is no question of the significance of the syntactic differences between verb complement and finite relative clauses, whose effects with respect to syntactic processes such as movement can be readily discerned. This is demonstrated in the following examples, in which *wh*-movement from the latter but not the former gives rise to 'subjacency effects':

(84) a. Joe said that the man liked his comic books.
b. What$_i$ did [$_{IP}$ Joe say [$_{CP}$ t_i that [$_{IP}$ the man liked t_i]]]?

(85) a. Joe saw the man who liked his comic books.
b. * What$_i$ did [$_{IP}$ Joe see [$_{NP}$ the man who liked t_i]]?

---

[58] In fact, the observation that 'backshifting' applies across sentence boundaries must lead us to reject any analysis, derivational or non-derivational, that posits a syntactic relation between a 'backshifted' tense and some higher element to account for 'backshifting' effects. We shall be returning to this point in §§2–3 below.

[59] One important exception is Abusch 1988, which points to independent factors that cut across the difference between these two constructions. We shall be examining aspects of this proposal below.

The question, then, is only whether this structural difference is the key to the respective temporal interpretations available to these clause types, or whether they may be attributed to independent factors. If these different interpretations, which we shall be examining presently, are indeed due to the latter, then an adequate analysis of tense interactions must, of course, take them into account. If, however, they are related to other properties of these constructions, then a much simpler analysis of tense interactions becomes possible. As we shall see, there is substantial support for the latter possibility.

1.4.1. DIFFERENCES BETWEEN RELATIVE AND COMPLEMENT CLAUSES

In assessing this claim about relative and complement clauses, it is important to recognize the rather subtle differences in behaviour that it is seeking to tie to their differences in structure. This becomes clear from the fact that relative and complement clause constructions display largely the same patterns with respect to various salient features of tense behaviour. In particular, each permits the same coöccurrence of tense forms, as we can see from the following series of examples:

(86) RELATIVE CLAUSES:

a. under present:
   i. Joe hates the people who never buy his comic books.
   ii. Joe (now) likes people who (once) refused to buy his comic books.
   iii. Joe (now) likes people who had (once) refused to buy his comic books.
   iv. Joe hates the people who will never buy his comic books.
   v. Joe hates the people who would never buy his comic books.

b. under past:
   i. Seth spoke to a man who never buys Joe's comic books.
   ii. Seth spoke to a man who never bought Joe's comic books.
   iii. Seth spoke to a man who had never bought Joe's comic books.
   iv. Seth spoke to a man who will never buy Joe's comic books.
   v. Seth spoke to a man who would never buy Joe's comic books.

c. under future:
   i. Chester will meet a man who never buys Joe's comic books.
   ii. Chester will meet a man who never bought Joe's comic books.
   iii. Chester will meet a man who had never bought Joe's comic books.
   iv. Chester will meet a man who would never buy Joe's comic books.

(87) COMPLEMENT CLAUSES

a. under present:
   i. Joe says that many people refuse to buy his comic books.
   ii. Joe says that many people (once) refused to buy his comic books.
   iii. Joe says that many people had (once) refused to buy his comic books.
   iv. Joe says that many people will never buy his comic books.
   v. Joe says that many people would never buy his comic books.

b. under past:
   i. Seth said that many people refuse to buy Joe's comic books.
   ii. Seth said that many people refused to buy Joe's comic books.
   iii. Seth said that many people had refused to buy Joe's comic books.
   iv. Seth said that many people will refuse to buy Joe's comic books.
   v. Seth said that many people would refuse to buy Joe's comic books.

c. under future:
   i. Chester will admit that many of his friends are disgusted by Joe's
   ii. Chester will admit that many of his friends were disgusted by Joe's
   iii. Chester will admit that many of his friends had been disgusted by Joe's last comic book.
   iv. Chester will admit the many of his friends will never buy Joe's comic books.
   v. Chester will admit the many of his friends would never buy Joe's comic books.

Each also permits both 'dependent' and 'independent' readings of embedded tenses with matrix 'past' and 'future' tenses (and exhibits no such a distinction with matrix present tenses). We have seen examples of these readings for complement clauses in §§1.3.1.1.2–3; some of these are repeated in (88)–(89) below:

(88) 'DEPENDENT' READINGS:

a. under past:
   i. Joe said that the bullet hit the target. (= (38a))
   ii. Joe said that the bullet had hit the target.[60]
   iii. Joe said that the bullet would hit the target.

b. under future:
   i. Chester will know that he is drunk.

[60] I am assuming for the purposes of this discussion that the 'past perfect' is the 'shifted' form of the 'past', and thus a 'dependent' form.

ii. The police will find out that you were staying here today, and not in
iii. Chester will say that he will be finished soon. (= (47a–c))

(89) 'INDEPENDENT' READINGS:

a. under past:
   i. Joe said that he loved Trish. (= (39a))
   ii. Joe said that he would enjoy going to the Caribbean Music Festival.

b. under future:
   i. One day John will regret that he is treating me like this.
   ii. The police will believe that he was killed yesterday.
   iii. Chester will admit that none of his friends will buy Joe's comic books.[61] (= (48a–c))

Analogous examples of these two readings for relative clauses are given below:

(90) 'DEPENDENT' READINGS:

a. under past:
   i. Seth finally caught the guy who stole his laundry.
   ii. Seth finally caught the guy who had stolen his laundry.
   iii. Seth saw the guy who would one day try to steal his laundry.

b. under future:
   i. Seth will spot the man who is wearing Joe's jacket.
   ii. Chester will meet the man who refused to buy Joe's comic books.
   iii. Chester will find someone at the party who will give him a lift home.

(91) 'INDEPENDENT' READINGS:

a. under past:
   i. Seth saw the man who was just here.
   ii. Seth was the kind of guy who would enjoy a Caribbean Music Festival.

b. under future:
   i. Seth will finally meet the woman who lives down the street from you.
   ii. Chester will meet a woman who knew Joe as a teenager.
   iii. Chester will talk to someone who will never buy Joe's comic books.

[61] This sentence seems able to receive 'dependent' and 'independent' readings with equal ease.

Where relative and complement clauses do appear to differ, however, is with respect to the temporal ordering of same-tensed clauses. As a number of authors have observed (e.g. Declerck 1991: 138; Enç 1987: 638; Hornstein 1990: 138; Ladusaw 1977; Ogihara 1989: 101), relative clause constructions like that in (92), with matrix and embedded 'past' tenses, may be understood to describe a relation of simultaneity, anteriority, or posteriority between the 'situation' described by the relative clause and that described by the matrix clause:

(92) We spoke to the man who was crying. (Enç 1987: 638, (16))

Similar effects may be observed when both clauses contain 'future' tenses, as the sentence in (93) shows:

(93) We will speak to the man who will be crying.

Interestingly, these effects may persist even when the order of clauses is reversed (Declerck 1991: 138):

(94) a. We spoke to the man who was crying.
b. The man who was crying spoke to us.

(95) a. We will speak to the man who will be crying.
b. The man who will be crying will speak to us.

In contrast, the temporal ordering of clauses in verb complement constructions appears to be much more restricted. For example, the embedded clauses in the three sentences in (96) can be interpreted only as describing 'situations' that are respectively simultaneous, anterior, and posterior to those described by their matrix clauses:

(96) a. Joe told them that he was working.
b. Chester said that he bought the beer.
c. Seth will say that he will bring the food.

Such examples thus demonstrate intriguing differences between relative and complement clause constructions. It might be argued, however, that the differences in question are not quite so dramatic as these particular examples have suggested. This is because the temporal relation between matrix and embedded clauses, as we saw in our discussion of complement clauses, depends upon a number of syntactic, semantic, and pragmatic factors independent of the syntactic structure of the construction itself. These

factors may lead to a temporal ordering of clauses which is respectively more restricted and less restricted than the relative and complement clause constructions given in (92)–(96). The rôle of these factors will become clearer once we examine these examples more closely, and compare them with various minimally different counterparts.

Let us begin with the sentence in (92), and seek to trace the source of its clauses' striking 'temporal freedom'. Now, given our discussion of 'bounded' and 'unbounded' complement clauses in §1.3.1.1.2, in which we noted the ability of the latter to license 'simultaneous' readings, we might suspect that the 'unbounded' readings of the embedded clause in this sentence — attributable to the 'progressive' form of the embedded verb *cry*, which is lexically a 'process' verb — is largely responsible for the availability of this reading here. This suspicion is confirmed when we replace the 'progressive' form of *cry* with the 'simple' form, as in (97a), since here the 'simultaneous' reading — unless we take this to include an 'habitual' reading for the embedded clause, which is acceptable (Carl Vogel, personal communication)[62] — becomes much less accessible.[63] We observe an even sharper contrast when we replace *cry* with an 'eventive' predicate, as in (97b), since in this case the 'simultaneous' reading completely disappears:[64]

(97) a. We spoke to the man who cried.
b. We spoke to the man who broke the window.

Notice, however, that 'anterior' and 'posterior' readings remain unaffected through these modifications, and are therefore as salient for the sentences in (97) as they are for that in (92). On these grounds, we can take these two readings to be quite stable concomitants of relative clause constructions; and thus to contrast with the 'simultaneous' reading, whose availability appears to be dependent upon additional factors — in particular, those that contribute to an 'unbouded' treading for the relative clause.

It should be recognized, though, that contextual and other pragmatic factors may conspire to make one of these two more 'stable' readings highly marked or even unavailable. Consider the following sentences, whose most salient interpretations are those in which the man hit Joe first, and Joe hit the man first, respectively:

(98) a. Joe swore at the man who swore at him.
b. The man whom Joe swore at swore at him. (based on ibid., (44))

---

[62] We shall be examining the interpretation of 'simultaneous' 'situations' further in §2.5.3 below.

[63] To the extent that the 'simple' form can acceptably indicate a 'simultaneous' reading, it seems to impart a highly formal, 'literary' tone to the sentence.

[64] A similar point is made in Abusch 1988: 12, n. 5.

While the 'anterior' readings are hardly unavailable — imagine, say, a context for (98a) in which Seth is explaining to Chester that the man who has just sworn at Joe has simply reciprocated Joe's earlier outburst — they seem difficult to recover once one has conceived of the situations in the temporally 'opposite' way. And pragmatic effects are certainly in evidence in examples like the one below, adduced by Abusch (1988: 3):

(99) John suspected that the man who killed him was behind the door.
(based on Abusch 1988: 3, (9))[65]

Here, of course, John's suspecting must precede his being killed. This observation highlights a simple, though frequently overlooked, point: this is that non-syntactic factors like those at play here are crucial in assessing the nature of a sentence's unacceptability. (Attention to non-syntactic[66] factors will, in fact, be the key to the account of the differences between complement and relative clauses that we shall be canvassing below.)

The examples of relative clause constructions that we have just seen indicate that the 'temporal freedom' of their clauses may be restricted in various ways. Conversely, we find examples of complement clause constructions, discussed earlier in this study, in which the temporal ordering of clauses is considerably less restricted than in the examples above. These include sentences like the ones in (100):

(100) a. Joe said that the train left at 5 o'clock.
b. Joe hoped that the bullet hit the target.

The sentence in (100a) has two readings, which assign its clauses two different temporal orderings: the standard 'anterior' reading, according to which the train's leaving precedes Joe's saying; and the 'scheduling state' reading, described in chapter 2, according to which the train's leaving is scheduled for some (contextually determined) 5 o'clock after Joe's saying. The sentence in (100b), repeated from (40a), likewise

---

[65] The original sentence on which this one is based is given below:

(i) John suspected that a man who killed him was behind the door.

While this sentence is certainly unacceptable, as Abusch (1988: 3) notes, this seems due, in large part, to the indefinite article in the object NP, since this suggests a lack of specificity about the identity of the killer which is at odds with the meaning of the sentence as a whole. This problem appears to vanish when we replace the indefinite article with a definite one, since this does permit a specific reading for the NP. Accordingly, the version of the sentence given in the text, which contains a definite article, is (on my judgement, at any rate) acceptable. A similar problem is present in one of the sentences adduced by Hornstein (1990: 142), which we shall be discussing below.

[66] At least in the narrower sense in which this term describes phrase-structural and not strictly lexical properties. Since this matter will ultimately turn on the latter properties, we might say that the key factors will still be syntactic ones in the broader sense.

exhibits two readings respectively associated with different temporal orderings, as noted in §1.3.1.1.2: one in which the bullet's hitting the target precedes and one in which it follows Joe's hoping.[67]

We have also seen examples of 'future under future' constructions that permit a relation of anteriority to hold between embedded and matrix clause 'situations':

(101) Little Wilt will regret that he will be tall.

If we imagine a context for this sentence in which Little Wilt's parents, both very tall people, are reflecting upon their son's inevitable future, then the two 'situations' appear to be independent of each other, with that described by the embedded clause holding, for pragmatic reasons, prior to that described by the matrix clause.

Examples like those in (97)–(101) thus offer a somewhat more muted picture of the differences between relative and complement clause constructions than the one which we saw earlier. What does still seem true, however, is that relative clauses constructions are generally less temporally restricted than complement clauses; and the instances that we have seen in which this fails to hold are more the exception than the rule. There is also an interesting difference between these constructions that surfaces in 'present under past' sentences like that in (102), as Enç (1987: 638) notes:

(102) John insulted the man who is walking toward us. (ibid., (19))

This is that these sentences do not require the embedded clause 'situation' to extend from the time of the matrix clause 'situation' to the time of speech, unlike their counterparts with complement clauses. Enç takes this fact as strong evidence that the tenses of relative but not complement clauses can be temporally 'independent' of the tenses of their respective matrix clauses. We have already found good reason to see this claim — which Enç shares with other authors, as we have already noted — as too strong; and have considered the possibility that the effects observed by Enç may be due not to structural differences between these two constructions themselves, but to independent factors related to the kinds of verbs that select complement clauses. We shall be exploring these issues in the following sections.

1.4.1.1. Some recent accounts

One of the observations that we made in the previous section was that certain relative clause constructions permitted the temporal relation between the 'situations' described

[67] The possibility of these readings for the sentences in (100) appears to be rather strong evidence against Abusch's (1988: 3) claim that complement clauses cannot receive a 'forward shifted reading'.

by matrix and embedded clauses to be that of simultaneity, anteriority, or posteriority. One means of capturing this observation which has been popular in the formal semantics literature is that of scopal ambiguity (e.g. Ladusaw 1977; Ogihara 1989: 101ff.; Richards 1982: 86). More specifically, the three temporal orderings are expressed in terms of different scope assignments for the relativized NP and each of the two tenses, which are represented as sentential operators. In Ogihara's (1989: 101ff.) version of this analysis, the scope assignments in question are determined by the LF rule of 'quantifier raising' (QR), in a version which permits quantificational NPs to be adjoined to VPs or Ss. The LF representations of the three orderings in question, shown after the application of QR and Ogihara's rule of 'tense deletion', are given in (103):

(103) John saw a man who was laughing.

a. $[_S [_{NPk}$ a man $[_{S'}$who PAST be laughing]] $[_S$ John PAST see $e_k]]$

b. John PAST $[_{VP} [_{NPk}$ a man $[_{S'}$who Ø be laughing]] $[_{VP}$ see $e_k]]$

c. John PAST $[_{VP} [_{NPk}$ a man $[_{S'}$who PAST be laughing]] $[_{VP}$ see $e_k]]$

(ibid., 101, (27))

These representations respectively permit the man's laughing to obtain (i) 'at any time before the speech time'; (ii) simultaneously with John's seeing the man; and (iii) at 'any time before the time of John's seeing the man' (ibid., 101).

Ogihara's description of the three predicted readings reveals some serious difficulties with this approach (aside from those associated with the operator account of tenses generally, as described in chapter 1). Perhaps the most glaring is that it overgenerates readings, just as Ogihara's analysis of complement clause constructions did. Since the first representation, which assigns a 'wide scope' reading to the relativized NP, 'locates both the time of the man's laughing and the time of John's seeing him in the past of the speech time', thus leaving 'these two times... unordered with respect to each other', it subsumes the readings given by the other two representations. Thus, the latter 'do not strike native speakers as independent readings' (ibid., 117, 119). And since the analysis predicts these three readings, it also predicts that they each should be available for any 'past under past' relative clause construction. However, as we have already seen, the 'simultaneous' reading is rather restricted, being available only when the embedded clause describes an 'unbounded' 'situation'.

As Ogihara's own remarks seem to acknowledge, the most straightforward account of the different temporal relations expressed by relative clause constructions is one according to which matrix and embedded tenses '[express] no more than that the event referred to took place in the past' (Declerck 1991: 5). In other words, the two tenses simply do not specify the temporal order of the 'situations' that their respective clauses describe. It follows, then, that 'any temporal ordering can be evoked'

(Hornstein 1990: 138), given appropriate grammatical and contextual support. These considerations reveal the 'scope analysis' of relative and complement clauses to be an unsatisfying one.

The task that we must now face, of course, is to determine how the temporal indeterminacy of relative clause constructions should be described, and whether this description should distinguish them from complement clause constructions. The analyses of Enç (1987) and Hornstein (1990) are among those that do attempt to relate this indeterminacy to structural properties distinctive of relative clauses. Because Enç's analysis is beset with technical problems, we shall postpone discussion of it until §§2.5.1–3, where we shall be treating her 'binding-theoretic' approach as a whole. We might turn instead, then, to Hornstein's analysis of relative clauses.

Hornstein proposes that the temporal indeterminacy of relative clause constructions is related to the inability of relative clause tenses to be linked to matrix tenses via his 'SOT rule', and thus to bear 'shifted' readings. In other words, since the former tenses cannot be interpreted relative to the latter ones, they must be interpreted relative to the time of speech. Hornstein attributes this inability to the failure of relative and matrix clauses to meet this rule's 'neighbouring clause' requirement, which was described earlier. This is because the former is embedded in an NP, and is thus not adjacent to the matrix clause. What this means is that 'the temporal interpretation of the finite relative clause is independent of the temporal interpretation of the matrix', so that 'their relative temporal ordering is not constrained by the tense system at all' (ibid., 138).

We have already seen reasons to be sceptical about Hornstein's analysis of relative clauses. As we noted earlier, Hornstein's 'neighbouring clauses' requirement for 'backshift' is too strong, since this rule may apply across non-finite clauses, as the sentences in (76) above have shown. While it is possible that these clauses are 'transparent' to this rule, whereas NPs are not, sentences like those given in (90) suggest that standard 'backshifting' effects do indeed surface in relative clause constructions. As we shall see, a closer examination of Hornstein's evidence for this analysis finds our scepticism to be warranted, since this evidence, like that marshalled for his original claim about SOT, turns out to be deeply problematic.

Hornstein's first pieces of evidence for his analysis are the following sentences from Enç 1987: 638 (the latter presented above as (102)):

(104) a. John insulted the man who is walking toward us. (Enç 1987: 638, (19))
b. We spoke to the man who was crying.

Here Hornstein observes that the first sentence does not constrain the temporal ordering of the 'situations' respectively described by the matrix and relative clauses; and that the

second sentence determines the time of the relative clause to be that of the moment of speech. Both of these observations are consistent with his claim, and provide good evidence that the embedded tenses in each sentence are temporally 'independent' of their respective matrix tenses. Yet neither observation provides any real support for Hornstein's claim that a difference exists in the temporal behaviour of relative and complement clause constructions. This is because a 'dependent' reading of the embedded tense in the former sentence is similarly unavailable in 'present under past' complement clause constructions, as we have already seen; and because the analysis that he offers for the latter sentence could just as easily be applied to complement clause constructions like that in (105), which purportedly displays the effects of 'backshift':

(105) Trish said that Joe was crying.

In other words, the two 'past' tense forms in a sentence like this one could also be analysed as imposing no temporal ordering on the 'situations' described by their respective clauses, the effect of simulaneity deriving from the 'unbounded' embedded clause 'situation' and contextual factors. (Such a possibility has, in fact, been explored in some studies (see Declerck 1991: 159 for discussion and references), and will form an integral part of the analysis to be presented in §3.)

Hornstein does offer further evidence for his claim, however, in the form of contrasts between 'past under past' and 'present under future' relative and complement clause constructions. He gives these examples of the former (which include sentences with *would*, since he takes this to be the 'shifted' version of *will*, as already noted):

(106) a. John is in New York in a week.
b. The Bruins play the Oilers in two days.
c. * Frank met a man who was in New York in a week.
d. * Frank met the team that played the Oilers in two days.
e. I said that I was in New York in a week.
f. Bill thought that the Bruins played the Oilers in two days.
g. John has spoken to the man who will win.
h. * John has spoken to the man who would win. (ibid., 139, (35))
i. John has said that Harry would win. (ibid., 221, n. 22)

Hornstein argues that the pattern of acceptability displayed in these sentences follows from the availability of his 'SOT rule' in the complement clause but not relative clause sentences. That is, the embedded past tense forms in (106c–d), which are 'true' 'pasts', cannot be modified by future-time-denoting adverbials without violating his CDTS; while those in (106e–f), which are underlying 'present' tenses, can be (ibid., 140). The

unacceptability of the sentence in (106h) follows from similar considerations: while the embedded tense form displays the effects of the 'SOT rule', this rule cannot apply between non-adjacent clauses, causing the sentence to be ungrammatical (ibid., 141).

The difficulty here is that this evidence — like other evidence that Hornstein adduces — is rather unreliable. In this case, this is largely because the patterns exhibited are attributable to factors orthogonal to his claim. As before, Hornstein employs the 'scheduling state' construction in his examples; and so earlier comments about the contextually-dependent nature of this construction, and the difficulty of judging the grammaticality of decontextualized examples, apply here too. Moreover, the acceptability of this construction — perhaps because of its complex temporal properties and its relative rarity — also seems to be affected by minor differences in lexical content. For example, the sentence given in (106a) does not (*pace* Hornstein) seem to be fully acceptable, probably because its main verb, unlike the simple forms of non-stative verbs which are more common in this construction, is a poor cue for the 'scheduling state' reading. (The acoustically jarring effect of adjacent PPs with the same preposition might be another factor in this sentence's degraded acceptability.) It is likely, then, that the unacceptability of the sentence given in (106c), in which the 'past'-tensed version of the sentence in (106a) figures as a relative clause, is at least partly attributable to these factors. This derives some support from the greater acceptability of the sentence in (106d), in which these factors are absent. That there is, however, yet another source of the unacceptability of the relative clause constructions in (106c–d), again orthogonal to that which Hornstein has claimed, becomes clear from sentences like the following ones, which are distinctly odd, despite Hornstein's prediction that they be fully acceptable:

(107) a. ?? Frank met a man who is in New York in a week.
b. ?? Frank met the team that plays the Oilers in two days.

The oddness of these sentences appears to have a straightforward source: namely, the difficulty of imagining a context in which it would be appropriate to identify some discourse referent by means of such a transitory property. This explanation is lent further support by the similar oddness of the sentence in (108), from which the complicating factor of the 'scheduling state' construction has been removed:

(108) ? John met the man who would leave in a week.

A similar infelicity in the use of a relative clause appears to be the source of another contrast that Hornstein offers, as given below:

(109) a. John said yesterday that Frank would marry Mary in a week.
b. ?? A woman who Fred would marry in a week arrived yesterday.
(Hornstein 1990: 142, (42))

He traces this contrast, again, to structural differences between relative and complement clause constructions — reflected, in this case, in a 'shifted' interpretation of *would* in (109a) but not (109b). In other words, it is the 'unshifted' interpretation of *would* in the latter sentence, according to Hornstein, that leads to its degraded acceptability, since this interpretation is 'incompatible with the future adverbial' (ibid., 142).[68] This claim about *would*, as we shall see presently, has little to recommend it. As it happens, a more likely source of the latter sentence's degraded acceptability is the presence of an indefinite article in the relativized NP, which leads to pragmatic oddness (at least in the absence of context), given cultural conventions of (reasonably long-term) monogamy. That this indefinite article is the true culprit is suggested by the greater acceptability of the sentence in (110), where this article has been replaced by a definite one:

(110) The woman who Fred would marry in a week arrived yesterday.

We just noted that Hornstein's account of the sentences in (109) appeals to the claim that the *would* form in (109b), unlike that in (109a), does not result from the application of the 'SOT rule'. He makes the same claim with regard to the sentence in (111a), taken from Dowty 1982: 30,[69] which he contrasts with that in (111b):

(111) a. A child was born who would be king. (ibid., (19))
b. John said that the Bruins would win the Stanley Cup.
(Hornstein 1990: 141, (41))

The basis of this claim, as Hornstein describes it for the sentences in (111), is that the use of a 'shifted' *would*, as in (111b), does not determine the temporal location of the 'situation' described by its clause relative to the 'situation' described by the matrix

---

[68] He also claims that this structural difference is behind the availability of a reading for the sentence in (109a) — but not (109b) — according to which Frank and Mary's wedding is six days from the moment of speech. But this contrast is surely due to the difference in the ordering of the two temporal adverbials in these sentences, since this reading becomes available when the adverbials are in the same order:

(i) A woman arrived yesterday who Fred would marry in a week.

[69] The example that Hornstein cites is the (somewhat less felicitous) one given in (i):

(i) A man who would be king was born. (Hornstein 1990: 141, (39))

clause; while the use of an 'unshifted' *would*, as in (111a), does do so: the child 'whose birth is in the past has been crowned by the time [(111a)] has been uttered' (ibid., 141).

However, Hornstein's remarks about the sentences in (111) are very much open to dispute. First of all, it is not clear that the sentence in (111a) could not be used, say, in a narrative to describe the birth of Prince Charles's son Harry:

(112) On a glorious day for England, a child was born who would one day be King.

If this sentence is acceptable on the intended reading, then it has precisely the temporal properties that Hornstein has attributed solely to the complement clause construction. However, even if one found such a reading infelitictous, it is certainly possible to construct more acceptable relative clause sentences with the relevant properties, such as the following one:

(113) Joe was looking for a girlfriend who would put up with his obnoxious behaviour.

Since there is no guarantee that Joe will ever find such a girlfriend, this sentence also leaves the time of the 'situation' described by the relative clause unspecified in just the same way that its counterpart in (111b) does.

These considerations leave Hornstein's claim about *would* with little empirical support. But this, unfortunately, is not its only problem: another is that it leaves the unacceptability of a sentence like that in (106h), repeated as (114), without an explanation:

(114) * John has spoken to the man who would win.
[on a 'future in the past' reading of *would*]

Given Hornstein's account of the sentences in (109b) and (111a), it is not clear why the possibility of an 'unshifted' *would* is not available here too. In fact, sentences structurally similar to this one are acceptable, as (115) shows:

(115) John has spoken to all of the players he would include on his 'dream team'.

But this possibility undermines both Hornstein's claim that the unacceptability of (114) is related to a violation of the 'SOT rule', and his claim that occurrences of *would* in relative clause sentences are acceptable only when they indicate a 'situation' that has already been realized.

All of these alternative explanations of the data that Hornstein presents demonstrate the very shaky empirical foundations of his claim that the tenses of relative clause constructions cannot be temporally 'dependent' on those of matrix clauses. However, Hornstein does isolate one robust difference in the temporal interpretation of relative clause and complement clause constructions, as revealed in the following pair of examples:

(116) a. John will think that Bill is walking toward us.
b. John will visit the man who is walking toward us.
(Hornstein 1990: 140, (38))

Here he observes that the complement clause sentence, but not its relative clause counterpart, 'can be interpreted as locating Bill's walking toward us in the future' (ibid., 140). He attempts to account for this effect in terms of his claim that the 'SOT rule' cannot apply in the latter sentence, eliminating the possibility of temporal 'dependence' of the embedded tense on the matrix tense. In fact, we have already seen substantial evidence of such temporal 'dependence' in relative clause sentences. This can be demonstrated for 'present under future' sentences, given an example less biased toward the 'independent' reading than the one given in (116b). One such example is given in (117):

(117) John will say hello to the man who is walking his dog.

Hornstein has nevertheless discovered an interesting difference here. This is that the relative clause sentence makes the 'speech-time-oriented' reading of the embedded clause more salient — perhaps the expected result, given the 'priming' effect of the deictic pronoun *us* —; while the complement clause sentence makes the 'dependent' reading more salient, despite the presence of this pronoun. A plausible source of this difference, and in turn of the 'temporal restrictedness' that we have observed in complement clause constructions, is the nature of clause-taking verbs themselves, and the 'propositional attitudes' that they describe. We shall be exploring this possibility in the next section.

1.4.1.2. The contribution of propositional attitude verbs

In the previous section, we examined the differing degrees of 'temporal freedom' of clauses in relative clause and complement clause constructions, and found little support for the claim that this difference could be attributed directly to the respective structures of these constructions. The question that now arises, then, is what actually is the source of

this contrast. Recall that the contrast consists in the general ability of embedded clauses in relative but not complement clause constructions to bear a 'posterior' reading in 'past under past' constructions and an 'anterior' reading in 'future under future' constructions. This is illustrated in (118):

(118) a. Joe had lunch with the guy who robbed the bank.
a'. Joe said that the guy robbed the bank.
b. C.W. will write about the guy who will rob a bank.
b'. C.W. will write that the guy will rob a bank.

One plausible answer to this question emerges from consideration of a similar restriction observed in §1.3.1.1.1, which applied to certain clause-taking verbs. This restriction was related to their ability to form 'present under past' structures, and appeared to be strongest with the class of verbs that included *believe* and *think*, which we identified as non-factive 'verbs of cognition'. What we concluded about these particular 'propositional attitude' verbs, following Heny (1982: 126) and others, was that they generally required the object of the mental state or activity that they described to be located at the same time as, or at a time that intersected with the time of, the state or activity itself. To see why this is so, let us consider Heny's discussion of this point in somewhat greater detail.

His discussion focusses on sentences containing the 'propositional attitude' verb *believe* like those given below:

(119) a. Sam believed that he was in Boston.
b. Sam believed that he would be in Boston. (ibid., 126, (41)–(42))
c. * Sam believed that his wife is in Boston today.
d. Sam believed that his wife would be in Boston today. (ibid., 123, (38a-b))
e. Sam believed that his wife was in Boston today.

Heny argues that 'the mechanics of reporting a belief' rule out the use of the sentence in (119a) 'if Sam's belief was held a year ago and what he believed was in effect that he would be in Boston just six months prior to evaluation.' This is because the use of an embedded 'past' tense 'would clearly do violence to the fact that Sam's belief was about the future — a future relative to the past time at which it was held.' In order, then, to locate Sam's belief in the past but at the same time to 'give due weight to the futurity' of this belief, one must use the sentence in (119b), whose embedded *would* form, with its 'future in the past' reading, permits these requirements to be fulfilled (ibid., 126).

The unacceptability of the sentence in (119c) follows from similar considerations. That is, as a report of a past belief of Sam's about his wife's whereabouts either at the

time of his belief or in the future (that is, today), it fails to preserve the 'structure' of one or the other of these original beliefs, which would require the use of the sentences in (119e) and (119d), respectively. Of course, the 'present under past' construction can be acceptably used to report certain past 'propositional attitudes'. But what is important to see about these cases is that they are acceptable only when they (more or less) preserve the 'structure' of the original attitude. As we noted earlier, this acceptability depends crucially on the persistence of the 'situation' described by the embedded clause (i.e., the 'object' of the attitude) from the time of the original attitude to the time of speech. (As we also noted, this 'situation' need not actually hold, either at the former or the later times; all that is required is that the speaker be able to entertain the possibility that this 'situation' has held at least during this entire temporal span.) But this in turn imposes strict standards on the acceptability of 'present under past' sentences for the reporting of a given attitude. Consider the sentences in (120):

(120) a. Joe said, 'Seth will be here tomorrow.'
b. Joe said that Seth will be here today.
c. Joe said that Seth is here today. [* as a report of (a)]

While the sentence in (120c) is certainly acceptable, it does not preserve the posterior orientation of Joe's original utterance, and thus cannot be taken to be an accurate report of it. In other words, a 'present under past' sentence is acceptable only when the persistence of the 'situation' adverted to by its embedded clause is consistent with the original attitude. This we find, for example, in (120b), where the 'situation' of Seth's future arrival today is consistent with Joe's original report of Seth's future arrival; but not in (119c), where the 'situation' of Sam's wife being in Boston today is inconsistent with a past belief that Sam might have had about his wife's concurrent, prior, or future appearance in Boston.

If we now return to the question posed above — namely, why embedded clauses in complement clause constructions cannot bear a 'posterior' reading in 'past under past' constructions and an 'anterior' reading in 'future under future' constructions — we can see that this temporal restriction is simply imposed by the 'structure' of certain 'propositional attitudes'. Thus, for example, a past 'saying' or 'believing' 'situation' about some other past 'situation' cannot alternatively be about some as yet unrealized 'situation' without changing the structure of the respective attitude in question; likewise for future 'saying' or 'believing' 'situations' about 'situations' as yet unrealized at the time of saying or believing. However, as we saw earlier, the 'prospective' character of certain attitudes, such as those of hoping and expecting, permits past 'hoping' and 'expecting' 'situations' to be about other past 'situations' that are already taking place or have already taken place as well as those that have yet to take place at the time of hoping

or expecting. What unites these apparently different attitudes, as we also noted, is their implication that the 'situations' that are their 'objects' will be verified at some time after that of the atttude itself. Similar comments apply to the case of 'future under future' sentences: these generally report a future attitude about some 'situation' as yet unrealized at the time of the attitude, and cannot (except under the rare circumstances that we suggested in §1.3.1.1.3 and §1.4.1, which are analogous to those that license 'present under past' sentences) report attitudes with 'structures' different from this one.

This account of the 'structure' of 'propositional attitudes', though rather imprecise, nevertheless identifies a plausible source of the difference in temporal behaviour between complement clause and relative clause constructions. It also offers a solution to Enç's puzzle regarding the unavailability of a reading for 'present under past' relative clause sentences like the one in (121a), in which the embedded clause 'situation' extends from the time of the matrix clause 'situation' to the time of speech. This is simply because the 'situation' described by the embedded clause bears no relation to that described by the matrix clause, in contrast to the complement clause sentences that we have seen. That this is not a fact about relative clauses as such is demonstrated by the sentence in (121b), for which such a relation between matrix and embedded clauses is natural one, and whose embedded clause can therefore have the 'persistent situation' reading:

(121) a. John insulted the man who is walking toward us. (= (102), (104b))
b. John insulted the man who lives next door to him.

Further support for this 'propositional attitude' account of the 'temporal restrictedness' of complement clause sentences comes from the observation that such effects actually cut across the relative clause/complement clause distinction. These effects, as Abusch (1988: 3–4) has shown, are associated generally with constructions that create intensional contexts. Thus, the relative clause in the sentence given in (122), whose matrix verb can introduce an intensional context, also displays a similar inability to describe a 'posterior' situation on the intensional reading:[70]

---

[70] Abusch's (1988: 4) claim about such data, however, appears to be too strong. This claim is expressed in the following generalization:

(i) A sentence with a past tense embedding verb V_1, and a past tense embedded verb V_2, may have a shifted forward interpretation iff in the logical form of that sentence, V does not appear within an intensional argument of V_1. (ibid., 4, (G))

Her evidence for this claim is the impossibility of a 'forward-shifted' reading of the embedded 'past' tense on the intensional reading of the sentence given in (122). However, the relation between an intensional context and this reading of the 'past' tense generally appears not to be as direct as Abusch claims. First, this reading is possible for the sentence in (ii):

(ii) John looked for a woman who liked him.

(122) John looked for a woman who married him.

We have thus found a good deal of support for the possibility that the restricted 'temporal freedom' of complement clause constructions may be attributed to the semantic properties of 'propositional attitude' verbs, rather than to syntactic differences between these and relative clause constructions. This possibility allows us to see the behaviour of tenses in embedded clauses as essentially the same even across constructions as different as these two; and in turn to construct an analysis of tense dependencies that appeals to this simplifying insight. We shall be examining such an analysis in §3, after addressing certain preliminary issues in the following sections.

1.4.2. Locality conditions and relative clause types

One of these issues concerns the domain within which dependencies between tenses may hold. In previous sections, we discovered that these dependencies can hold across more than one IP and across an NP, leaving us with no indication of a locality condition on this dependence. However, a clear indication of such a condition does exist, in the form of contrasts like the following one:

(123) a. Joe will meet Mary at the café. She will be the one wearing the leather jacket.
b. Joe will meet Mary at the café. She is the one wearing the leather jacket. [* on the future reading]

These examples demonstrate quite conclusively that tense dependencies — at least in the case of 'future' tenses, a point to which we shall return below — cannot hold across sentence boundaries. Such a condition is certainly consistent with our observations about tense dependencies up to this point. However, as we have just seen, its insensitivity to the configurations that play such an important rôle in other syntactic processes might make us wary of accepting it without further investigation. Let us thus undertake such an investigation, to determine the robustness of this generalization.

Next, contrary to Abusch's claim, the 'forward-shifted' reading is not available for the sentence in (122), which has a restrictive relative clause. If such a reading is available at all with a indefinite relativized NP, it is available only for with a nonrestrictive relative clause, as given in (iii):

(iii) John looked for a woman, who (was the one who) married him.

(We shall have more to say about the differences between restrictive and nonrestrictive relative clauses in the next section.) Such results, however, are consistent with the weaker requirement that the attitude reflected in the 'looking for' 'situation' be preserved.

In fact, only a little investigation is required to uncover complex sentences with precisely the same tense behaviour as the independent sentences in (123). The sentences in question are ones that contain nonrestrictive relative clauses (Declerck 1991: 39), as illustrated in (124a) (sentences with restrictive relative clauses are given for comparison in (124b–c)):

(124) a. Joe will meet {Mary / a beautiful woman}, who {will be / * is†} dressed in black.

† At least on the future reading with *Mary*, and apparently on any reading with *a beautiful woman*.

b. * Joe will meet Mary who is dressed in black.

c. Joe will meet a beautiful woman who {will be / is} dressed in black.

Such sentences present an obvious challenge to our generalization if we assume that they have largely the same syntactic structure as sentences containing restrictive relative clauses. However, as McCawley (1988: 418–20, 427) has noted, there are good grounds for rejecting this assumption, in the form of a range of differences between restrictive and nonrestrictive clauses. These include, in addition to their quite different interpretations, the ability of a restrictive but not a nonrestrictive clause (i) to occur without a relative pronoun and with or without the complementizer *that*, (ii) to be extraposed, (iii) to coöccur with another clause of the same type, and (iv) to be attached to indefinite pronouns; the ability of a nonrestrictive but not a restrictive clause (i) to take 'comma intonation' or to be separated (with at least marginal acceptability) from its head noun by parenthetical expressions, (ii) to have a relative expression with its own head noun; and (iii) to be attached to proper nouns; the possibility of substituting the pro-form *one* for a sequence containing an N′ plus a restrictive but not a nonrestrictive clause; and finally the requirement that the former precede the latter when clauses of each type occur in the same sentence.

McCawley takes one of these contrasts in particular — namely, that related to the acceptability of parenthetical expressions in the two constructions, as exemplified in (125)–(126) below — to offer some clue to the structure of nonrestrictive relative clause constructions:

(125) a. * Fred was just talking to the person incidentally who asked John for help.

b. * Dorothy arrived on the day of course when I was in Toledo.

(126) a. ? Fred was just talking to Mary, incidentally, who asked John for help.
b. ? Dorothy arrived on Monday, of course, when I was in Toledo.
(ibid., (31a, a', b, b'))

This contrast, he suggests, might be taken 'as evidence that nonrestrictive clauses are less tightly connnected to the preceding material than are restrictive clauses' (ibid., 427). This claim dovetails with his observation, based on sentences like those below, that nonrestrictive clause sentences are 'to a large extent... interchangeable with sequences of sentences, one of which accomplishes the sort of speech act... that can be accomplished with nonrestrictive clauses' (ibid., 445):

(127) a. Put the turkey, which is in the refrigerator, into the oven.
b. Put the turkey in the oven. It's in the refrigerator. (ibid., (1b), (2b))

McCawley unites these observations in an analysis that takes nonrestrictive relative clauses to be distinct from their host sentences at deep structure, and to combine with them only if certain syntactic and semantic conditions are met. His claim, more specifically, is that both relative and matrix clauses have the status of independent sentences at deep structure, and that one may be converted into a nonrestrictive clause just in case it 'correspond[s] to a speech act of a type that can be performed in nonrestrictive clauses' and 'contain[s] a constituent coreferential to some constituent of the other [sentence]'. The process that creates the nonrestrictive clause 'involves replacement of the coreferential item in the nonrestrictive clause by the corresponding relative pronoun, movement of the relative pronoun to the initial position in the nonrestrictive clause, and movement of the nonrestrictive clause to a position immediately following the coreferential item (its target) in the host [sentence]' (ibid., 446). We might be reluctant to adopt McCawley's proposal as it stands, given its use of powerful and syntactically unmotivated devices to generate nonrestrictive relative clauses. However, since the development of an alternative is beyond the scope of this study, we must leave open the question of how best to analyse this construction. What seems clear, though, is that nonrestrictive relative clauses bear a striking formal and intepretative resemblance to independent sentences. We might thus assume (pending further investigation) that this is precisely how they are treated by the tense system.

Interestingly, despite the evidence that nonrestrictive relative clauses do represent a distinct domain for tense dependencies, a decided contrast exists in the 'dependence' behaviour of 'past' and 'future' tenses: namely, that the former but not the latter exhibit dependencies that cross sentence boundaries ('present' tenses, as we have seen, display

no discernible differences in this regard). This contrast is demonstrated in the sentences below:

(128) a. Joe will finally meet Mary, who $\left\{\begin{matrix}\text{will be}\\ *\text{ is}\end{matrix}\right\}$ dressed in black.

b. Joe will finally meet Mary. She $\left\{\begin{matrix}\text{will be}\\ *\text{ is}\end{matrix}\right\}$ dressed in black.

(129) a. Joe finally met Mary, who was dressed in black.
a'. Joe finally met Mary, who had heard a lot about him.
b. Joe finally met Mary. She was dressed in black.
b'. Joe finally met Mary. She had heard a lot about him.

This contrast arguably represents a significant difference in the properties of 'past' and 'future' tenses, and one which the 'linking' analysis of tense-tense dependencies to be offered in §3 will seek to account for.

2. NON-DERIVATIONAL ANALYSES OF TENSE IN COMPLEX SENTENCES

So far, this chapter has been devoted entirely to an examination of the data associated with SOT, and of the dominant approach to these data, which analyses them in derivational terms. This examination has revealed conceptual and empirical shortcomings in the derivational approach substantial enough to warrant the investigation of alternatives. In this and the following sections, we turn, finally, to some recent alternatives, which analyse these phenomena in non-derivational terms. As we shall see, these ultimately hold more promise as means of describing SOT phenomena, and lead to a clearer understanding of their properties.

2.1. LEXICAL AMBIGUITY: RIGTER 1986

Perhaps the simplest description of SOT phenomena in non-derivational terms is one that treats 'dependent' and 'independent' readings of embedded tenses as a matter of lexical ambiguity — that is, as deriving from lexically distinct, homophonous tense forms. One such description is given in Rigter 1986, whose basic features we examined in chapter 1. Recall that Rigter presents a 'Reichenbachian' analysis involving a temporal feature system for tenses, verbs, and auxiliaries. This system provides both for a temporally sensitive syntactic characterization of these elements and a straightforward construction of the chronological component of 'Discourse Representation Structures' (DRSs).

Although the latter is an important goal of his analysis, we shall focus here on its syntactic claims.

In order to investigate these claims, it is necessary to recognize that Rigter makes use of 'Reichenbachian' temporal schemata that reflect a significant departure both from Reichenbach's original analysis and from more recent studies in the 'Reichenbachian' tradition. This departure pertains to Rigter's characterization of 'S'. He interprets this element, following these other recent studies, as describing not only the 'time of speech' but the 'present... of the discourse domain' (ibid., 101), as is consistent with its occurrence in both embedded and unembedded contexts. Where Rigter departs from more standard assumptions, however, is in his allowing the 'S' of tense schemata embedded under 'past' tenses to encode a 'shift' to a past domain directly. In other words, while other 'Reichenbachian' analyses assign the same temporal schema to a given tense whether it appears in an embedded or an unembedded context, Rigter's analysis takes the embedding itself to determine the kind of tense that is inserted in an embedded clause.

The temporal representations that result from this claim, and their implications for the analysis of tenses in embedded clauses, will become clearer once we examine the evidence on which Rigter bases his claim. This includes the contrast in the respective interpretations of embedded tense forms in (130) and (131):

(130) a. He thinks that Jane is angry.
a′. Jane is angry.
b. He thinks that Jane has been angry.
b′. Jane has been angry.
c. He thinks that Jane was angry.
c′. Jane was angry.
d. He thinks that Jane had been angry.
d′. Jane had been angry. (ibid., 103–4, (9)–(16))[71]

(131) a. He thought that Jane was angry.
b. He thought that Jane had been angry. (ibid., 107, (27)–(28))

As Rigter observes, the temporal interpretations of embedded and unembedded tenses in (130) are completely parallel, the former displaying the same 'oppositional possibilities' as the latter: namely, 'R,S', 'R,E'; 'R,S', 'E-R'; 'R-S', 'R,E'; and 'R-S', 'E-R', respectively. These facts are consistent with the claim that both embedded and unembedded tenses place 'R' simultaneous with or anterior to the 'S' of their own

[71] I have rearranged Rigter's examples for ease of comparison.

domain. In contrast, the embedded tenses in (131) display the loss of the very 'oppositional possibilities' that are attributable to 'R', and indicate only that 'E' is either simultaneous with or anterior to the past time already established by the matrix past tense. (The latter relation, Rigter adds, is indicated not by the embedded 'past' tense itself, but rather by 'the auxiliary of the perfect' with which it appears (ibid., 107).)

It might be easier to see Rigter's point if we examine the temporal representations that he assigns to these sentences. Some of these are given in (132)–(133) (recall that '=' and '>' are equivalent to ',' and '-', respectively; and that subscripted letters indicate level of embedding):

(132) a. He thinks that Jane has been angry.

a′. $S_a = R_a = E_a = S_{aa} = R_{aa} > E_{aa}$

b. He thinks that Jane was angry.

b′. $S_a = R_a = E_a = S_{aa} > R_{aa} = E_{aa}$

(133) a. He thought that Jane was angry.

a′. $S_a > R_a = E_a = S_{aa} = E_{aa}$

b. He thought that Jane had been angry.

b′. $S_a > R_a = E_a = S_{aa} > E_{aa}$ (ibid., 106–7, (18), (19), (27), (28))

As these diagrams show, the 'past' tenses embedded under 'present' tenses display a contrast with each other that can be attributable only to the placement of 'R'; while those embedded under other 'past' tenses do not display such an opposition, indicating only a relation between 'S' and 'E'.

Rigter attempts to capture these observations in terms of a distinction in tense types. He posits two basic types: (i) 'domain' tenses, which establish an 'R' and relate it to an 'S' of the same domain; and (ii) 'domain-shift' tenses, which appear in embedded clauses under domain tenses, and do not establish an 'R', but indicate that the 'S' with which they are associated is chronologically 'shifted' away from the 'S' of the embedding domain. The lexical specifications for these tenses are given below, repeated from chapter 1 (recall that '↑' 'is an instruction to find the right-hand term of the nearest c-commanding chronology indicator'; and 'α-1 is the domain that directly embeds α') (ibid., 107–9):

(134) a. +Past domain-shift tense:

+PAST, $INFL^0$: [— V] must be inserted iff $S^{\alpha-1} > E^{\alpha-1} = S^{\alpha}$

[↑ = S] $INFL^1$

b. -Past domain tense:

-PAST, $INFL^0$: [— V]

[↑ = S ≤ R] $INFL^1$

c. +Past domain tense:

+PAST, $INFL^0$: [— V] cannot be inserted if $S^{\alpha - 1} > E^{\alpha - 1} = S^{\alpha}$

[↑ = S > R] $INFL^1$

The distinction in tense types that Rigter posits permits the possibility that the construction of 'R' in a 'DRS' may be either 'syntax-driven', as in the case of 'domain tenses', or 'inference-driven', as in the case of 'domain-shift' tenses. (In the latter case, however, an 'R' can be constructed only on the basis of contextual clues as to its location; if no such clues are available, then no 'R' is associated with the 'DRS' for such an embedded clause (ibid., 117). We shall returning to this point below.)

Rigter thus accounts for the interpretative effects of tense embedding in lexical terms, avoiding the many difficulties associated with derivational accounts and their rule of 'backshift', as we saw earlier. According to his analysis, then, 'backshift effects' are attributable not to an alteration in the form of tenses in 'backshift' contexts, but to the presence in these contexts of a particular kind of tense — namely, a 'domain-shift' tense — whose own properties are responsible for these effects. By locating such differences between embedded and unembedded 'past' tenses in the lexicon, Rigter is able to provide a uniform treatment of embedded 'past' tenses, which appeals promisingly to the rôle of syntactic structure in making certain temporal interpretations available.

Yet there are many reasons to be sceptical of Rigter's proposal, and its particular (rather limited) use of syntactic structure. Perhaps the most basic one is that it relies on homophonous 'past' tense forms, whose occurrence is dictated entirely by the structural description set out in the rules that form part of their respective lexical specifications. As such, Rigter's use of syntactic structure to account for tense dependencies is restricted to specifying the contexts in which 'domain' and 'domain-shift' tenses may respectively appear. That these specifications serve, moreover, to place the two tenses in complementary distribution makes it difficult to accept the claim that they are really distinct forms.[72]

---

[72] Rigter also relies on a disjunctive specification of the 'perfect' to capture its different readings, as we noted in chapter 1; one of these expresses the 'continuative perfect' reading, in which the 'E' of the verb governed by the auxiliary *have* 'begins before, and continues into, the episode' indicated by the matrix tense. Since Rigter himself notes that this specification of the 'perfect' 'requires the use of duration adverbial specifying the ['E'] of the governed verb', his appeal to this device of disjunctive specification suggests that he has missed an important generalization regarding the (under)specification of temporal elements.

Another reason to be sceptical of Rigter's proposal is its rejection of a basic principle of Reichenbach's (1947) analysis: namely, that every tense form is associated with 'S', 'R', and 'E'. While the validity of Reichenbach's principle itself cannot, of course, be taken for granted, closer examination of the evidence that Rigter marshals for his two tense types suggests that none of it is robust enough to warrant a rejection of Reichenbach's original claim. We noted above that the presence of 'domain-shift' tenses, according to Rigter assumptions, may lead to the construction of an 'inference-driven' 'R', given sufficient contextual clues as to its temporal location. Rigter's (ibid., 117) discussion of this point with respect to embedded 'past perfect' forms reveals the basic difficulty with this claim. He argues that without such clues, the hearer cannot determine the location of 'R' in a sentence like that in (135) (repeated from (131b)):

(135) He thought that Jane had been angry.

However, it is unclear whether it is the embedded 'E', rather than the embedded 'R', that is indeterminate here. The latter seems readily understood as simultaneous with matrix 'R'; what we really cannot determine without context is when Jane was supposed to be angry. As regards the embedded 'past' tense in a sentence like that in (136), it is difficult to see any greater indeterminacy of 'R' than we find with any 'past' tense, since context is always required to determine the past interval to which the sentence is actually referring:

(136) He thought that Jane was angry.

What this suggests is that Rigter's distinction between 'past' tenses is largely an artefact of how he has chosen to describe the temporal properties of 'past under past' constructions in the first place. By taking matrix 'past' tenses to shift the 'S' of embedded 'past' tenses into the past, rather than describing the properties of the two tenses independently, Rigter has already neutralized the distinction between 'S' and 'R' that is usually associated with the 'past' tense. Given this description, it is no surprise that embedded 'past' tenses appear to have a temporal structure fundamentally different from their matrix counterparts.

This distinction in tense types also faces more obvious empirical difficulties. These pertain to the existence of 'R' in embedded contexts such as those illustrated in the following sentences:

(137) a. This afternoon, he thought that by 10 a.m. Jane had been angry several times already.

b. He thought that John had taken the bag, opened the door and left.

(ibid., 117, (46)–(47))

According to Rigter, the 'domain-shift' tenses in these embedded contexts will not be associated with a 'syntax-driven' 'R'; yet both contexts indicate the presence of an 'R'. In (137a), this is because of the temporal adverbial *by 10 a.m.*, which he takes to be a specifier of 'R'; in (137b), this is because of embedded clauses that describe successive events, doing so on the basis of 'interpretation-driven construction rules' that move 'R' forward 'when each new event sentence is introduced' (ibid., 103). Both sentences thus represent cases in which certain syntactic properties of embedded clauses make the occurrence of an 'inference-driven' 'R' obligatory. In the former sentence, this presents the rather curious situation of a specifier of 'R' being syntactically present, even though the 'R' that is itself being specified is not.[73] More to the point, the appeal here to an obligatory 'inference-driven' 'R' might lead us to wonder whether such an 'R' is best understood as 'inference-driven' — especially since the assumption of a 'syntax-driven' 'R' would allow these sentences to be accounted for without further stipulation.

What undermines the plausibility of Rigter's proposal even further is the temporal interpretation of 'free adjuncts' like that in the following sentence:

(138) Feeling ill, I went to bed. (ibid., 119, (54))

As Rigter points out, the 'situation' described by the 'free adjunct' is 'located anterior to the speaker's present'. However, on standard assumptions, this adjunct would be taken to be adjoined to IP, so that the non-finite verb form contained in it would not be c-commanded by the matrix tense. This would mean that the '↑' instruction associated with this verb should 'point deictically to the moment of speech', resulting, contrary to observation, in an interpretation according to which I am feeling ill at this time rather than before going to bed. Rigter therefore concludes that the 'free adjunct' must introduce a 'syntax-driven' 'R', which 'finds itself under a node that governs the verb feel and induces the *-ing* morphology' (ibid., 119–20), but whose identity is otherwise 'mysterious' (ibid., 129). The mysterious nature of this node clearly signals the ad hoc nature of Rigter's claim about 'R' in 'free adjuncts'. This is emphasized still further by Rigter's stipulation that the 'R' in question 'is itself independent, and freely placeable', given the occurrence of 'free adjuncts' with 'present'- and 'future'-tensed matrix clauses like those in (139):

[73] The same difficulty arises in Rigter's treatment of infinitivals, as we shall see in chapter 4.

(139) a. Arriving there all alone, you will feel lost.
b. Sitting here, on the beach, I can hear the sound of seagulls.
(ibid., 122, (64)–(65))

The view of finite and non-finite verb forms implied by this treatment of 'free adjuncts' — namely, that the non-finite verb forms in these constructions, in being associated with 'R', have more in common with tensed verb forms in matrix clauses than embedded 'past'-tensed verb forms do — reveals Rigter's analysis of tenses to be a very implausible one.[74] However, what must lead us to reject this analysis is arguably not this problem but rather the more straightforward problem of its empirical inadequacy. Given Rigter's claims about the temporal properties of embedded 'past' tenses, his analysis has no obvious means to account either for the 'posterior' reading available to complement clauses and relative clauses in 'past under past' sentences like those below, which we described earlier:

(140) a. Joe hoped that the bullet hit the target.
b. Yesterday, Joe met the man who just walked by.

One way of accounting for these sentences that Rigter's analysis does make available is suggested by his treatment of 'present under past' constructions like that in (141):

(141) Simon said that he is hungry. (ibid., 117, (48))

Rigter's claim about such sentences is that they involve no shift of domain; that is, both matrix and embedded clauses 'are statements constructing the speaker's primary domain' (ibid., 117). There seems to be no reason in principle that such an explanation could not be applied to the analysis of 'past under past' sentences like those given above. Doing so, however, would mean the loss of Rigter's unitary treatment of 'past under past' sentences, if 'domain-shift' tenses were accordingly posited for embedded clauses that receive 'simultaneous' or 'anterior' readings, and 'domain' tenses for those that receive 'posterior' readings. Since this modification would in turn mean that the distribution of 'domain' and 'domain-shift' tenses could no longer be specified in purely structural terms, it would fundamentally alter the form of Rigter's analysis, which depends on this structural specification. The existence of sentences like those in (140) is

[74] Rigter also assumes that 'tenses are operators on tenseless verbal clauses, which are the syntactic correlates of tenseless propositions' (ibid., 110). We have already discussed the problematic nature of this assumption in chapter 1.

clearly at odds with Rigter's unitary treatment of the 'past under past' construction in any case, since this treatment takes every instance of this construction to involve the temporal subordination of the embedded clause to the matrix clause. (Notice, however, that a unitary treatment of this construction is still available, if we make the opposite assumption that no instances of it involve temporal subordination. This possibility, to which we have already alluded in earlier discussion, will be taken up in §3.) These considerations all appear to confirm the conclusion that we have already reached: namely, that a distinction between 'domain' and 'domain-shift' tenses, and the 'lexical' analysis of tense dependencies that underwrites it, cannot be sustained.[75]

Moreover, while this analysis offers an intriguingly simple means to capture the interpretative differences between embedded and unembedded 'past' tenses, its attempt to attribute this difference to the lexical properties of different 'past' tense forms, rather than to the effect of embedding itself, is ultimately unsuccessful. We might observe that it is also rather unsatisfying as an account of how tenses behave: in making the peculiar interpretative properties of embedded 'past' tenses an independent lexical fact about them, such an account suggests that it is a matter of mere lexical coincidence that the tense forms in particular structural configurations have the interpretative properties that they do, rather than a direct reflex of their occurrence in such configurations. It would seem, then, that a more adequate analysis of tense dependencies would be one that could exploit the relation between the structural position and interpretative dependence of tenses more directly.

2.2. 'ORIENTATION' AND 'SHARING': SMITH 1978, 1981

One such analysis has been proposed by Smith (e.g. 1978, 1981), as part of the more general theory of temporal expressions that we examined in chapter 2. Smith attempts to account for tense dependencies in complex sentences in terms of two principles, 'sharing' and 'orientation'. According to the first principle, an embedded clause fixes a value for 'R' by 'sharing' the 'E' of the matrix clause or another sentence. According to the second, the clause fixes a value for 'R' by 'orienting' its own 'S' to the 'E' of the matrix clause. Smith's analysis, in relating the interpretations of embedded tenses and temporal adverbials to their structural positions, grants a plausible interpretative rôle to the syntactic fact of embedding. Unfortunately, like her analysis of tenses in simple sentences, as described in chapter 2, this one, too, has serious weaknesses, which greatly reduce its descriptive and explanatory power.

To see both the strengths and weaknesses of Smith's proposal, let us consider its two principles in turn, beginning with that of 'sharing'. According to this principle, a

[75] Similar remarks apply to Abusch's (1988: 5–6) postulation of two 'past' tenses, which are also distinguished largely by the contexts in which they appear.

'temporally incomplete' embedded clause 'shares' the 'R' specified by the temporal adverbial in the matrix clause, just in case the two clauses have the same tense. This principle allows us to derive the temporal interpretation of the two kinds of sentences illustrated in (142a) and (142b), respectively:

(142) a. The office announced yesterday that Professor Thrum had retired.
b. They announced before noon that the fugitive had been caught 3 hours earlier. (Smith 1978: 59, (80), 93, (56))

Sentences like that in (142a) contain only the single temporal adverbial that establishes 'R' for both clauses. Ones like that in (142b), which we described in chapter 2, have temporal adverbials in both matrix and embedded clauses. The former adverbial likewise establishes 'R' for both clauses; and the latter adverbial, whose features prevent it from establishing 'R' for its clause, is able, under 'sharing', to specify 'E' for this clause (ibid., 58, 61).

Smith argues that an 'extended sharing principle', with a domain larger than the sentence, can account for the temporal interpretation of two other types of 'temporally incomplete' clauses: (i) embedded clauses that do not share the tense form of their matrix clauses; and (ii) independent sentences containing tense-adverbial combinations that cannot establish 'R'. Respective examples of these two sentence types are given in (143):

(143) a. The public will learn next week that Smith had already withdrawn his offer of open negotiations.
b. Ross was leaving in three days. (Smith 1978: 64, (104), 66, (107))

Here, 'sharing' applies in essentially the same manner as it does within sentences: a 'temporally incomplete' clause is supplied with a value for 'R' by the temporal adverbial of a 'temporally complete' clause with the same tense. The only difference is that the two clauses are syntactically independent of each other, the clause 'sharing' its 'R' being, in fact, a neighbouring sentence (ibid., 65). Examples of such 'R sharing' sentences for the 'temporally incomplete' clauses in (143a–b) (repeated as (144a′, b′)) are given in (144a) and (144b), respectively:

(144) a. The conference took place before March, ostensibly to arrive at a peaceful solution.
a′. But the public will learn next week that Smith had already withdrawn his offer of open negotiations. (ibid., 65, (106))

b. On Tuesday, all of Ross's friends were gathered together for the last time.

b′. Ross was leaving in three days.

The 'orientation principle', in contrast, applies neither to 'temporally incomplete' clauses nor to syntactically independent pairs of clauses.[76, 77] Its target, rather, is 'temporally complete' embedded clauses whose tenses differ from those of their matrix clauses. According to this principle, the 'R' of such embedded clauses is 'oriented' to the 'E' of their matrix clauses, rather than to 'S' itself. This has the effect of permitting clauses embedded under 'past'- or 'future'-tensed clauses, like those in (145a–b), to be interpreted relative to a past or future 'R' (as established by the tenses and temporal adverbials in the latter clauses). At the same time, it leaves the interpretation of clauses embedded under 'present'-tensed clauses, like that in (145c), with their 'unembedded' interpretation, given that an interpretation relative to a present 'R' is indistinguishable from one relative to 'S' (ibid., 62):

(145) a. The investigator will insist next month that he talked to the suspects three weeks earlier.

a′. The investigator talked to the suspects three weeks earlier.

b. Sharon admitted yesterday that she had already arrived on Friday.

b′. Sharon had already arrived on Friday.

c. The report states that the spy was denounced last month.

c′. The spy was denounced last month.

(based on ibid., 61, (92), 63, (99), 61 (91))

The sentence in (145a) thus describes the investigator as talking to the suspects a three weeks earlier than next month, rather than three weeks earlier than today, like its counterpart in (145a′). Similarly, the sentence in (145b) describes Sharon as having arrived on the Friday before yesterday, rather than the Friday before today, like its counterpart in (145b′) (although these two Fridays may actually be the same day).

---

[76] Although Smith (1978: 62) states very clearly that 'orientation' involves embedded clauses that establish their own 'R', her examples of the sentences to which this principle may apply do not seem consistent with this statement. One of these is the following sentence:

(i) Bill said yesterday that Tom was sick. (ibid., 64, (101))

Given that there is no temporal adverbial in the embedded clause, it is difficult to see how this clause could establish its own 'R' without some further stipulation. We shall see how Smith attempts to solve this problem in the text below.

[77] As it happens, Smith takes 'orientation' to apply within sentences only in her 1978 study (see e.g. ibid., 57), but abandons this position in her 1981 study, where she permits this principle to apply across syntactically independent clauses that have the same tense (ibid., 225). However, her description of the cases in which 'orientation' applies across sentences suggests that these are actually cases of 'extended sharing' between sentences that also involve 'orientation' of an embedded clause to its matrix clause. (This matter is discussed in the following note, *q.v.*)

Contrariwise, the sentence in (145c) describes the spy's denunciation as having occurred last month, just like its counterpart in (145c').

Smith (1981: 224) argues that the 'orientation principle' may also apply to sentences like that in (146), whose matrix and embedded clauses have the same tense:

(146) Bill told me last Tuesday that Carol arrived on Friday. (ibid., (32))

Here, the 'orientation principle' accounts for the 'anterior' reading of this sentence, according to which the Friday in question is the one preceding Tuesday.[78]

From these remarks, Smith's proposal seems to be an appealing one, which accounts for a range of data in terms of two simple principles of dependence — rather than in terms of some conceptually and empirically suspect rule of 'backshift'. On closer inspection, however, Smith's two principles turn out not to provide the tools to describe the basic patterns of tense dependency in complex sentences. Both principles are too powerful, predicting unattested interpretations which must be ruled out by stipulation or simply go unrecognized in Smith's analysis. At the same time, these principles are not powerful enough to describe the full range of tense combinations that are attested in complex sentences. Smith is thus compelled to supplement her analysis with various ad hoc devices in order to have it achieve empirical adequacy. In addition, they make use of 'R' and 'E' in a manner that attributes no difference in status to them. These difficulties with Smith's proposal, which complement those already described in chapter 2, suggest that it does not have the right properties to model the interactions of tenses with adverbials or with one another.

The difficulties surrounding Smith's two principles emerge in her analysis of sentences to which both apply. The sentences in question are (i) those in which matrix and embedded clauses have the same tense, and the latter clause is able to establish 'R'

---

[78] Smith (1981: 224–25) also claims that 'orientation' accounts for a reading of this sentence according to which the temporal adverbial indicates some Sunday that is related to a past time not specified in the sentence. In this case, the 'R' of the embedded clause is 'oriented' to the 'E' of the matrix clause, resulting in an 'anterior' reading; but this 'R' is established not by the embedded temporal adverbial and 'past' tense, but by another sentence, through the 'sharing principle'. While the context that Smith constructs to bring out this reading, as given in (ia), does not appear to do so, other contexts, such as that given in (ib), do make this reading available:

(i) a. Jimmy and Ross told us all about the events of 2 weeks ago. They said last night that Gertrude resigned on Sunday. (ibid., 225)

b. Jimmy and Ross told us last night, in their tales of Gertrude's adventures in the Big City, that she resigned on Friday, left New York on Saturday, and made it back home on Sunday — all before Black Monday hit Wall Street.

It is not clear, however, that such examples require Smith to complicate her claims about the application of 'sharing' and 'orientation' as she does here. This is because the availability of such interpretations of 'past' tense-'clock/calendar' adverbial combinations seems largely attributable to the highly context-dependent nature of these adverbials, as we noted in chapter 2. (This matter is also given considerable attention in Kamp & Reyle 1993: 614–20, *q.v.*)

(ibid., 63); and (ii) those in which the embedded clause has a 'present' tense (ibid., 66–67). Significantly, application of the two principles yields the same results in certain cases and different ones in others. Each type of result is instructive. The former reveals that Smith's treatment of 'R' in 'sharing' and 'orientation' is not consistent, and that it is this inconsistency which permits 'sharing' to achieve the correct reading; while the latter reveals that neither principle is sufficiently constrained, since each yields incorrect readings in certain cases. Inasmuch as the latter also includes cases in which the two principles yield different readings, but still do not capture the range of readings attested for the construction, it underscores the limited expressive power of Smith's system.

Among the first category of sentences are ones like that just given in (146), repeated for convenience as (147):

(147) Bill told me last Tuesday that Carol arrived on Friday.

The temporal interpretation of this sentence, as just noted, can be derived by 'orientation' as follows: the embedded clause establishes a past 'R', and this 'R' is, in turn, 'oriented' to the past 'E' of the matrix clause, resulting in an 'anterior' reading for the sentence (Smith 1981: 224). Smith (ibid.) claims that this same 'anterior' reading can also be derived by 'sharing', since the matrix clause can establish 'R' for both clauses, and the embedded temporal adverbial can thus specify an 'E' for its clause that is anterior to that of the matrix. However, while both principles appear to produce the same interpretation, they do so by assigning different temporal structures to the embedded clause: by 'sharing, this structure is 'R-S', 'E-R', whereas by 'orientation' it is 'R-S', 'R,E'. That this difference in structure — which in Reichenbach's system reflects the difference between the 'past perfect' and 'past', respectively — has no interpretative reflex in Smith's analysis suggests that her application of Reichenbach is a deeply problematic one, which assigns no clear interpretative rôle to 'R'.[79] Smith does

[79] Another problem with Smith's analysis of 'R' pertains to sentences with temporal PPs headed by prepositions like *before* and *after*. Recall from chapter 2 that Smith's analysis of such temporal PPs in independent sentences assigns them a dual function: the NP selected by the head of the PP specifies 'R'; and the head itself specifies the relation between 'R' and 'E', the actual location of 'E' remaining unspecified. Thus, in the sentence given in (i), 'R' is noon, and 'E' is some time before noon:

(ii) Harry ate before noon. (Smith 1978: 58, (74))

As we noted, there were compelling reasons to reject Smith's assumption that the internal structure of the PP could play such a rôle in determining the 'RE' relation. Yet another reason emerges from consideration of sentences like that in (ii), in which a PP of the type in question is part of an embedded clause to which 'sharing' has applied, and thus locates 'E' rather than 'R':

(ii) Sally said yesterday that Harry ate before noon.

The difficulty here is that the internal structure of PPs in these instances plays no rôle in specifying the relation between 'R' and 'E' or the location of either interval: here it is the PP as a whole that locates 'E', leaving the NP to identify some interval that has no privileged status in the temporal marking

not assign any different responsibilities to the different times: they are simply three times available to any adverbial for anchoring. But, as McGilvray (1991) has emphasized, these times are different, and do have different responsibilities: 'R' is the 'reference time', and is not simply another 'event time'. Thus, it is difficult to see how the same adverbial can preserve essentially the same meaning when it is shifted from one time to the other.

Instances in which the two principles yield different readings are no less problematic for Smith's analysis, since both readings are attested with only some sentences, and must be blocked elsewhere. One type of sentence that permits both readings is that containing a matrix 'past'-tensed clause with a 'stative' 'past'-tensed complement, as exemplified in (148):

(148) Bill said yesterday that Tom was sick. (Smith 1978: 64, (101))

With this sentence, 'sharing' predicts that the 'situation' described by the embedded clause is simultaneous with that described by the matrix; whereas 'orientation' predicts that the 'situation' described by the former is anterior to that described by the latter. As it happens, Smith takes this sentence to have only the 'simultaneous' reading, and thus claims that 'orientation' does not apply in such instances. (This she attributes to an ordering constraint — which plays a rôle elsewhere in her analysis, as we shall see — that specifies that 'sharing' applies before 'orientation', thereby blocking its application wherever 'sharing' is possible.) While the 'simultaneous' reading of such 'past under past' sentences is unquestionably the more salient one, an 'anterior' reading of these sentences is available in certain contexts, as we saw in §1.3.1.1.2. One such context is given in (149) (adapted from (45)):

(149) A: Why wasn't Joe at work on Friday?
B: He told me yesterday that he was sick.

This 'anterior' reading, moreover, is the only one available for sentences like those in (150), which describe 'situations' that are 'bounded':

(150) a. Chester said yesterday that he enjoyed the party.
b. Joe said yesterday that he was born in Philadelphia.

---

system of English. This curious asymmetry in the interpretation of the same PP structure in matrix and embedded contexts is a highly undesirable consequence of Smith's claim about temporal PPs, and provides us with even stronger grounds for rejecting it.

The availability of 'anterior' readings for the sentences in (148)–(150) thus offers a strong argument for permitting 'orientation' to apply to them — as Smith herself acknowledges in her (1981) study (see ibid., 224). In fact, given the unavailability of 'simultaneous' readings for the sentences in (150), it is the application of 'sharing', rather than 'orientation', that has undesirable consequences here — and whose application would require the same sort of restriction that Smith has proposed for 'orientation'.

This, however, is not the most serious technical problem to which these data expose Smith's (1978) analysis. A much greater one is that 'orientation' should not be able to apply to the sentences in (148)–(150) at all; this is because their embedded clauses do not have temporal adverbials, and thus should not be able to establish 'R'. Yet if 'orientation' did not apply here, Smith would have no way of accounting for these sentences, since 'sharing' predicts identity of matrix and embedded 'Rs'. Smith's (1981: 224) response is to claim that embedded clauses without temporal adverbials are interpreted as 'either simultaneous with the matrix or vague' — interpretations whereby the 'R' of the embedded clause is respectively the same as that of the matrix or is not specified in the sentence itself. Unfortunately, while the former reading follows from the application of 'sharing', as in Smith's original system, the latter has no obvious source, and thus could presumably be derived — Smith herself does not elaborate upon this point — only through some stipulation that it becomes available if 'sharing' does not apply. If such a stipulation is necessary to ensure the availability of an 'anterior' reading for the 'past under past' sentences like those in (148)–(150), then the problem that we have recognized has hardly been solved. Moreover, because this stipulation encroaches upon a domain governed by 'sharing' in Smith 1978, it considerably complicates the interpretative procedure spelled out there, according to which 'sharing' applies whenever an embedded clause has the same tense as its matrix clause. Of course, it is this overly restrictive procedure for determining the embedded 'R' that has created these difficulties in the first place, by providing no means to account for their 'anterior' readings of 'past under past' sentences. Yet given the central rôle that Smith assigns to temporal adverbials in establishing 'R', as described in chapter 2, there is no obvious way to resolve them. (This dilemma inevitably casts further doubt on Smith's claims about temporal adverbials, which, as we saw earlier, are already deeply problematic.)

An even more basic problem with Smith's analysis of 'past under past' sentences is that 'sharing' and 'orientation' themselves do not predict the different readings that these sentences may have. These instead follow, as we saw in §1.3.1.1.2, from the contributions of matrix and embedded verbs and their arguments, temporal adverbials, and context. Recall, for example, that an 'unbounded situation' like that described by the embedded clause in (148) may be understood as complete or incomplete in the past, and thus as located either at the same time as or prior to the 'situation' described by the

matrix clause; whereas a 'bounded situation' like that described by the embedded clause in (150b) can only be understood as complete, and thus as located prior to the 'situation' described by the matrix clause. Recall, too, that the 'situation' described by the embedded clause of a sentence like the following one (repeated from (40a)) may be understood as posterior to that described by the matrix clause, given the appearance in the latter clause of the 'prospective' verb *hope*:

(151) Joe hoped that the bullet hit the target.

All of this demonstrates that Smith's two principles are not keyed to various significant determinants of interclausal temporal relations, so that their application takes no account of the latter's effects on these relations, making these effects incidental to temporal structure. What this leads us to conclude, then, is that these principles cannot adequately describe the range of temporal interpretations that complex sentences actually receive.

This conclusion is reinforced by an examination of Smith's analysis of 'present under past' sentences, where we find the same cluster of problems: the application of one principle being licit but yielding unattested readings, and that of the other being impossible without recourse to ad hoc devices. Here, however, it is 'orientation' that fits the former description, and 'sharing' that fits the latter. Smith's analysis begins with the claim that the embedded 'present' tense in these sentences, which are exemplified in (152), serves to signal that 'the speaker is responsible, as it were, for the complement's being true or relevant' at 'S' (ibid., 66):

(152) a. The Egyptians knew that the earth is round.
b. Sam told me that Mary is leaving in a week. (Smith 1978: 66, (110)–(111))

This claim about the rôle of the 'present' tense here is precisely the one that we canvassed in §1.3.1.1.3. Unfortunately, the properties of Smith's system give her no ready means to cash it out. 'Orientation' is not up to the task, because it predicts only that this 'present' tense is interpreted relative to the 'past' tense of the matrix clause, rather than to 'S' (ibid.).[80] And 'sharing' simply cannot apply, since these 'present under past' sentences do not satisfy the requirements of either its 'basic' or its 'extended' form: the two different tenses in these sentences rule out the application of the former, and the fact that no 'present'-tensed sentence consistently accompanies 'present under past' sentences, to 'share' its 'R' with the embedded clause, rules out the

[80] Smith (1978: 67) entertains the possibility of correcting the 'orientation principle' by altering the value of a present 'R' from that of simultaneity with 'S' to that of 'a time between Past and Future, anterior to Future [reference time] and posterior to Past [reference time]'. However, it is difficult to imagine the value of this time if it is not present. (Smith rejects this proposal for other reasons; see ibid., 67.)

application of the latter. What Smith suggests is that the 'extended sharing principle' does apply after all; and that the source of a present 'R' is an 'abstract performative sentence' associated with the sentence as a whole, which expresses the relation 'S,R' (ibid., 66). In this way, a present 'R' is always available for 'sharing'. As it happens, such a 'performative sentence' is needed in any case in order to ensure that embedded 'deictic' adverbials like that in (153) are interpreted relative to 'S', rather than to 'R', as she predicts:

(153) The butler reported yesterday that the count had vanished a week ago.
(ibid., 68, (116))

Smith postulates, accordingly, that every overt sentence has such an 'abstract' counterpart, which is available to 'share' its 'R' whenever a sentence has an embedded clause containing a 'deictic' adverbial. This makes it possible for such an adverbial to express a relation between 'E' and a present, rather than past or future, 'R' (ibid., 68). While this stipulation cleverly extends the empirical range of 'sharing', it reveals quite strikingly the expressive limitations of Smith's approach, which places sentences with embedded 'deictic' adverbials and 'present' tenses — and many other complex sentences, as we have seen — beyond the reach of her basic account of temporal dependencies, slating them for special explanation. Smith concedes the weakness of this approach in her 1981 study. Her alternative, however, is to take 'sharing' and 'orientation' to apply only to sentences in which matrix and embedded clauses have the same tense, and to invoke distinct rules to account for the respective interpretations of 'present under past' and 'past under present' sentences (ibid., 226). This is certainly no more satisfying, since it once again introduces distinct classes of tense configurations, subject to radically different principles of temporal interpretation, without providing independent support for the criterion according to which these classes are distinguished — in this case, identity of matrix and embedded tense values. In the absence of such support, the interpretative burden that Smith places on this difference in tense configurations seems implausibly heavy, suggesting that she has again overstated the rôle of relatively minor factors in the organization of the tense system.

What Smith does not explore, in either her earlier or her later study, is the possibility that the different relations between tenses in complex sentences can all be explained in terms of a single set of principles, which are more sensitive to the nature of these relations, and the properties of tenses themselves, than either 'orientation' or 'sharing'. In this light, we can see that the various complications introduced into the operation of these two principles serve largely to salvage a claim about the structure of the temporal system which, in fact, has little empirical support. We have seen both here and in chapter 2 that the oppositions that Smith takes to be central to this structure do

not, on closer inspection, have any privileged status in the temporal system. These oppositions — between clauses with and without temporal adverbials, between pairs of clauses with the same tenses and with different tenses, and between 'simultaneous' and 'non-simultaneous' readings of complex sentences — are, as we have seen, at the heart of 'sharing' and 'orientation'. This fact suggests a plausible source for the difficulties that these principles face: namely, that they embody the assumption that same-tensed complex sentences are canonically associated with 'simultaneous' readings, and different-tensed complex sentences with 'non-simultaneous' readings. Of course, the range of temporal interpretations that complex sentences actually receive gives little support to such an assumption, leading Smith to a host of stipulations which serve only to further undermine the plausibility of her analysis.[81]

The ultimate failure of Smith's account of tense-tense dependencies is nevertheless instructive. While this account makes crucial appeal to the structure of complex sentences, the 'principles of interpretation' that it exploits are guided neither by the broad outlines of phrase structure nor the finer hatchings of lexical information. Thus, 'orientation' and 'sharing' may apply to sentences with identical phrase structures, whose only difference is in the combination of tenses that they instantiate. Since the differences in the temporal interpretations of such sentences could easily be attributed directly to this difference in tenses, it is not clear why such principles would be required by the grammar if they serve only this function. At the same time, these principles do not take account of lexical differences that determine the 'situation' type described by the VP, an equally important contribution to temporal interpretation. This makes their inclusion in the grammar even less plausible.

Since Smith's approach accounts neither for the general interpretative consequences of embedding, nor for the means by which various linguistic and non-linguistic factors converge on specific temporal interpretations, we must look for other approaches that are more adequate to these tasks. The latter effects, we might guess, can be described largely in terms of a theory of the lexicon, together with a theory of contextual knowledge. Further discussion of these matters, however, would take us beyond the scope of this study, and we shall not be pursuing them here. The former effects, in contrast, are very much within the scope of our study; and, from what we have seen in this and the previous chapters, are amenable to a syntactic description. As it happens, syntactic theory offers many possibilities for such a description. Two possibilities that we shall be exploring below — those given in Hornstein 1990 and in Enç 1987 and Zagona 1990 — make use of the devices of 'government' and 'binding'.[82] While these descriptions have problems of their own, they provide a much

---

[81] Enç's (1987) analysis suffers from the same problem, as we shall see in §2.5.3.

[82] The following sections are based on §2 of Shaer 1990 and §§2.1.2, 2.1.3, and 3.2.1.2 of Shaer 1992.

clearer picture of how particular configurations of tenses might be related to particular temporal interpretations.

2.3. TENSES AS ADVERBS: HORNSTEIN 1990

Let us first examine Hornstein's (1990) proposal, which assigns a central explanatory rôle to the structural relation of 'government'. Drawing upon a commonly invoked connection between tenses and adverbs (e.g. Kiparsky 1968; McCawley 1971; Smith 1978), Hornstein claims that these elements belong to the same category, and are thus subject to the same grammatical principles. Most significantly, both are able to modify only what they govern — a restriction which, when applied to tenses, permits a considerable simplification of the rules that define SOT and other tense dependencies (Hornstein 1990: 168, 169, 177).[83] Hornstein's suggestion that tense relations in complex sentences can be described in such a straightforward fashion makes his proposal an intriguing one. Unfortunately, an inspection of its technical foundations shows them to be far too unstable to support an adequate theory of temporal interpretation, as we shall see presently.

Recall from our discussion in §1.3.2.2 that Hornstein posits an 'SOT rule' that combines the 'basic tense structure' (BTS) of an embedded clause with that of an immediately higher clause, by anchoring the 'S' of the former to the 'E' of the latter (ibid., 127). This rule proceeds in accordance with Hornstein's 'constraint on derived tense structures', which ensures that the order of 'S', 'R', and 'E' in the two BTSs is preserved. The operation of this rule is illustrated in (154) (repeated from (55)):

(154) a. John heard that Mary was pregnant.

b. SOT RULE: Associate S_n with E_{n-1}.

b'. $E_1, R — S_1$ $\qquad$ $E_1,R,—S_1$

$\qquad\qquad\qquad$ SOT $\qquad$ |

$\qquad\qquad\qquad$ ——> $\qquad$ |

S_2,R,E_2 $\qquad\qquad$ S_2,R,E_2

Given Hornstein's assumption that the elements of BTSs are encoded directly in the syntax — 'S' by the tense morpheme in Infl; 'R' by the [+ Perfective] auxiliary *have* or its null [- Perfective] counterpart, each of which is adjoined to the VP; and 'E' by the verb (ibid., 169–70)[84] — a 'government requirement' on the application of this rule

---

[83] As well as his 'rule for temporal connectives', which serves to associate a matrix clause with an embedded temporal adverbial clause. For a discussion of this, see Hornstein 1990: 43ff.

[84] As it happens, Hornstein is not consistent in his remarks about the element that provides 'E', sometimes claiming that it is the 'predicate' (ibid., 170), and at other times that it is the verb (ibid., 171). Note, however, that his 'government requirement' rests crucially on the assumption that it is the

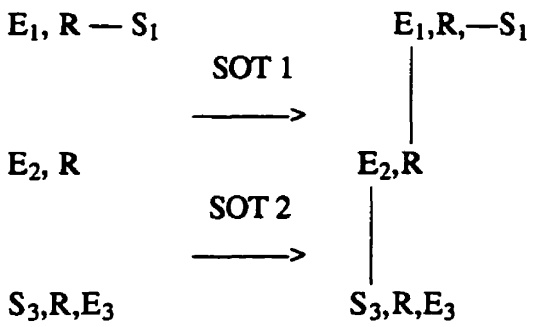
offers distinct advantages for his analysis, not only simplifying the statement of the 'SOT rule' but giving independent grounding to its key properties. In particular, it serves to derive the fact that the rule links the elements of lower BTSs to those of higher ones, and not the converse; that it applies only to 'neighbouring' tenses; and that it associates the 'E' of a matrix clause to the 'S' of an embedded finite clause, the 'R' of an embedded infinitival clause (whose temporal structure has no 'S'), and 'E' of a 'bare infinitive' (whose temporal structure has neither 'S' nor 'R').[85] In accounting for the rule's application to infinitivals, the 'government requirement' even reveals a solution to a problem, described in §1.3.3, which Hornstein himself does not identify. This is that 'backshift' may 'skip over' non-finite clauses that intervene between finite clauses, as illustrated by the following example (repeated from (58a)):

(155)

Rachel $\left\{\begin{matrix}\text{hoped}\\ \text{intended}\\ \text{used}\end{matrix}\right\}$ to tell us that she wouldn't be able to attend the meeting.

Given Hornstein's claim that the 'SOT rule' applies obligatorily to infinitivals (ibid., 146), it is possible to analyse these sentences as involving successive applications of this rule, as shown below:[86]

(156)



latter element that does so, since only this element can be claimed to govern the embedded tense morpheme. This creates a real problem for his analysis, if we consider that 'E' represents the time of the 'situation', which cannot be determined without information supplied by both the verb and its arguments.

[85] Hornstein also claims that '[t]he government restriction also explains why tenses within relative clauses do not manifest SOT' (ibid., 173). While Hornstein's claim that the matrix verb does not govern the Infl contained in a relative clause is certainly correct, the claim that he takes this to support — namely, that 'SOT effects' do not emerge in relative clause constructions — is empirically suspect, as we have already seen in §1.4.1.1.

[86] Although Hornstein does not discuss gerundial constructions like that in (i) (repeated from (77b)), the same analysis would presumably apply to them also:

(i) Bill regretted telling Mary that he felt depressed.

This analysis would accordingly permit Hornstein to assimilate these cases to the others that he discusses. Since all of these properties of the 'SOT rule' can thus be seen to follow from its function of 'linking' one governed temporal element — that is, tense morpheme, [+/- Perfective] morpheme, or verb — to another that governs it, the rule can be stated simply as 'Link temporal elements' (ibid., 177).

Hornstein's evidence that these elements actually interact under government takes the form of the interpretations available to complex sentences like the following ones:

(157) a. At 6 o'clock, [$_S$ John [$_{VP}$ had [$_{VP}$ said [$_{S'}$ that [$_S$ Bill was on his way]]]]]
b. At 6 o'clock, [$_S$ John will [$_{VP}$ have [$_{VP}$ said [$_{S'}$ that [$_S$ Bill is on his way]]]]]
(based on ibid., 170, (9))

These sentences, as Hornstein observes, each have readings on which the 'fronted' temporal adverbial specifies the matrix 'R' as six o'clock and both John's saying and Bill's departure are, in turn, located prior to this time. What this means, according to Hornstein, is that the time of Bill's departure, represented by the embedded Infl, is in each case dependent on the matrix 'E' represented by the 'past' participle, rather than on the matrix 'R' represented by the auxiliary. These results readily follow if the 'past' participle is understood to govern the embedded Infl (ibid., 168–71).

Hornstein claims that such interpretative dependencies between temporal elements are essentially parallel to those that we find between adverbs, his evidence for this claim being the patterns of adverbial modification exemplified in (158)–(159):

(158) a. [$_{S'}$ [$_S$ John necessarily believes [$_{S'}$ that [$_S$ 2 plus 2 equals 3 plus 1]]]].
b. [$_{S'}$ [$_S$ John believes [$_{S'}$ that [$_S$ 2 plus 2 necessarily equals 3 plus 1]]]].

(159) a. [$_{S'}$ [$_S$ John cleverly said [$_{S'}$ that [$_S$ Bill gave a speech]]]].
b. [$_{S'}$ [$_S$ John said [$_{S'}$ that [$_S$ Bill cleverly gave a speech]]]].
(based on ibid., 168, (5c–d))

According to Hornstein, the interpretations of the adverbs in each pair of sentences 'indicate... that adverbial modification is under government' (ibid., 169). It is this 'government requirement', in other words, that explains why the adverb *necessarily* modifies the verb *believes* but not the embedded clause in the sentence in (158a), thus distinguishing the interpretation of this sentence from that of its counterpart in (158b); and why the 'subject-oriented' adverb *cleverly* 'can only modify the subject of the clause that it is in', thus distinguishing the interpretation of the sentence in (159a) from that of its counterpart in (159b). This parallelism in the behaviour of temporal elements and adverbs is what, of course, leads Hornstein to conclude that the two belong to the same

category, and to take the relation between governing and governed temporal elements to be that of modification.

From the foregoing synopsis, Hornstein's claim about tenses — that they are adverbial elements, modifying what they govern — appears to offer a powerful analytical tool for the study of tense interactions, and thus warrants further investigation. In doing so, however, it is important to recognize that this claim represents a number of distinct claims — about the grammatical status of tenses, the structural conditions on their interactions, and the interpretation of these interactions. The distinctness of these claims emerges clearly when we consider the various ways in which evidence relevant to them might be interpreted. For example, it is possible for tenses and adverbs to behave identically in certain relevant respects, in particular interacting under government, while still belonging to distinct categories (hence the notion of a natural class). Similarly, it is possible for these two elements to belong to the same category, but for neither to interact under government; or for this structural relation to determine the interactions of both, but to have no general correspondence to the semantic relation of 'modification'. As it happens, closer examination of Hornstein's arguments gives little reason to accept any of these claims: Hornstein fails to establish that tenses are adverbs, that adverbs modify only what they govern, or that interactions between either tenses or adverbs may be defined in terms of government.

Despite the logical independence of these claims, Hornstein's 'government restriction' is arguably the keystone of his analysis of tense interactions, and as such is a natural place to begin. We noted above that Hornstein offers as evidence for this restriction the interpretations available to the sentences in (157), which were consistent with the claim that the thematic verb in the matrix clause governed the embedded Infl. What we did not note, however, is that this claim rests on controversial assumptions about both X′ theory and government itself. More specifically, Hornstein follows Aoun, Hornstein, Lightfoot & Weinberg 1987 and other studies in adopting a version of X′ theory that permits Infl to be the head of S′; and a discarded definition of government based on Belleti & Rizzi 1981 and Aoun & Sportiche 1983, as given in (160):

(160) X governs Y iff_{def} all maximal projections that dominate X dominate Y, and if X governs Y then X governs the head of Y.

In doing so, Hornstein rejects more standard versions of X′ theory, in which Infl and Comp each head their own projections; and more recent definitions of government based on Chomsky 1986a, which appeal to the notions of 'barrier' and 'minimality'. One example of such a 'Barriers'-style definition, together with a definition of 'barrier'

(and of the 'minimality condition' which forms part (ii) of this definition), is given in (161):

(161) a. GOVERNMENT:
α governs β iff α c-commands β and there is no category γ such that γ is a barrier between α and β. (based on Baker 1988: 39, (13))[87]

b. BARRIER:
Let δ be the smallest maximal projection containing α. Then γ is a BARRIER between α and β if and only if γ is a maximal projection that contains β and excludes α, and either:
i. γ is not selected, or
ii. the head of γ is distinct from the head of δ and selects some maximal projection equal to or containing β.

c. SELECTION:
α selects β if and if only if:
i. α assigns a θ-role to β, or
ii. α is of category C and β is its IP, or
iii. α is of category I and β is its VP. (based on ibid., 56–57, (49), (50))

Not surprisingly, the government relations that support Hornstein's claim do not hold according to these more recent formulations. If we return to the sentences in (157), repeated for convenience in (162), we can verify that government of the embedded Infl by the participle in these sentences is ruled out as a violation of the 'minimality' condition. Given the above definitions, γ may be identified as CP and recognized to form a 'barrier', since its head is distinct from V, the head of δ, and selects some maximal projection, namely IP, which is equal to β.[88]

(162) a. At 6 o'clock, [$_S$ John [$_{VP}$ had [$_{VP}$ said [$_{S'}$ that [$_S$ Bill was on his way]]]]]
b. At 6 o'clock, [$_S$ John will [$_{VP}$ have [$_{VP}$ said [$_{S'}$ that [$_S$ Bill is on his way]]]]]

---

[87] I have replaced Baker's Roman letters with Greek ones to avoid confusion in the discussion that follows.

[88] Note that this result is preserved under more recent formulations of government, such as the following one, from Barss 1995: 684:

(i) A head α governs β iff α c-commands β, no other Σ exists that c-commands β and does not c- command α, and no maximal projection separates α and β other than the complement of α.

Since Hornstein gives no independent justification for the particular formulations of government and X′ theory that he adopts,[89] his choices here appear to be ad hoc ones. It is nevertheless possible that he has uncovered a significant generalization about tenses which more recent formulations simply cannot capture. Before contemplating any radical changes in the theory, however, we must ask if Hornstein has really uncovered a significant generalization about tenses. Further inspection of his 'government requirement' for temporal elements suggests that he has not. This is because this requirement depends not only on ad hoc formulations of structural principles, but on two sets of assumptions which turn out to be highly problematic: one pertaining to the syntactic realization of 'Reichenbachian' temporal elements, and one to the domain of the pretheoretical term 'modification', respectively.

Recall that Hornstein takes the 'Reichenbachian' elements 'S', 'R', and 'E' to be realized, respectively, by the tense morpheme under Infl, the 'perfective' morpheme (or its null counterpart) adjoined to VP, and the verb. Now, such a syntactic realization of 'S', 'R', and 'E' is crucial for Hornstein's claim that temporal elements interact under government, since this 'mirror[ing of] government configurations by surface morphemes' (ibid., 179) is the basis of his account of SOT.[90] However, there are at least two serious problems with this particular realization of 'Reichenbachian' elements. The first is that the realization of 'R' as a verbal element adjoined to VP — either *have*, encoding [+ Perfect], or a null counterpart, encoding [- Perfect], as we noted earlier — has no independent support, and is at odds both with other, better supported claims about the realization of temporal features and with certain important theoretical considerations, which Hornstein himself raises. For example, there is good evidence, as we saw in the previous chapters, that it is the 'past' participle, rather than *have*, that encodes [+ Perfect]. This is arguably sufficient to cast real doubt on Hornstein's claim. Even more questionable, however, is his stipulation of a null counterpart for *have*; in accordance with the assumption that 'R' is part of the temporal structure of every tense. Although he himself acknowledges that the existence of such a morpheme could 'not be induced on the basis of primary linguistic evidence', which raises a real learnability problem for this system, he sees this stipulation only as one of his 'housecleaning assumptions'. This is because if 'R' is part of every tense structure, then '[i]ts presence will always be assumed'; as such, the question 'whether there is a null morpheme or

---

[89] Note that Aoun *et al.* (1987: 538–39, n. 1) do not attempt to defend their assumption that Infl is the head of S′ against Chomsky's (1986a) alternative, according to which Infl is the head of S, and Comp the head of S′. On the contrary, they suggest that their analysis could, with some reformulation, be made compatible with this alternative.

[90] Hornstein (ibid., 179) claims that the 'government requirement' also accounts for the relative ordering of tense, auxiliary, and verb in a sentence, given the assumption that 'S anchors R and R anchors E, and that anchoring is possible only under government'. While this claim is empirically adequate, it begs the question of how one 'Reichenbachian' element is plausibly understood to be dependent on another in this way.

not...[is] irrelevant' (ibid., 232, n. 20). It is difficult to accept Hornstein's reasoning here: if we wish to know how (or whether) 'Reichenbachian' elements are syntactically realized, then the question of how (or whether) 'R' is realized is, of course, a crucial one.

The second, even graver, problem with Hornstein's claim is that it takes tense, auxiliaries, and verbs to encode 'Reichenbachian' elements directly, rather than to encode relations between these elements — in particular, those between 'S' and 'R' and 'R' and 'E' which have figured so prominently in our discussion. As it happens, it is crucial for Hornstein's 'government restriction' that 'S', 'R', and 'E' be realized by distinct elements, since otherwise the linking of one 'Reichenbachian' element to another will not be mirrored in a government relation in the syntax. However, even brief consideration of the temporal properties of tenses reveals that they do not specify times themselves, but rather relations between times — namely, 'S' and 'R'.[91] If, for example, tenses supplied only 'S', rather than a relation between 'S' and 'R', it would be a mystery that 'lexicalized tenses' like *will* are able to specify 'S-R' in the absence of grammatical or situational context.

It seems, then, that a 'non-relational' encoding of 'S', 'R', and 'E' of the kind that Hornstein proposes is simply untenable. In fact, as we have already seen in chapter 1, Hornstein himself argues for a 'relational' encoding of these elements elsewhere in his study, where he posits the following, more adequate, mapping rules:

(163) a. i. present morpheme: associate S and R: S,R
ii. past morpheme: R removed to left of S: R-S
iii. future morpheme: R removed to the right of S: S-R

b. i. + *have*: E removed to left of R: E-R
ii. - *have*: E and R associated: E,R or R,E (ibid., 111–12, (42))

Hornstein's difficulties only arise, then, when he attempts to reconcile this 'relational' conception of 'Reichenbachian' elements with a claim that syntactic temporal elements interact under government. From what we have seen, however, it does not seem possible to do so. This leads us inevitably to the conclusion that Hornstein's 'government restriction' on the interaction of syntactic temporal elements cannot be sustained. (Whether this 'government restriction' holds for adverbs is more difficult to assess, since it remains an open question what positions they occupy, and Hornstein himself takes no stand on this issue.)

---

[91] Note that Partee (1984: 266) argues, on basis of different considerations, that 'reference time'... does not correspond uniformly to any single constituent of the sentence'. We shall be returning to this issue in §2.5.

If government is not what underwrites the interaction of these temporal elements, then it follows that one such element cannot be understood to modify another only if it governs it. Of course, this does not discount the possibilitity that the relation between higher and lower temporal elements is one of 'modification',[92] and that their behaviour may in this sense be adverbial. Unfortunately, the meaning of 'modification' seems reasonably clear only in the canonical case of adverbs 'modifying' verbs, where adverbs are understood to '"augment" verbal meaning in order to delineate it more precisely' (McConnell-Ginet 1982: 167). As such, it is far from clear how the term applies to the interaction of temporal elements; and since Hornstein offers no definition of this term, it is again difficult to assess his proposal. On the face of it, though, the analogy between temporal elements and adverbs is not a compelling one; the claim that a higher temporal element somehow 'augments' the meaning of a lower one — just as, say, *extremely* 'augments' the meaning of *slowly* in the phrase *extremely slowly* — seems neither very illuminating nor even obviously accurate. Indeed, the weakness of the analogy suggests that Hornstein has offered it largely to buttress his 'government requirement'. These suspicions are given substantial support by his remarks about the 'modifying' properties of 'subject-oriented' adverbs — glaringly, he describes them as 'modifying' the subjects of the sentences in which they appear, without supplying any sense of 'modify' compatible with this possibility (Hornstein 1990: 169)[93] — which appear to serve the same purpose.

Stripped of the claim that temporal elements, like adverbs, interact under government and modify what they govern, Hornstein's identification of temporal elements with adverbs has little force of its own. This is particularly true given that this identification, if it is to have any force, must apply to all three of the temporal elements claimed to be subject to his 'government requirement'; after all, their ability to modify what they govern is predicated on their status as adverbs. Of course, since two of these elements are themselves verbs, it is not clear how, given the assumptions of generative grammar, the claim that they are also adverbs can avoid incoherence. Observe, however, it is still possible that tense morphemes themselves are adverbs, and it is this possibility that Hornstein addresses in two additional arguments for his 'tenses as adverbs' claim.

---

[92] I wish to thank Stephen Berman, Peter Krause, and Robert van Rooy for helpful discussion of this point.

[93] Although his observation that these adverbs may be paraphrased in terms of morphologically-related adjectives suggests that he has conflated sentences like those in (159) with sentences like those in (ia–b):

(i) a. $[_{S'}$ $[_{S}$ It was clever of John to say $[_{S'}$ that $[_{S}$ Bill gave a speech]]]]
b. $[_{S'}$ $[_{S}$ John said $[_{S'}$ that $[_{S}$ it was clever of Bill to give a speech]]]]
(based on Hornstein 1990: 169, (6a–b))

Nevertheless, even the adjective *clever* cannot be said to modify the matrix and embedded subjects in (159a–b) in any obvious sense, but rather to be predicated of them.

The first of these arguments appeals to the distribution of tenses. Hornstein notes that a 'striking fact' about tenses is 'that they love to hang out around verbs', and that 'in most languages that have tense, the tense is indicated as a marking on the verb or as part of the auxiliary complex' (ibid., 177, citing Comrie 1985: 12). This evidence about the status of tenses is weak for several reasons. Since tenses 'hang around' verbs or auxiliaries in most but not all languages, Hornstein establishes no necessary connection between tenses and verbs here. But even if tense elements were always adjacent to verbal ones, it is difficult to see how this would support the claim that the former are adverbs. Adverbs themselves appear in many positions, and some are less closely associated with the verb itself, either syntactically or semantically, than with the sentence as a whole. Even adverbs of manner, which are arguably the most closely associated with the verb in these two respects (see e.g. McConnell-Ginet 1982: 167–70) may appear in various positions. Contrariwise, many different kinds of syntactic elements appear adjacent to verbs, including arguments of the verb, to which tenses have, in fact, frequently been compared (as we shall see in the next section).

The second of Hornstein's arguments, which appeals to diachronic considerations, is no more compelling. This argument, based on Kiparsky 1968, is that tenses (at least in English and other Indo-European (IE) languages) derive historically from adverbs. In particular, the augment *e-* and the suffix *i-* , which respectively indicate 'past' and 'primary non-past' tenses in many IE languages, both appear to derive from adverbial elements (Kiparsky 1968: 45, cited in Hornstein 1990: 178). Hornstein claims on this basis that the 'main historical change has been a change of tenses from free-standing morphemes into bound morphemes', '[a]ll else ha[ving] remained the same' (ibid., 179). Yet as Dahl (1992: 649) points out, such an argument, which 'identif[ies] elements synchronically with their diachronic sources', simply does not go through when there are multiple sources, as there are in the case of the English tense system. Since other components of this system — namely, *will* and *have* —derive from full verbs, there is no more substantial basis for identifying all tenses as full verbs than there is for identifying them all as adverbs. Note, too, that in asserting that '[a]ll else has remained the same', Hornstein has significantly understated the syntactic differences between tenses and their adverbial sources. One obvious difference is that the former are obligatory, while the latter, according to Kiparsky (1968: 46–48), are optional in various contexts. Another difference — which, curiously, Hornstein (1990: 178–79) himself cites — is that it is not possible to predicate 'past' and 'present' tenses 'independently of their host verbs to which they are attached as syntactic features', while it was possible to do so with the IE adverbial elements that are their sources. These data provide quite strong evidence that the latter elements, *pace* Hornstein, did undergo syntactic reanalysis on their way to becoming tenses.

In short, Hornstein has given us little reason to believe either that tenses (or their temporal companions, auxiliaries and verbs) are adverbs, or that they pattern with adverbs to any syntactically significant degree. What this means, then, is that each part of Hornstein's account of tense interactions proves unsatisfactory, and that the account as a whole must be rejected. It should nevertheless be noted that Hornstein's structural approach to these interactions has provided an important insight: namely, that an 'interpretive asymmetry' exists between higher and lower tenses, such that 'the lower clause can be temporally dependent on the higher but not vice versa' (ibid., 171). This principle must be basic to any adequate treatment of tense dependencies — as it is both in the analyses to be discussed in the following section, and in the one that we shall be canvassing in §3.

2.5. TENSES AS REFERENTIAL EXPRESSIONS: ENÇ 1987; ZAGONA 1990

In this section, we come finally to an analysis of tense interactions which has arguably been the most influential in the syntax literature, and which was implicit in our 'linking' proposal in chapter 2. This is one couched in terms of binding theory, which invokes the parallel between tenses and NPs drawn by Partee (1973b) and pursued frequently in the linguistics literature (e.g. Fassi Fehri 1993; Guéron & Hoekstra 1995; Li 1990; Smith 1981; Vlach 1993). Here we shall be examining two studies that present such an analysis: Enç 1987 and Zagona 1990.[94]

Given the salient differences as well as salient similarities between tenses and NPs, it is crucial in examining these studies to assess the conceptual and empirical soundness of the means by which they draw a parallel between these two elements. Now, it should be stated at the outset that the grounds for drawing such a parallel are themselves clear. As Partee (1973b) and others have demonstrated, tenses and NPs — in particular, pronouns — have quite striking similarities. Not only do tenses have the same kinds of 'deictic' and 'non-deictic' readings as pronouns do, but they also display the same kinds of scopal ambiguities found in 'virtually every sentence which contains a potentially anaphoric pronoun' (ibid., 608). These similarities are illustrated below:

(164) 'DEICTIC' READINGS:

a. tenses:

i. 'specific': I didn't turn off the stove.

ii. 'non-specific': He went to a private school.

---

[94] Note that Zagona 1990 is an unpublished study, the basic analysis of which also appears in published form in Zagona 1992. However, because the former is the more detailed (and also, as it happens, the more recent) of the two, we shall be restricting our attention to it in the following discussion.

b. pronouns:

i. 'specific': He shouldn't be in here.

ii. 'non-specific': They haven't installed my telephone yet.

(ibid., 602–3, (3), (6), (2), (5))

(165) 'NON-DEICTIC' READINGS:

a. tenses:

i. 'anaphoric':

Sheila had a party last night and Sam got drunk.

When Susan walked in, Peter left.

ii. 'bound variable':

When you eat Chinese food, you're always hungry afterwards.

b. pronouns:

i. 'anaphoric':

Sam took the car yesterday and Sheila took it today.

ii. 'bound variable':

Every student spoke to the student in front of him.

(ibid., 605–6, (10), (11), (9), (20))

(166) SCOPAL AMBIGUITIES:

a. tenses:

If John had married Susan, he would have had everything he wanted.

(ibid., 607, (24))

he wanted = 'he actually did want' (wide scope)

he wanted = 'he would want if he married Susan' (narrow scope)

b. pronouns:

Every woman believes that she is happy. (Partee 1984: 246, (4a))

she = 'some woman in the discourse' (wide scope)

she = 'every woman' (narrow scope)

The question that this parallel raises for an analysis of tense, then, is what devices best capture these properties that tenses and pronouns share. But since these elements share some properties and not others, this immediately raises the question of what to make of the differences between them.

The answers to these questions are by no means obvious. Further complicating matters is the dependence of an answer to the first on an answer to the second, since the latter determines how close a connection between these two elements is to be claimed. Note that the data themselves are hardly a sure guide, if Partee's own responses to them are any indication. In her original study, Partee (1973b: 603–4) noted a 'major nonparallelism' between tenses and pronouns, in the fact that 'every full clause contains a tense whether it contains a time adverbial or not, whereas a sentence containing a full noun phrase need not contain a pronoun in addition'. However, she did not take this to cast doubt on the claim that tenses 'correspond[ed] to explicit time variables in a logical representation' (Partee 1984: 275), imputing real significance to such syntactic differences between nominal and temporal anaphora only in her 1984 study (see e.g. ibid., 266). Yet in the latter study her recognition of these differences — in particular, the fact that '[t]emporal anaphora is more subtle' than its nominal counterpart 'because of the categorial variety of the expressions involved — tenses, adverbs, adverbial clauses, and main clauses' (ibid., 275) — led her to suggest that the similarity between the two elements was merely 'a derivative phenomenon' (ibid., 243).

If, however, it is still 'reasonable to characterize tenses as anaphoric' (ibid., 256), as Partee acknowledges, then it also seems reasonable to locate this common semantic property in a formal similarity between tenses and pronouns. The possibility that has repeatedly suggested itself in syntactic research, as we noted above, is that the locus of this similarity is in the application of binding-theoretic principles to both the nominal and temporal domains, such that the syntactic behaviour of tenses and NPs is governed by similar well-formedness conditions. Since the elements in question otherwise have rather different syntactic (and thus semantic) properties, it is these properties that are responsible for the distinct effects of such conditions when applied to these two different domains.

Admittedly, there are risks as well as advantages in applying a device — in this case, binding theory — to a domain for it was not designed, as we have observed elsewhere in this study. One obvious risk is that the device will be applied in a manner that does not pay sufficient heed to the differences between domains, and is determined too much by the analogy that it serves to support, and not enough by the data that it is intended to explain. (This risk is particularly great in the case of an analogy between tenses and NPs, since this analogy is based on attested similarities between tenses and pronouns only, which give us few clues as to how it might extend to the category of NPs more generally.) The other is that the original device itself is faulty, and thus creates the same sorts of problems in a second domain that it has created in the first.

As we shall see, both sorts of difficulties arise in Enç's and Zagona's applications of binding theory to the temporal domain. Those of the first sort pertain to the syntactic entities that they respectively take to be analogues of NPs in this domain; and to a

'referential' view of tense that they both adopt, which derives from Partee 1973b. It is, in fact, this view of tense that Partee explicitly rejects in her 1984 study, and which is at the heart of the doubts that she expresses there about the tense-pronoun analogy itself. While binding theory does suggest a way to preserve the analogy, as we shall see, the results of our examination of tenses in this study lend considerable support to Partee's (1984: 256) contention that tenses do not '["refer"] to times as pronouns "refer" to entities'. Such a view of tense appears to misrepresent its function, which is to locate 'situations' in time, in collaboration with other linguistic elements and context. Curiously, Enç's and Zagona's studies adopt not only Partee's earlier view of tenses as 'referential' but also a view of the representation of tenses that accords little or no importance to Reichenbach's 'R', despite Partee's (1984) arguments for the centrality of this element to an adequate explanation of temporal anaphora (ibid., 243). The failure of these studies to appeal to 'R' will, as we shall see, be a key factor in undermining the cogency of their analyses.

Difficulties of the second sort, which relate to the faultiness of the original device being applied, characterize Enç's and Zagona's use of the standard version of binding theory, which exploits the device of coindexation. As we observed in chapter 2, this device yields problematic results in the temporal domain for the very cases that are problematic in the nominal domain: namely, those in which the referents of antecedent and anaphor are not identical. What our examination of Enç's and Zagona's studies will suggest, then, is that the analogy that they draw between tenses and NPs, while illuminating, can be preserved only if it released from a commitment to a 'referential' view of tenses and a version of binding theory couched in terms of coindexation.

2.5.1. Enç 1987

Let us begin our investigation with Enç's (1987) study, which, as noted above, pursues the claim that 'tenses denote intervals and... provide the temporal arguments of the verb' (ibid., 640). This claim follows from assumption that 'semantically verbs select [intervals] as arguments', and that the simplest means of expressing this relation between them is to take intervals to be 'the value of some syntactic object' (ibid.) Enç assumes that this object is tense; and that 'like all other referential expressions', it bears an index, according to which it is assigned an interval (ibid., 640). This, then, is the basis of the analogy that Enç pursues between tenses and NPs, which takes the form of the claim that tenses are subject to conditions like those of binding theory, which serve to restrict the range of their interpretations, much as binding conditions do with NPs.

What gives further substance to this claim is Enç's introduction of a second element — namely, Comp — into the syntactic representation of time. Her motivation for doing so is straightforward. Given that 'past and present are *relational* notions', the

interval denoted by tense 'cannot be determined without reference to some other interval'; and given the hypothesis that the former interval is the value of one syntactic entity, it seems reasonable to hypothesize that the latter is the value of another one (ibid., 640–41). Comp, as the entity in question, may thus 'carry a temporal index', and as such '[function] as the specifier of tense, yielding an interval as its semantic value' (ibid., 641). In Enç's description of the tense system, then, 'a tense denotes an interval that stands in a certain relation to the interval denoted by the Comp, and this relation depends on whether the tense is past or present' (ibid., 642).[95]

It is in Enç's account of the relations between tense and Comp that the analogy between tenses and NPs becomes most fully articulated. This is because she couches these relations in terms of the 'anchoring' rules given below, which appeal to the same structural notions and devices as binding theory itself:

(167) THE ANCHORING PRINCIPLE:
Each tense must be anchored. (ibid., 642, (26))

(168) ANCHORING CONDITIONS:[96]
a. Tense is anchored if it is bound in its governing category, or if its local Comp is anchored. Otherwise, it is unanchored.
b. If Comp has a governing category, it is anchored if and only if it is bound within its governing category.
c. If Comp does not have a governing category, it is anchored if and only if it denotes the speech time. (ibid., 643, (27))

---

[95] Tense and Comp denote intervals as follows (where '*T* is a variable over intervals, and *t*, *t'* are variables over moments' (Enç 1987: 641)):

(i) a. Where α is a past tense, β is a Comp with a temporal index, and β is the local Comp of α, ‖ α ‖ is an interval T such that every moment *t* in *T* precedes every moment *t'* in ‖ β ‖.
b. Where α is a present tense, β is a Comp with a temporal index, and β is the local Comp of α, ‖ α ‖ is an interval *T* such that *T* = ‖ β ‖.
c. A Comp β is a local Comp of a tense α iff β governs α or β governs a tense γ and γ binds α. (Enç 1987: 642, (25a–b), 647, (25c'))

[96] These presuppose the definition of (head) government (following Aoun & Sportiche 1983 and Chomsky 1981) given in (i); and the definition of 'governing category' (following Chomsky 1986b) given in (ii):

(i) A governs B iff
a. A is X^0, and
b. A and B are contained in all the same maximal projections. (Enç 1987: 643, (28))

(ii) The minimal governing category of α is the minimal XP containing α, a governor for α, and a subject, i.e. a 'complete functional complex'. (Chomsky 1986b: 169)

These rules serve to determine the interpretation of tenses in both simple and complex sentences, by requiring that a tense be either 'bound or related to its Comp.' This provides the following two possibilities for simple sentences: namely, for 'past' and 'present' tenses denoting some time the speech time and some time wholly before speech time, respectively. (Note that licit tense indexings are determined not by the 'Anchoring Conditions', but by the semantics of each tense, which rule out a '0' index for 'past', and demand an index for 'present' that is the same as its local Comp (ibid., 644).) In each case, the tense has no governing category, and therefore must be anchored through its Comp, which, in turn, must also be anchored — as it is by denoting the speech time (ibid., 643):

(169) a. $[\text{Comp}_0\,[_S\ \text{NP}\,[_{T'}\ \text{PRES}_0\text{VP}]]]$
b. $[\text{Comp}_0\,[_S\ \text{NP}\,[_{T'}\ \text{PAST}_i\ \text{VP}]]]$ (ibid., 644, (29b))

The 'Anchoring Conditions' provide a greater range of interpretative possibilities for the tense in a complement clause, since here it has a governing category, the matrix S (in virtue of being governed by its Comp), and can thus be 'anchored' either by being bound, as shown in (170a), or by the 'anchoring' of its Comp, as shown in (170b):

(170) a. $[\text{Comp}_0\,[\text{NP}\,[\text{PAST}_i\,[\text{V}\,[\text{Comp}\,[\text{NP}\,[\text{PAST}_i]]]]]]]$
b. $[\text{Comp}_0\,[\text{NP}\,[\text{PAST}_i\,[\text{V}\,[\text{Comp}_i\,[\text{NP}\,[\text{PAST}_j]]]]]]]$ (ibid., 646, (34), (33))

These two 'anchoring' possibilities allow Enç to capture, for example, both the 'simultaneous' and 'anterior' readings which we have seen for 'past under past' sentences like this one:

(171) John heard that Mary was pregnant. (ibid., 635, (5))

These two readings correspond to the schemata in (170a) and (170b), respectively. In the former schema, the embedded tense is 'directly bound' by the matrix tense, making the time of Mary's being pregnant the same as the time of John's hearing about it. In the latter, the embedded Comp is bound by, and thus coreferential with, the matrix tense; while the embedded tense has a distinct index. This permits the latter tense to denote a time prior to that of the matrix tense, and thus for the time of Mary's being pregnant to be prior to the time of John's hearing about it (ibid., 646–47).[97]

[97] Note, however, that the time of the pregnancy is not, as Enç (1987: 646) claims, 'determined to be prior to the time when John heard about it', since the embedded 'past' tense should also be able to denote a past time subsequent to the latter time — a point to which we shall be returning below.

Enç's (1987) study thus provides an interesting account of certain interpretative patterns — namely, those associated with the 'past under past' construction — which have not received a satisfying explanation in the other studies that we have reviewed so far. However, Enç's analysis is not without its difficulties, as we shall see more clearly when we subject it to closer scrutiny.

2.5.2. ZAGONA 1990

Before we do so, however, let us examine the basic features of Zagona's (1990) analysis, which resemble those of Enç's in many respects. The most important similarity between them, as we have noted, is the analogy that they both draw between tenses and NPs, and the assumption that the temporal reference of sentences can be adequately explained in terms of temporal arguments that are directly encoded in the syntax. However, Zagona pursues the analogy between the syntax of tenses and NPs in a far more thoroughgoing fashion than Enç does, analysing tenses in terms of internal and external arguments of a predicate, which are selected by a head, and subject to binding conditions[98] in a manner entirely parallel to NPs.

Zagona's 'central claim' is that 'the two times referred to in simple sentences', 'S' and 'E', 'are syntactically expressed as Temporal Arguments' selected by F^0, the head of the clause, represented as Finite Phrase (FP) (ibid., Introduction). Zagona posits that the two syntactic arguments of F^0 are 'Speech-Time'[99] and the VP, which are respectively assigned the 'temporal semantic roles' 'S' and 'E' 'in temporal argument structure' (ibid.), as shown in (172):

(172) LEXICAL ENTRY (I) FOR F^0:

T_i T_j
<S> <E>
|
VP

(ibid., (1b))

---

[98] Zagona formulates Principles A, B, and C of binding theory as follows (assuming Chomsky's (1986b: 169) definition of 'minimal governing category' (MGC) as given in n. 93):

(i) a. An anaphor must be bound in its MGC.
b. A pronominal must be free in its MGC.
c. An R-expression is free (in the domain of the head of its chain).

[99] Zagona is not more explicit about the identity of this argument, and represents it in her tree diagrams only as 'T'.

Zagona posits that F^0 has a second, 'intransitive' form,[100] which assigns 'R' to the VP in 'perfect' tenses — the assignment of 'S' and 'E' being assumed here by *have*, as shown in (173):

(173) a. LEXICAL ENTRY (II) FOR F^0:

T_k
<R>
|
VP

b. LEXICAL ENTRY FOR HAVE:

T_i T_j
<S> <E>
|
VP (ibid., (3))

Zagona also posits that the assignment of 'temporal rôles' by F^0 and *have* is associated with the assignment of a value of the inflectional feature [Past] to VP, the internal argument of each, as shown in (174):

(174) a. F^0 assigns [+/- Past] to VP.
b. *have* assigns [+ Past] to VP. (based on ibid., (5))

The value of this feature, according to Zagona, determines the binding properties of a given VP. Accordingly, a [+ Past] VP is an R-expression — that is, [- Anaphor, - Pronoun] — which is 'name-like' inasmuch as it cannot 'be construed as potentially coreferential with Speech-time' (ibid., Introduction). A [- Past] VP, in contrast, is temporally underspecified, so that it functions as an anaphor, pronoun, or R-expression, 'depend[ing] on its binding-theoretic relation to other clausal elements' (ibid., §3.3).[101] More specifically, a VP like that in (175a) is understood to be a 'temporal anaphor', given that it locates a 'situation' at the same time as 'S'; a VP like that in (175b) is understood to be a 'temporal pronoun', given that it does not locate a 'situation' at 'S'; and a VP like that in (175c) is understood to be a 'temporal R-expression', given that it locates a 'situation' at a time not identical with 'S', as determined by a modal by which it is A′-bound (ibid., Introduction):

---

[100] Zagona claims that this form is a 'raising' predicate, whose 'temporal argument', 'Speech-time', cannot be licensed *in situ*, just like the arguments of other 'raising' predicates; and must therefore move in order to be licensed — in this case, to the Spec of CP (ibid., Introduction, §2.3).

[101] Zagona (ibid., §3.3) notes that there is no VP analogue of PRO — i.e. one specified [+ Anaphor, + Pronoun] — because the VP in tensed clauses always has a governor, in the form of Infl.

(175) [- Past] VPs:

a. [+ Anaphor, - Pronoun]
Ellen is singing.

b. [- Anaphor, + Pronoun]
Ellen sings.

c. [- Anaphor, - Pronoun]
Ellen will sing. (based on ibid., Introduction, (6)–(7))

Zagona's analysis thus presents a clever application of the devices of binding and theta theory to the analysis of temporal anaphora. However, given that this phenomenon is rather different from nominal anaphora, as we have seen, this application inevitably invites scepticism. This is the case, in particular, because Zagona's use of these devices leads to complex structural solutions to problems which (as we found in chapter 2) have a straightforward treatment in lexical or contextual terms. These problems include ones pertaining to the readings available to the 'present' tense, as just noted, and to the different temporal properties of 'eventive' and 'stative' predicates — both of which Zagona handles, rather implausibly, in terms of the rule of 'quantifier raising' (QR) (see ibid., §3.4). We shall not be assessing Zagona's solutions to these specific problems — a task which, in any case, remains unfeasible in the absence of a more explicit semantics for the various syntactic categories and processes that Zagona invokes. What we shall do, instead, is to reëxamine Zagona's central claims, and to determine some of their empirical consequences. This should be sufficient to demonstrate that her analysis, in its present form, is untenable.

As we observed earlier, Zagona claims that a predicate F^0 takes the VP and 'Speech-time' as its internal and external 'temporal arguments', respectively; and that this configuration is the syntactic basis of a sentence's temporal reference. Because this analysis involves both unfamiliar syntactic entities and unfamiliar functions for well-known ones, it is difficult to offer an adequate assessment of it given the limits of this study. What we can assess here, however, are the conceptual and empirical foundations of her analysis. Yet here alone we can find sufficient cause to doubt the adequacy of Zagona's analysis.

Perhaps most problematic is Zagona's characterization of the VP as an argument of F^0. This is because it is not obvious how the VP could serve such a function when it is a predicate itself; or how F^0 (notwithstanding its hypothesized status as a lexical category) could be a predicate when it has essentially no semantic content, and thus no property of which a given argument might be predicated. Nevertheless, Zagona acknowledges no conceptual difficulties in assigning such semantic duties to these

categories; and her arguments for this analysis are purely syntactic — focussing on evidence that F is a lexical category according to criteria laid out by Fukui and Speas (1986); and on the ability of an 'argument' status for VP to resolve a 'paradox inherent in the Barriers framework', which requires the VP to be L-marked, on the one hand, but to be 'a non-argument with respect to adjunction', on the other (ibid., §§2.1.1, 2.2). Moreover, since these arguments are largely theory-internal, they do not establish even a firm syntactic basis for Zagona's analysis, but demonstrate only its consistency with the assumptions that she has adopted. As such, these arguments provide little cover from the basic semantic problem that this analysis creates: namely, that it proposes syntactic structures that have no obvious interpretation.

Similar remarks apply to Zagona's claim that 'S' is encoded as an external argument. While there is little question that 'S' figures in any adequate temporal representation of tensed clauses, it remains unclear whether it corresponds directly to any syntactic expression. Yet Zagona offers no independent support for such a correspondence between 'S' and some syntactic expression, simply adopting Enç's (1987) assumption that one exists. Accordingly, her discussion of this point serves only to make a case for analysing 'Speech-time' as a syntactic argument of F^0 rather than as a specifier of Infl, as Enç (1987: 641) has assumed.[102] As it happens, the case that Zagona develops is an especially weak one, which conflates the notion of 'specifier', as figures in Enç's analysis, with that of 'determiner'; and then proceeds with the claim that 'S' is not plausibly realized as a determiner, since determiners, like other functional heads, have no reference independent of the lexical categories with which they are associated. Even assuming that 'S' does correspond to a syntactic expression, Zagona does not succeed in establishing that this must be an 'argument'. This is because 'specifiers', first of all, cannot be equated with 'determiners'; and there are clear cases — such as the genitive NP construction exemplified below, which Enç herself adduces — in which the former are disjoint in their reference from the arguments that they 'specify':

(176) John's father (Enç 1987: 641, n. 10)

However, even if we took 'determiner' to be the relevant notion, Zagona's assumption that members of this category have no 'independent reference' would be at odds with Abney's (1987: 176) claim, following Postal (1969) and others, that pronouns are also members of this category.

---

[102] In fact, Enç says only that Comp, which denotes 'S', functions as the 'semantic specifier' of Infl. Since she does not clarify this function, she appears only to be drawing an illustrative parallel between the function of Comp here and that of genitive NPs like the one given in (176).

In fact, there is little reason to believe that 'S' has any direct syntactic realization, either as a 'specifier' or as an 'argument'. Not only is there little empirical support or conceptual advantage in positing such a direct relation between syntactic elements and times, but there are substantial arguments against such a relation, as we noted above. A recognition of these has led to a growing consensus in the linguistic literature on tense (e.g. Cowper 1991; Giorgi & Pianesi 1991; Kamp & Reyle 1993; Rigter 1986) that it is the relation between 'S' and 'R', rather than 'S' itself, to which tensed verbs give syntactic expression. We might note that this 'relational' claim about 'S' is also consistent with McGilvray's (e.g. 1991) claim, as discussed in chapter 1, that the 'exemplificational reference' that a sentences makes to 'S' is different in kind from the 'picture reference' that it makes to 'E'; and that only the latter has a basis in the syntactic properties of a sentence. Since 'exemplificational reference' to 'S', as McGilvray (ibid., 162–63) argues, pertains to sentence tokens, and is thus a matter of language use — 'S' being 'simply the time at which *this* token is produced' —, it would make little sense for 'S' and 'E' to correspond to the same kind of syntactic expression. This point is even clearer in the case of other deictic elements, such as first and second person pronouns. While the interpretation of these elements is as dependent on 'S' as that of tenses is, few researchers would claim that these 'refer' to 'S' in the same way that they refer to individuals, or that their syntactic representation contains two expressions corresponding to these respective 'referents'.

It appears, then, there is little support for Zagona's claim that 'S' and 'E' have a direct correspondence to the syntactic elements 'Speech-time' and VP, respectively. However, this claim turns out to have more obvious empirical shortcomings when we examine its rôle in Zagona's temporal binding theory. Here we see that the direct relation that Zagona posits between 'temporal arguments' and times is clearly falsified by the data of temporal anaphora.

Recall that Zagona takes [+ Past] VPs to be R-expressions, and [- Past] VPs to be 'temporally indeterminate', and as such able to assume the character of pronouns, anaphors, or R-expressions. Recall, too, that the binding conditions that she takes to apply to VPs are identical to those that apply to NPs (the only difference between them being in the size of their respective governing categories, which follows from differences in the phrase structure positions of VPs and NPs.) Now, no serious empirical difficulties arise with VP 'anaphors' or 'pronouns', which are respectively A-bound and A-free in their governing categories (which Zagona defines as IP, which contains a governor for VP in the form of Tense^0 and an 'accessible subject' in the form of Agr (Zagona 1990: §3.3)). However, Zagona's predictions for VP 'R-expressions' are squarely at odds with the readings available for at least two classes of sentences: those with two 'past' tense verb forms; and those with 'future' tense forms (which Zagona takes to consist of a [- Past] VP A′-bound by the modal form *will*, as we noted

above) that coöccur with present-time-denoting adverbials. The incorrect predictions yielded for the former class seem to have arisen from Zagona's restricting her attention to simple sentences, which has led her to overlook the consequences of her binding claim for the relation between the VPs in complex sentences: namely, that it rules out the possibility of 'past under past' sentences with 'simultaneous' readings, where the two [+ Past] VPs must be coindexed.[103] Such sentences — in contrast to their counterparts with coindexed 'nominal' R-expressions — are, of course, perfectly acceptable:

(177) a. John saw$_i$ that Bill was$_i$ turning blue.
b. * John$_i$ saw that John$_i$ was turning blue.

Similarly, the incorrect predictions yielded for the latter class, exemplified in (178), seem to have arisen from Zagona's overlooking of the effects of adverbial modification on temporal interpretation. Thus, the [- Past] VP in this sentence, though A′-bound by a modal, still appears to locate a 'situation' at 'S', given the temporal contribution of the adverbial *right now*:

(178) Ellen will sing for us right now.

It might be possible to blunt the effect of such examples by claiming that they show only that the temporal domain instantiates a different 'parameter setting' of the requirement that R-expressions be free. (This would follow the strategy suggested by Lasnik (1989) for treating analogous violations among NPs that have been observed in Thai and Vietnamese.) Of course, such a response would beg the question of why a

---

[103] Another class of acceptable Principle C violations is exemplified by the sentence in (i):

(i) On 1 May, at about 1.15 p.m., John decided that in exactly one week he would say to his mother at lunch that they *were having* their last meal together.
(based on Abusch 1988: 2, (6))

If this sentence were uttered at 1.15 p.m. on 8 May, then the event described by the italicized 'past progressive' form would be coreferential with speech time, in apparent violation of Principle C. However, such violations appear to be direct analogues of the cases of 'accidental coreference' discussed by Heim (1982: 315ff.) and others, which were noted in chapter 2. The examples that appeared there are repeated in (ii):

(ii) a. He is John.
b. He must be John, because he put on John's coat. (ibid., 315, (1)–(2))

As Heim (1982: 315) notes, *he* and *John* must be understood as coreferential in these sentences in order for the statements expressed by them 'to have any chance of being true'. However, given that binding principles are constraints on coindexation and not coreference, they need not constitute Principle C violations if *he* and *John* are assigned different indices — in which case they can still be interpreted as coreferent if certain discourse conditions are met (see ibid., 318–20). Accordingly, the problem posed for Zagona's analysis by sentences like that in (i) might be solved simply by permitting the assignment of different indices to different [+ Past] arguments, so that they may be coreferential wihout being coindexed.

single language would have two 'settings' of the same principle in the first place. Moreover, while it might serve as a stopgap solution to the essentially technical problem raised by the example in (177a), it would obscure the sight-line to an important generalization uncovered by the example in (178), which is the key to a truly adequate solution. This is that the use of some tense in describing a given 'situation' does not rule out the possibility that the 'situation' in question actually begins before or continues after the time indicated by the tense itself. We saw many examples of such apparent 'mismatches' between tense values and times in chapter 2. Further examples are provided by the sentences in (179):

(179) a. The book was in the kitchen just a moment ago.
(based on Declerck 1991: 257, (4a))

b. Joe will certainly be at home at five o'clock.

c. Seth is sick today.

Thus, the use of the 'past' tense in the first sentence rules out neither the possibility that the book was in the kitchen long before a single moment ago nor the possibility that it is still there — the latter of which is, of course, what the use of such a sentence generally implies. Similarly, the use of the 'future' tense in the second sentence and that of the 'present' tense in the third do not rule out the respective possibilities that Joe has been at home all day, and that Seth was sick yesterday and will be sick tomorrow. Yet a 'temporal binding' theory that assumes that tense values correspond directly to times is hard-pressed to account for these data, since it has only one highly undesirable means at its disposal to do so: namely, to appeal to the claim that a given tense value may denote past, present or future times. Once more, we are led inevitably to the conclusion that a 'referential' view of tenses cannot be sustained — nor, *a fortiori*, a binding theory based on it.

2.5.3. COINDEXATION AND THE PROBLEM OF IDENTICAL INTERVALS

This conclusion is reinforced by a closer examination of Enç's (1987) study, whose more explicit treatment of this 'referential' view of tense, and application of it to a wider range of data — most notably, complement and relative clause constructions — make the problems associated with it even more salient. These problems are particularly well encapsulated in one problem that arises in Enç's 'anchoring' analysis of tenses in these constructions. This pertains to the privileged status that her analysis assigns to the relation of identity between intervals described by matrix and embedded tenses.

Enç's analysis of relative clause constructions offers a clear instance of this problem. We noted earlier in the chapter that this analysis has serious technical

shortcomings; these are related to the readings that it predicts for 'past under past' versions of this construction, as given in (180) (repeated from (92)):

(180) John saw the man who was crying. (Enç 1987: 645, (30))

The analysis yields the 'anchoring' configuration given in (181), which in turn yields the correct reading of this sentence, in which '[t]he time of seeing and the time of crying are not ordered relative to each other' (ibid., 645):

(181) $[Comp_0\ [NP\ [PAST_i\ [V\ [NP\ [Comp_0\ [...\ PAST_j]]]]]]]$ (ibid., (32))

This configuration makes such a 'temporally unordered' reading available by virtue of its ungoverned embedded Comp, which can be 'anchored' only by denoting the speech time. This means that the embedded tense, which is not bound, must be 'anchored' through its local Comp, and thus evaluated with respect to speech time, just as the matrix tense is.

A problem arises, however, from the fact that this analysis yields a second configuration, as given in (182), corresponding to a reading in which 'the past time of crying is identical to the past time of seeing':

(182) $[Comp_0\ [NP\ [PAST_i\ [V\ [NP\ [Comp\ [...\ PAST_i]]]]]]]$ (ibid., (31))

This reading, as Enç notes, is certainly available for the sentence. Yet the fact that it already follows from the configuration in (181) makes it an undesirable artefact of her analysis, which as such predicts ambiguity for sentences like that in (180) when there is only indeterminacy. Enç sketches an alternative analysis that eliminates this ambiguity, but remarks that '[t]he choice between these two analyses depends on matters other than the interpretation of tense', and does not pursue the matter any further (ibid., 645–46).

Now, Hornstein (1990: 158) has argued that the 'temporally unordered' reading predicted for the configuration in (181) is, in fact, unavailable. This is because relative clauses do not have the phrase structure given in (183a), as Enç assumes, but rather the structure in (183b) or (183c):[104]

[104] Hornstein (1990: 158–59) claims as an additional problem for Enç's analysis the fact that one of the possible readings that it yields is one in which the 'past' tense in a relative clause is 'bound' — a reading that is impossible, given that 'SOT effects', according to Hornstein, do not emerge in relative clause constructions. However, since Hornstein's claim about the absence of such effects is itself empirically suspect (as we observed in §1.4.1.1 and again in n. 85), no problem actually arises here for Enç's account.

(183) a. $[_{NP}$ NP $[_{S'}$ Comp $[_{S}$ ... TNS...]]]]

b. $[_{NP}$ Spec N' $[_{N'}$ N $[_{S'}$ Comp $[_{S}$ ... TNS...]]]]

c. $[_{NP}$ Spec N' $[_{N'}$ $[_{S'}$ Comp $[_{S}$ ... TNS...]]]]

Hornstein claims that 'there is considerable evidence' for the former structure, in which Comp is governed. Given this structure, Comp would not denote the speech time, and the 'temporally unordered' reading of relative clause sentences would be unavailable. The incorrectness of the structure that Enç assigns to relative clauses is indicated by the results of '*one* substitution', as shown in (184a). However, these results also indicate that the correct structure is that in (183c), and not that in (183b), which appears to be that of the noun complement clauses given in (184b):

(184) a. John saw the $[_{N'}$ man $[_{S'}$ who was crying]] and the $[_{N'}$ one $[_{S'}$ who was laughing]].

b. * John believed the $[_{N}$ claim $[_{S'}$ that pigs had wings]] but not the $[_{N'}$ one $[_{S'}$ that walls had ears]].[105]

Since, given the structure in (183c) and current definitions of government, the Comp position in (183c) turns out not to be governed, the technical problem that Hornstein alleges fails to materialize. Yet an equally refractory problem does beset Enç's analysis of relative clause constructions, which pertains to her suggestion that the choice between an analysis that permits coindexation between matrix and embedded tenses in these constructions and one that does not is peripheral to the question of how tenses are actually interpreted. Even brief inspection of examples like those in (185) should be sufficient to demonstrate that the choice between these analyses is a significant one:

(185) a. Joe met the guy who lived downstairs.

b. Joe saw the guy who stole Chester's laundry.

Observe that neither of these sentences has a plausible reading in which the 'situations' respectively described by matrix and embedded clauses are simultaneous; in fact, such a

---

105 It must be noted that this sentence, whose unacceptability is often taken for granted in discussions contrasting noun complement and relative clauses (and which in my own dialect is perfectly dreadful), appears to be acceptable to many native speakers of English. I have now found several speakers of (North American) English who find it perfectly acceptable. While this might lead us to doubt that noun complement clauses have the structure indicated in (184b), in which N is sister to CP, the judgements elicited from some of the speakers in question, as given in (i), suggest that the problem lies not with the [N CP] structure itself, but rather with the cross-dialectal stability of the N' status of *one*:

(i) John is the student of physics, and Bill is the one of chemistry.
(Carl Vogel, personal communication)

reading is simply impossible for the latter sentence, since it would require the embedded verb to have a 'progressive' form. These data cast considerable doubt on a 'binding' analysis like Enç's which takes a relation of simultaneity between two past 'situations' to be one of the basic possibilities that the grammar makes available.

This problem is brought into even sharper focus by Enç's analysis of 'past under past' complement clause constructions, which we discussed earlier. Recall that her 'anchoring conditions' specify the two configurations given below (repeated from (170)), which correspond to 'simultaneous' and 'non-simultaneous' readings, respectively:

(186) a. $[Comp_0\,[NP\,[PAST_i\,[V\,[Comp\,[NP\,[PAST_j]]]]]]]$

b. $[Comp_0\,[NP\,[PAST_i\,[V\,[Comp_i\,[NP\,[PAST_j]]]]]]]$ (ibid., 646, (34), (33))

At first blush, this analysis seems well suited to a description of 'past under past' sentences. As we already noted, it predicts both 'simultaneous' and 'anterior' readings of the following sentence, repeated from (171):

(187) John heard that Mary was pregnant. (ibid., 635, (5))

It even captures one reading, noted several times in this chapter, which Enç does not discuss — that in which the embedded clause 'situation' is posterior to the matrix clause 'situation', which we find in this sentence, repeated from (40a):

(188) Joe hoped that the bullet hit the target.

Yet consideration of a wider range of data again reveals this analysis to be an implausible one, and for the same reason that we already saw with relative clauses: namely, that a 'simultaneous' reading is not a basic possibility for these sentences. On the contrary, this reading — or more generally, one in which the time of the 'situation' described by one clause is included in that of the 'situation' described by another — is possible only if the latter 'situation' is a 'state'.[106] This can be seen from the following sentences, which also reveal that the 'anterior' reading, which Enç claims as the other basic reading of 'past under past' sentences, is likewise not always available:

(189) a. Joe was sad that Trish was gone. ['simultaneous' reading only]

b. Joe was sad that Trish left him. ['anterior' reading only]

---

[106] Zagona (1990: §1.4) makes a similar point, noting that the 'simultaneous' reading 'is characteristic of Stative predicates only.'

c. Joe said that Chester was sick. [both readings available][107]

d. Joe said that Chester caught the flu from Seth. ['anterior' reading only]

Notice, in this context, that the sentence in (188), though offered in support of Enç's claim, turns out to provide evidence against it. This is because it has only 'non-simultaneous' readings: the time of Joe's hoping may be either prior to or subsequent to that of the bullet's hitting the target, but cannot be identical to it.

Given these observations, there seems little warrant in privileging the 'simultaneous' reading, as Enç's analysis does, by couching tense interactions in terms of an opposition between 'coindexed' and 'non-coindexed' tenses. A more plausible account of this reading, then, is that it is simply one of those available to 'past under past' constructions — in other words, that the embedded 'past' tense in these constructions is neither syntactically nor semantically dependent on the matrix 'past' tense. This, in fact, is the conclusion reached by Heny (1982) in his investigation of 'past'-tensed 'propositional attitude' constructions, which we discussed in §1.4.1.2. Heny (ibid., 126) remarks that the correct reading of sentences like that in (190), which requires that 'the object of belief... be relativized to the same time as the belief sentence itself or to some interval intersecting with that time', depends not on 'the "binding" of one tense by another', but on 'the mechanics of reporting a belief':

(190) Sam believed that he was in Boston (ibid., (41))

This means that the requirement 'that a single interval be relevant to the evaluation of the object sentence and of the higher sentence' (ibid.) is plausibly traced to pragmatic, rather than syntactic or semantic, constraints.

Note that this opposition between 'coindexed' and 'non-coindexed' elements also characterizes Enç's treatment of tenses in simple sentences, which we described earlier, and is equally problematic in this context. For example, when the two elements being related are a past tense and its local Comp, 'the semantics of past tense', as Enç defines it, 'requires the interval denoted by the tense to completely precede the interval denoted by Comp' (ibid., 644). Thus, 'past'-tensed sentences like that in (191a) will have the 'anchoring' configuration shown in (191b) (repeated from (169b)), and 'will have a noncontradictory reading only if $i \neq 0$' (ibid., 644):

(191) a. John died. (ibid., (29a))

b. $[\text{Comp}_0 [_S \text{NP} [_{r'} \text{PAST}_i \text{VP}]]]$

[107] The contexts under which the (admittedly less salient) 'anterior' reading of such sentences is available were discussed in §1.3.1.1.2.

Now, it is certainly true that the sentence in (191) has no reading on which the 'interval denoted by the tense' does not 'completely precede the interval denoted by Comp'. However, it is a straightforward task to adduce 'past'-tensed sentences that do not result in contradiction when the two intervals in question overlap. One such sentence is given below:

(192) They were still reading his dissertation the last time anyone asked.

This sentence is by no means contradictory if the interval denoted by the 'past' tense extends to the time of speech. Again, a mechanism that yields only identity or non-identity of intervals is simply unable to capture this possibility.

Enç (ibid., 648) does recognize that a simple opposition between 'coindexed' and 'non-coindexed' readings cannot account for many readings of the 'present', in particular, 'present under past' constructions like that given in (193):

(193) John heard that Mary is pregnant. (ibid., 636, (11))

This is because these require the time of the embedded clause 'situation' 'both to extend to the speech time and to include the past time' of the matrix clause 'situation' (ibid., 648). Enç attempts to bring these sentences within the scope of her analysis as follows. She posits that 'speech time' is not an instant, but rather 'a contextually determined interval that includes the moment of utterance and that may vary in size depending on the discourse situation'; this allows it to 'contain past or future moments' (ibid., 650). In order to represent a relation of inclusion between intervals that this view of 'speech time' makes possible, Enç introduces a double-indexing system, as illustrated in (194), which permits an embedded 'present' tense like that in (193) to bear the index both of its local Comp and of the matrix 'past' tense:

(194) $[\text{Comp}_{<0,\, i>}\ [\text{PAST}_{<j,\, k>}\ [\text{Comp}_{<j,\, k>}\ [\text{PRES}_{<j,\, k>}]]]]$ (based on ibid., 652, (44))

Finally, in order to capture the fact that the embedded 'present' tense in (193) is evaluated with respect to the speech time, and not the interval denoted by the matrix 'past' tense, as Anchoring Condition B predicts, Enç makes two stipulations. One is that the 'present' tense in English always 'denotes the speech time' as a matter of parametric setting; the other is that in such languages a 'present' tense and its Comp are subject to a 'reindexing rule', as given in (195a), which serves to undo at LF the binding relation established by Anchoring Condition B at D-structure (ibid., 649). This yields the configuration given in (195b):

(195) a. At LF, change the referential index of the present tense and its Comp to 0.

b. $[\text{Comp}_{<0,\,i>}\ [\text{PAST}_{<j,\,k>}\ [\text{Comp}_{<0,\,k>}\ [\text{PRES}_{<0,\,k>}]]]]$ (ibid., (40), 652, (44))

These modifications to Enç's basic analysis permit a reading of the sentence in (193) according to which the 'past time of hearing [is] included in the present time of pregnancy' (ibid., 650).

Now, while this analysis correctly describes the temporal relation that holds between the two 'situations' described by these sentences, it appears, from our findings about such sentences in §1.3.1.1.1, to misrepresent their actual meaning. For example, the sentence in (193), on Enç's analysis, would seem to assert that John heard that Mary has been pregnant for some interval beginning in the past and extending to the time of speech. But this, of course, is not what the sentence asserts; what it asserts, rather, is that John heard that Mary was pregnant, and that she is still pregnant at the time of speech. The function of these sentences, in other words, is not to include the time of the matrix clause 'situation' in that of the embedded clause 'situation', but to allow the speaker to indicate that the latter 'situation', which was the object of some past 'attitude', is still taken to hold.

Thus, despite all of the machinery that Enç employs in her analysis of 'present under past' sentences, she is finally unable to provide a satisfying account of them. Moreover, because her analysis rests crucially on the stipulation that the 'present' tense always denotes the time of speech, it precludes any straightforward account of the 'simultaneous' reading of 'present under future' sentences, like that in (195), which seem quite plausibly treated in 'binding' terms (Hornstein 1990: 160):

(196) John will say that Mary is pregnant.

However, it is not only Enç's assumption about the denotation of the 'present' tense, but the entire structure of her 'anchoring' analysis, which is based on an opposition between 'past' and 'present' tenses, that leaves her with no means to account for the 'simultaneous' and 'non-simultaneous' readings of 'present under future' sentences.[108]

As it happens, Enç's treatment of the 'present' tense reveals an even deeper problem in her basic approach to tenses and temporal reference. This is that her conception of speech time as an arbitrarily long interval, which may extend into the past,[109] makes it unclear how the 'present' tense could ultimately be distinguished from the 'past', given that the 'present' could always denote an interval that extends into the past, and the 'past' could always overlap with speech time. This problem appears to

[108] See Ogihara 1989: 157–63 for discussion of the dire consequences for Enç's (1987) analysis of her (ibid., 634, n. 2) claim that 'the temporal properties of *will*... pattern with other modals, rather than with tenses'.

[109] Since this interval may also extend into the future, the same point applies to the 'future' tense.

have its source in the 'referential' view of tenses that Enç adopts, since on this view, tenses correspond directly to intervals. This means that a 'present'-tensed sentence can refer to an interval longer than the present moment, or 'time of speech', only if the time of speech itself is longer than this moment. Thus, in order to give an empirically adequate account of the 'present' tense consistent with this view, one would have to claim, rather implausibly, that the time of speech is indefinitely long. From a 'Reichenbachian' perspective, this claim is not merely implausible, but represents a serious misconstrual of the nature of temporal reference. In not recognizing the distinct status of 'S', 'R', and 'E', then, Enç is led to conflate their temporal responsibilities, and thus to claim that the 'present' tense simply denotes the speech time, rather than serving to locate an individual at an interval 'R' that includes the speech time; and that the speech time itself is indefinitely long, rather than the interval 'E' in which a sentence locates a 'situation'. (Not coincidentally, Zagona's analysis of the 'present' tense faces similar problems, since without recourse to 'R', she is also led to attribute the different readings of the 'present' tense to different relations between 'S' and 'E', rather than seeing all uses of this tense as expressing 'S,R', and attributing their differences to the location of 'E' — which, according to our claim in chapter 2, was determined by temporal adverbials, lexical properties of the VP, and context.)

Of course, the view of temporal reference that both Enç's and Zagona's studies assume, in which particular syntactic entities correspond directly to intervals, and the corresponding intervals are either identical or disjoint, can be readily described in terms of coindexed elements and other devices associated with binding theory. However, neither study has given us reason to believe that such a description is an accurate one. In fact, Enç's final recourse to a double-indexing mechanism in accounting for the 'present' tense might be seen as an acknowledgement that simple coindexation, which requires its syntactic targets to be interpreted 'atomically', is ill-suited to a description of temporal reference in general and the 'molecular' character of temporal intervals in particular. (As we saw in chapter 2, simple coindexation is similarly vulnerable in the face of NPs that behave 'molecularly', as they do in cases of split antecedence.) Unfortunately, Enç's introduction of a more complex indexing mechanism does little to address the general problem that coindexation poses for the analysis of tense interactions (a problem already spelled out, in somewhat different form, in chapter 2). This is that it misrepresents the nature of the interactions between temporal expressions, couching them in terms of an opposition between temporally 'like' and 'unlike' expressions, when virtually all of the evidence that we have examined points to an opposition between temporal 'dependence' and 'independence'. (Of course, a multiple indexing system raises a host of new problems, as we also noted in chapter 2.)

In sum, while Enç's and Zagona's studies demonstrate that the analogy between tenses and NPs is an illuminating one, they also appear to put stress on the analogy at its

weakest points: namely, those related to the 'reference' of tenses and NPs and to the 'atomicity' of their respective referents. A less problematic rendering of this analogy, then, would be one that related tense forms less directly to the intervals to which tensed sentences refer. Just such a rendering will underlie the analysis of tense interactions that we shall be canvassing in the next section, which extends the 'linking' analysis proposed in chapter 2.

3. A LINKING THEORY OF TENSE INTERACTIONS

Given the detailed examination of tense-tense interactions in both complement and relative clause constructions that we have undertaken in this chapter, we can point with some authority to certain key features of these interactions. One is that tensed clauses in both types of complex sentences are able to express the full range of temporal relations between 'situations': namely, those of precedence, simultaneity, inclusion, and overlap. This is illustrated by the sentences in (197):

(197) a. PRECEDENCE:

i. Joe hoped that the bullet hit the target. (= (40a))

ii. Joe saw the bullet that hit the target.

b. SIMULTANEITY:

i. Seth believes that he is sick.

ii. Joe heard the noise that his neighbour was making.

c. INCLUSION:

i. Joe realized that Trish wanted to leave him.

ii. John saw the man who was crying. (= (180))

d. OVERLAP:

i. Joe believes that Chester and Seth enjoy his company.

ii. We will be living in the city that will have the worst crime rate in the country.

Another feature of these interactions is that embedding itself does not restrict the ability of embedded tenses to receive both 'dependent' and 'independent' readings — that is, those that are related to a higher tense and to the time of speech, respectively —, although this ability is restricted in various tense configurations and by various predicates. More specifically, tenses embedded under 'present' tenses receive only one

reading, since the 'S,R' value of this tense means that tenses under it will always be related to 'S', as the sentences in (198) show:

(198) a. Joe says that many people refuse to buy his comic books.
b. Joe says that many people (once) refused to buy his comic books.
c. Joe says that many people will never buy his comic books.
(= (87ai, ii, iv))

Notice, however, that sentences that contain multiple embedding, like the one in (199), reveals that this reading is, in fact, a 'dependent' one:

(199) Seth will say that Joe believes that Chester will get drunk.

This sentence has two possible readings, on which Seth's believing is located at the time of speech and at the time of Seth's saying, respectively. Yet in both cases Chester's getting drunk must be located posterior to Seth's believing, demonstrating the dependence of the the lower 'future' tense on the 'present' tense of its matrix clause.

In addition, 'present' and 'future' tenses embedded under 'past' tenses do not receive a 'dependent' reading, and can only be interpreted relative to the time of speech.

(200) a. Seth said that many people will refuse to buy Joe's comic books.
a'. Seth said that many people refuse to buy Joe's comic books.
b. Seth spoke to a man who never buys Joe's comic books.
b'. Seth spoke to a man who will never buy Joe's comic books.
(= (87bi, iv), (86bi, iv))

A 'dependent' reading is, however, available for 'past under past' sentences, as the following sentences show:

(201) a. Joe said that the bullet hit the target. (= (38a), (88ai))
b. Seth finally caught the guy who stole his laundry. (= (90ai))

Finally, 'propositional attitude' verbs like *believe* commonly resist 'independent' readings of 'present' and 'future' tenses embedded under them, since the use of these tenses fails to preserve the 'structure' of the original belief that the sentences serve to report:

(202) * Sam believed that his wife is in Boston today. (= (119c))

What the presence of these various restrictions means, then, is that the full range of 'dependent' and 'independent' readings emerges only in the case of tenses embedded under 'future' tenses. This range of readings is illustrated in the following examples:

(203) 'DEPENDENT':

a. Chester will know that he is drunk. (= (47a), (88bi))

a′. Seth will spot the man who is wearing Joe's jacket. (= (90bi))

b. The police will find out that you were staying here today, and not in London. (= (47b), (88bii))

b′. Chester will meet the man who refused to buy Joe's comic books. (= (90bii))

c. Chester will say that he will be finished soon. (= (47c), (88biii))

c′. Chester will find someone at the party who will give him a lift home.

(204) 'INDEPENDENT':

a. One day John will regret that he is treating me like this. (= (48a), (89bi))

a′. Seth will finally meet the woman who lives down the street from you. (= (91bi))

b. The police will believe that he was killed yesterday. (= (48b), (89bii))

b′. Chester will meet a woman who knew Joe as a teenager. (= (91bii))

c. Little Wilt will regret that he will be tall. (= (101))

c′. Chester will talk to someone who will never buy Joe's comic books. (= (91biii))

A third feature of tense interactions is that these may occur over a large but nevertheless well-defined domain, posited to be a free-standing sentence. Accordingly, this interaction may 'cross over' either an NP boundary, as we have seen with relative clause constructions, or a non-finite IP, as in (205). However, it may not 'cross over' a sentence boundary, as the sentences in (206) demonstrate:

(205)

Rachel $\left\{\begin{matrix}\text{hoped}\\ \text{intended}\\ \text{used}\end{matrix}\right\}$ to tell us that she wouldn't be able to attend the meeting.

(206) a. Joe will say that he has had much to drink.

a′. Joe will be feeling terrible. He $\left\{\begin{matrix}\text{* has}\\ \text{will have}\end{matrix}\right\}$ had too much to drink.

b. Chester will say that Joe believes that he is too drunk to drive.

b′. Chester will say that Joe cannot drive. He $\left\{\begin{array}{l}\text{* is} \\ \text{will be}\end{array}\right\}$ too drunk to drive.

This interaction, however, can occur only between adjacent tenses in a configuration; that is, it cannot 'skip over' intervening tensed clauses. This is why the lower 'future'-tensed clause in the following sentence, repeated from (199), can be temporally dependent on the the higher one only if the intervening 'present'-tensed clause is itself dependent on the latter clause:

(207) Seth will say that Joe believes that Chester will get drunk.

Intriguingly, the last two generalizations, which appear to involve rather basic structural properties of tensed clauses, do not apply to 'past' tenses. We saw this in §1.4.2, where alongside the pattern exemplified in (206) was one exemplified in (208), in which 'past' tenses displayed intersentential dependencies:

(208) a. Joe said that he had had too much to drink.
b. Joe was feeling terrible. He had had too much to drink.

Similarly, 'past' tenses also appear to interact across intervening tensed clauses. The following sentence, for example, can only be taken to locate Joe's treating Trish badly before Seth's talking about Trish's feelings:

(209) Seth said that Trish still feels that Joe treated her badly.

The simplest explanation of these facts, as already suggested, is that the temporal dependence of one 'past' tense on another in these sentences is pragmatically rather than syntactically determined. Such an explanation would account for the behaviour of the 'past' tense while allowing us to preserve the generalization that the other tense forms interact only with adjacent tense forms, and only within the domain of the sentence. (We shall be considering such a possibility in the 'linking' analysis given below.)

The various exceptions to these and the other generalizations just described suggest a final feature of tense interactions: namely, the significant difference in the behaviour of 'present', 'past', and 'future' forms. Accounting for these distinctive properties thus appears to be crucial to an adequate analysis of these interactions.

It is the foregoing observations, then, that we want an analysis of tense-tense interactions to capture. Of course, we have not yet said what kind of 'interaction' this is; and determining its nature is arguably the central goal of such an analysis. As it happens, much of this chapter has been devoted to an examination of the range of answers offered in the literature regarding the identity of this interaction. Yet none of the answers that we have seen appears able to account for its attested features. According to the derivational analyses that we reviewed, this interaction took the form of some rule of 'backshift'. However, in none of its manifestations was the application (and non-application) of this rule sufficiently general, its domain sufficiently large, or its effects sufficiently sensitive to differences between tenses, to capture the features of tense-tense interactions that we have observed. Moreover, these derivational analyses posited multiple structures for various sentences — in particular, those with one 'past' tense embedded under another — where the interpretations offered little warrant for them, and pointed to an analysis couched in terms of temporal indeterminacy rather than ambiguity. The non-derivational analyses that we examined next did eliminate the empirically suspect rule of 'backshift' itself. Yet they fared little better in capturing the temporal interpretations available to complex sentences; and faced similar problems related to the generation of unmotivated ambiguities, in addition to other problems, both empirical and conceptual.

In fact, a more satisfactory description of tense-tense interactions is available in terms of the 'linking' analysis proposed in chapter 2 — more specifically, by extending the 'linking conditions' proposed there to govern interclausal relations between temporal elements. Accordingly, we might supplement the 'linking conditions' of chapter 2 with with the following conditions:

(210) CONDITIONS ON INTERCLAUSAL LINKING:
If α and β are the heads of two distinct IPs in a complex IP, the maximal projection of α embeds the maximal projection of β, and both are specified for the feature matrix [Anterior, Posterior], then:
a. [+ Anterior, - Posterior] α cannot host linking by β;
b. [- Anterior, + Posterior] α may host linking by β;
c. [- Anterior, - Posterior] α must host linking by β.

This application of 'linking' to two temporally specified elements yields a rather different kind of dependence between 'anaphor' and 'antecedent' than we saw in chapter 2, where the former element had no temporal specification of its own. Here, the interpretation of 'X is linked to Y' is that the 'SR' relation established by X is temporally interpreted relative to the 'R' established by the higher tense; this results in a temporally 'shifted' reading, such as the one associated with the sentence in (211a). In

contrast, an 'unlinked' embedded tense is simply evaluated with respect to speech time; this results in a temporally 'unshifted' reading, such as the one associated with the sentence in (211b):

(211) a. Chester will know that he is drunk. (= (47a), (88a), (203a))
b. One day John will regret that he is treating me like this. (= (48a), (89a), (204a))

This 'linking' proposal appears to account for the varied patterns of tense-tense interactions that we have just summarized. Perhaps most importantly, it associates each tense with a distinct 'linking condition', which permits a straightforward description of their respective properties. In particular, it captures the obligatory temporal dependence that 'present' tenses impose on the tenses embedded under them; the availability of both 'dependent' and 'independent' readings for tenses embedded under 'future' tenses; and the range of interpretations and peculiar syntactic effects that are associated with 'past' tenses. By appealing to the claim that 'past' tenses do not host 'linking', this proposal is able to offer a unified account not only of their apparent violation of constraints that apply to the other two tenses, but also of the 'simultaneous', 'anterior', and 'posterior' readings available to 'past under past' sentences. Since 'past' tenses always establish a relation to 'S' independently, what appear to be syntactically determined anaphoric dependencies are, by hypothesis, contextually determined. Accordingly, 'simultaneous' and 'anterior' readings of 'past under past' sentences are merely available to them, rather than privileged by the grammar.

The particular formulation of these 'interclausal linking' conditions also serves to capture other important features of tense-tense interactions. Since the structural description of these conditions ensures that they target only tensed Infl nodes, it also ensures that 'interclausal linking' and 'intraclausal linking' do not interact; and that the temporal duties of adverbials are thus discharged within a clause. This distinction between 'higher'- and 'lower'-level 'linking' is consistent with the difference in the interpretation of the following sentences, which depends entirely on differences in their 'intraclausal linking' properties:

(212) a. Joe will say that Trish will be in town tomorrow.
b. Joe will say tomorrow that Trish will be in town.

A further consequence of the fact that 'interclausal linking' targets only tensed matrix and embedded Infl nodes is that its domain is large enough to relate tenses in various structural configurations, including both complement and relative clause

constructions.[110] At the same time, because 'linking' always relates a tense in an embedded clause to one in a matrix clause, it cannot 'skip over' tensed clauses.

A final noteworthy feature of these 'interclausal linking' conditions is that they do not apply to Infl elements that are not fully specified for the temporal matrix [Anterior, Posterior]. Among these elements are the modal auxiliaries *can*, *could*, *might*, *should*, and *would*, as discussed in chapter 2. We might speculate that these elements, given their 'temporally underspecified' status, may be 'linked' to 'past' tenses. Since one member of this group, namely *can*, does not appear to have a 'dependent' reading under a 'past' tense, we might speculate further that this 'linking' is subject to a compatibility requirement related to the [+ Anterior] specification of the 'past' form, which disqualifies [- Anterior] forms. Note, however, that 'linking' of the other modal forms to 'past' tenses, and of all of the modals to 'future' tenses, is optional, as is consistent with the possibility of 'dependent' and 'independent' readings of these forms (the latter involving, in the case of 'underspecified' modal forms, a contextual determination of the temporal values for which they are 'unspecified'). The possibility of 'linked' and 'unlinked' configurations can be seen in the behaviour of *would* in the following sentences:

(213) a. He said that he would go.
a'. He said that he would like to go, but can't.
b. He says that he would like to go, but can't.
c. He will say that he would go, but can't.
d. I'm glad I'm not treating conditionals, or I would have to treat examples like this. (based on Brendan Gillon, personal communication)

The first and third sentences are rather clear illustrations of 'linked' readings, and the last sentence of an 'unlinked' reading. The second and fourth sentences, however, have rather 'shifty' readings, given that the possibilities of both 'linked' and 'unlinked' readings are salient ones. These observations provide some support for what is, admittedly, only a preliminary analysis of embedded modals, whose development must await further study.

4. TEMPORAL CLAUSES

In the previous section, we canvassed a 'linking' analysis of tenses in complex sentences, which provided a number of interesting results. With this analysis at our disposal, we might now attempt a (tentative) solution to a final puzzle of tense-tense

[110] This domain is also appropriate to the description of tense-tense interactions in temporal clause constructions, as we shall see in §4.

interactions: that pertaining to the unacceptability of the 'future' tense in *when-*, *before*, and *after-* clauses. This restriction, as we shall see, can be plausibly traced to the lexical properties of the temporal complementizers that figure in these constructions, in concert with the 'linking' properties of the various tenses with which they occur.

4.1. PATTERNS

A frequent observation regarding the behaviour of *when*-clauses in English is that the tenses that they contain must be the same as those of their matrix clauses. As frequently observed, however, is the one conspicuous exception to this rule: namely, that *when*-clauses cannot contain 'future' tenses when the matrix tense is itself 'future'. This is demonstrated by the pattern in (214). The same pattern characterizes the behaviour of *before* and *after*, as demonstrated by the sentences in (215) and (216), respectively:

(214) a. When Joe stops by, we have some real fun.
b. When Joe stopped by, we had some real fun.
c. * When Joe will stop by, we'll have some real fun.
d. When Joe stops by, we'll have some real fun.

(215) a. Before Joe gets here, we have some real fun.
b. Before Joe got here, we had some real fun.
c. * Before Joe will get here, we'll have some real fun.
d. Before Joe gets here, we'll have some real fun.

(216) a. After Joe leaves, we have some real fun.
b. After Joe left, we had some real fun.
c. * After Joe will leave, we'll have some real fun.
d. After Joe leaves, we'll have some real fun.

Interestingly, temporal clauses display a clear contrast with *if*-clauses in both respects. Alongside standard conditional structures, which are characterized by specific combinations of tenses in antecedent and consequent, we find a range of tense combinations, including 'future under present' and 'future under future':

(217) a. If A is greater than B and B is greater than C, A is greater than C.
b. If it rains tomorrow, the game will be cancelled. (Declerck 1991: 192, (55))
c. If you parked/were to park you car there, it would be towed away.
d. If you had parked your car here, it would have been towed away.
(ibid., 194, (59b))

(218) a. If you'll follow me, your table is right this way.

a'. If he won't arrive before nine, there's no point in ordering dinner for him.
(Quirk *et al.* 1972: 781, cited in ibid., 198: (63c))

b. If you'll just listen, you'll hear everything quite clearly.

c. If they (had) fired me, there's still my trust fund.

d. If she (had) left you, there'll always be Paris in the springtime.

The contrast between temporal clauses and *if*-clauses, then, seems rather a stark one. However, exceptions to the 'future-tense' restriction on the former have been reported. These include the following sentences, drawn from the literature:

(219) a. I will write to you of our plans from Pisa, when I shall understand them better myself. (Shelley, cited in Jespersen 1925: §2.5 (3))

b. I will work in the garden till the evening, and then, when it will be cooler, I will walk to Blooms-End. (Hardy, cited in ibid.)

c. You will live to see the day when there is not/will not be an English soldier on the soil of France. (Hirtle 1981: 221, cited in Declerck 1991: 55, (83b))

A plausible explanation of this pattern is that the occurrences of *when* in these sentences and in those given above are actually occurrences of two different lexical items — the former a *wh*-phrase that forms part of a relative clause, as in the sentence given in (220), and the latter a temporal complementizer, as argued recently by Dubinsky & Williams (1995).

(220) Dorothy arrived on Wednesday, when I was in Toledo.
(based on McCawley 1988: 427, (31b'))

That the embedded clauses in the two sets of sentences do represent different structures is suggested by the observation that only the embedded clauses in (219) have the features associated with relative clauses (including NPs to which these clauses are related and comma intonation preceding them); or any obvious interpretation as relative clauses. Moreover, the status of *when*, *after*, and *before* as temporal complementizers in the embedded clauses in (214) is given strong support by Dubinsky and Williams (1995: 126–27). They argue, for example, that the unacceptability of sentences like that in (221b) cannot be assimilated to that of *wh-that*, not only because the former construction lingered on in standard English two hundred years longer than the latter, but also because the latter, but not the former, is acceptable in some dialects, as the sentences in (222) demonstrate:

(221) a. John left after I told him to.
b. * John left after that I told him to. (ibid., 126, (1a, c))

(222) a. I didn't get why that she was supposed to wait for them.
[acceptable in some dialects]
b. * They came to church after that they read their Bibles.
[unacceptable in the same dialects] (ibid., 127, (9))

Given these considerations, the sentences in (219) can be plausibly taken to represent a construction distinct from the one that poses the puzzle just described, which we can now identify as a restriction on the occurrence of a 'future' tense in a clause containing a temporal complementizer. Despite our success, however, in eliminating one set of purported counterexamples from consideration, another set emerges for which no similar treatment is available:

(223) a. He'll beg for food before he'll ask his parents for money.
b. Pigs will fly before he'll become a mathematician.
(Quirk *et al.* 1985: 1081, (1)–(2))

These appear, then, to constitute true exceptions to our generalization, and will warrant more attention as our discussion of temporal clauses proceeds.

4.2. Toward an analysis of temporal clauses

From what we have just seen, the restriction on the occurrence of the 'future' tense in temporal clauses appears to be a rather robust property of these clauses. The nature of the restriction itself, however, is considerably more elusive. One common attempt to characterize it has appealed to the superfluity of a 'future' tense form in the temporal clause given the presence of one in the main clause (see e.g. McGilvray 1991: 336–37, n. 16). Other attempts, such as that of Declerck (1991: 97–98), have appealed to the observation that temporal complementizers can be paraphrased 'by means of a prepositional phrase with the word *time*'. For example, *when* indicates 'at the time when', and *after* 'after the time that', both paraphrases being appropriately followed by 'present'-tensed but not 'future'-tensed sentences. Yet neither of these attempts provides a real explanation, since neither can account for the fact, as McGilvray himself notes,

that there are languages in which this restriction is not observed, as these examples (repeated from chapter 1) demonstrate:[111]

(224) a. FRENCH:
Quand (Lorsque) vous voudrez me parler, je vous écouterai.
(Ollivier 1978: 157)

b. GREEK:

ótan	θa	ftásume	s	to spíti	tis,	θa	vrúme
when	FUT	arrive-1PL	at	the+house	her-GEN	FUT	found-1PL
ti lúla							
the+Lula-ACC							

lit. 'When we will arrive at her house, we will find Lula.'
(Joseph & Philippaki-Warburton 1987: 30, (89b))

Arguably the key to an explanation of this phenomenon is the recognition that the tense patterns that we find in temporal clause constructions are the same ones that we find in 'simultaneous' readings of sentences with matrix 'past', 'present', and 'future' tenses:

(225) a. Joe says that he wants to have fun.
a′. When Joe leaves, we have some real fun.
a″. After Joe leaves, we have some real fun.
a‴. Before Joe arrives, we have some real fun.

b. Joe said that he wanted to have fun.
b′. When Joe left, we had some real fun.
b″. After Joe left, we had some real fun.
b‴. Before Joe arrived, we had some real fun.

c. Joe will say that he wants to have fun.
c′. When Joe leaves, we will have some real fun.
c″. After Joe leaves, we will have some real fun.
c‴. Before Joe arrives, we will have some real fun.

[111] McGilvray (1991) himself makes this observation in the note referred to in the text.

That is, like complement clauses generally,[112] temporal clauses cannot use a 'future' tense to indicate a 'situation' simultaneous with one indicated by a 'future'-tensed matrix clause:

(226) a. Joe will say that he will want to have fun.
≠ 'Joe will say that he wants to have fun.'
b. * When Joe will leave, we will have some real fun.
≠ 'When Joe leaves, we will have some real fun.'

The question that now arises is why the complement clause sentence in (226a) is available when its temporal clause counterpart is not. The simplest answer is that this is because of the meanings of the temporal complementizers themselves, which are not compatible with a reading in which the clauses containing them locate a 'situation' in the future of the 'situation' described by their matrix clauses. What their meanings appear to require, then, is a relation of 'sloppy simultaneity' (Declerck 1991: 41) between the 'situations' described by matrix and embedded clauses. 'Situations' that are simultaneous in this sense need not actually overlap, but are understood by the speaker as 'belonging to the same "occasion" and hence as falling with the same time interval' (ibid., 42). Such a relation between 'situations' is demonstrated in the following sentences:

(227) a. Everybody was away when John destroyed the documents.
b. We were crossing the street when John noticed us.
c. They built the wall when bricks were still very cheap.
(Heinämäki 1978: 24, (16), (17), (19))
d. When Jocelyn received the letter, she wrote a reply.
e. When Jocelyn went on holiday, she notified the police.
(Declerck 1991: 43, (58b–c))

Since 'sloppy simultaneity' need involve neither identical nor even overlapping 'Es', we might wonder if it is best characterized in terms of 'situations' at all. In fact, a simple alternative is available: namely, that the relation involves the same specification of 'R' by both clauses. This is suggested by sentences like that in (228):

---

[112] The only exceptions that we have seen are the instances of 'accidental' simultaneity or inclusion that characterize 'independent' readings of sentences like the following one (repeated from n. 34, (101), and (204c)):

(i) Little Wilt will regret that he will be tall.

(228) When he had finally finished writing, he felt happy.

Since this sentence locates his feeling happy at an interval simultaneous (or overlapping) with his having finished ('R'), rather than his finishing ('E'), it offers convincing evidence that it is the embedded 'R', rather than the embedded 'E', on which temporal complementizers impose a requirement.

Let us say, then, that the requirement is one of identical specifications of 'R'. What this means, given the 'interclausal linking' conditions proposed above, is that the requirement will impose different 'linking' configurations, and rule out different embedded tenses, depending upon the identity of the matrix tense. Accordingly, a matrix 'present' tense will coöccur with, and host 'linking' by, an embedded 'present' tense; while a matrix 'past' tense will coöccur with, but not host 'linking' by, an embedded 'past' tense. Most crucially for our analysis, a matrix 'future' will coöccur with, and host 'linking' by, an embedded 'present' tense but not an embedded 'future'. This is because neither 'linked' nor 'unlinked' occurrences of the latter will fulfil the requirement that temporal complementizers impose: the former will place the embedded 'R' after the matrix 'R', and the latter will leave the embedded 'R' to be determined only by context, and thus not ensure the required relation of identity of 'Rs'.

It should be noted, however, that this 'compatibility requirement' on matrix and embedded 'Rs' is not sufficient to capture the differences in the meanings of the three temporal complementizers that we have been considering. This, however, seems the correct result: the differences that these complementizers do display are arguably lexical ones that do not trigger any differences in syntactic structure. Rather, they simply determine different interpretations for the respective sentences that contain them — more specifically, that the two 'situations' related by *when* must be 'sloppily simultaneous'; that the 'situation' described by an *after*-clause must be located before that described by the matrix clause; and that the 'situation' described by a *before*-clause must be located after that described by the matrix clause.

There does, however, seem to be an exception to this claim, in the form of the acceptable *before*-clauses in the sentences given in (229) (repeated from (223)):

(229) a. He'll beg for food before he'll ask his parents for money.
b. Pigs will fly before he'll become a mathematician.

In such (admittedly rare) cases, the requirement that *before* imposes — namely, that the clause in which it appears locate a 'situation' after that described by the matrix clause —

appears to license a 'future' tense in its clause that is 'linked' to a matrix 'future'.[113] Since this possibility follows directly from the very lexical properties of *before* that distinguish it from *when* and *after*, it is not surprising that the possibility does not exist for either of the latter two complementizers. Of course, the analysis of temporal complementizers just outlined does not predict the acceptability of sentences like those in (229), in which 'future' tenses occur in *before*-clauses. Yet these sentences are sufficiently distinct in their interpretations from those that we have been considering — in particular, they do not suggest that the 'situations' described by matrix and embedded clauses '[belong] to the same "occasion"' (Declerck (1991: 42) — that we might take them to represent a rather exceptional use of *before*, which requires a different analysis. This possibility, however, must be left for future research.

A final point that we might make about the interaction of tenses in temporal clause constructions pertains to the possibility of both sentence-initial and sentence-final occurrences of the temporal clause in these constructions. What is significant about these two structures is that the temporal clause is temporally subordinate to the matrix clause in both. If we assume that sentence-initial temporal clauses are adjoined to IP, then the 'linking conditions' given in (210), which 'link' an embedded Infl to a matrix Infl regardless of the former's structural position, seem to provide the correct description of these facts. Whether this assumption about the position of these clauses is itself correct must, however, be determined by further study.[114]

5. SUMMARY

In this chapter, we examined the properties of tense interactions in complex sentences, focussing on complement clause and relative clause constructions. What we saw gave us good reason to believe that a derivational approach to them was not adequate, and that non-derivational approaches held more promise. However, our observation of the peculiar properties of tense-tense interactions, and of the significant differences in the

---

[113] In fact, the same account seems to be available for the occurrence of 'future'-tensed *if*-clauses. In other words, these are available only if they can be 'understood as being future with respect to the consequent' (Iatridou 1991: 95):

(i) a. If it (* will) rain, we will get wet.
b. If you (* will) invite me, I will visit you.

(ii) a. If it will make you happy, I will visit you.
b. If you will be alone on Christmas day, let us know now.
(Close 1980, cited in ibid., 95, (97)–(98))

This is consistent with McGilvray's (1991: 113ff.) claim that *if*-clauses are a kind of temporal clause.

[114] Note that the evidence regarding the base-generated or moved status of *if*-clauses, as reported in Iatridou 1991, appears to be inconclusive. Iatridou (ibid., 33) claims that the evidence shows 'that an *if*-clause can be base-generated in sentence-final and sentence-initial position, as well as that it can move from the former to the latter.' Such a range of possibilities suggests that theory simply underdetermines analysis in this case.

behaviour of 'present', 'past', and 'future' tenses, led us away from solutions couched in terms of 'standard' relations such as government and binding, and toward an extension of the 'linking' analysis proposed in chapter 2. This extension permitted a straightforward account of the various features of tense-tense interactions that we had observed. In addition, it suggested a way to capture certain facts about temporal clauses — in particular, the constraint against their containing 'future' tense forms.

CHAPTER 4

EXTENDING THE ANALYSIS FURTHER: TENSE LINKING AND NON-FINITE CONSTRUCTIONS

> *The habit of mapmakers* to place *lands and not seas in the forefront has obscured the oneness of the Pacific.* The writer probably wrote *to place* because he rightly disliked the repeated *of* in *of mapmakers of placing*. But that is no excuse. Fowler 1965: 283

In the last two chapters, we explored a 'linking' analysis of tenses and saw how it could be applied to tenses in both simple and complex finite clauses. As a final test of this analysis, we turn to non-finite constructions, to see if their temporal behaviour, which has been relatively neglected in theoretical treatments, can also be brought within its scope.

The expression 'non-finite construction' subsumes a rather broad range of syntactic phenomena, which serve a similarly broad range of syntactic functions.[1] Given the limits of this study, we shall be restricting our attention to a small and fairly coherent subset of these phenomena, that of non-finite complement clauses. Of these, we shall be examining three basic types — '*to*-infinitives' (TIs), gerunds, and 'bare infinitives' (BIs)[2] —, with the goal of identifying both the features of temporal structure that distinguish finite from non-finite clauses generally, and those that distinguish these non-finite types from each other. As we shall see, the patterns of temporal interpretation associated with non-finite complements can be readily accommodated within the framework already developed. All that will be required is a supplementation of the previous claims about the realization of temporal features, in order to permit 'incomplete' feature matrices; and a modification of the 'linking' analysis, in order to incorporate the resulting configurations. The claim that we shall be canvassing here is that these 'incomplete' feature matrices constitute a range of possible temporal specifications of Infl characteristic of TIs alone. This offers a basis for distinguishing these forms, on the one hand, from their finite counterparts, which bear complete feature matrices; and on the other, from gerunds and BIs, which (as we shall be claiming) are not structurally IPs. In this way, we can draw a perspicuous connection between clause types, while still capturing significant differences between them.

---

[1] See e.g. Quirk *et al.* 1985: §§14.6–8, 14.15–19, 15.10-15, 15.59, 16.36–43, 16.49–54, 16.62–63.

[2] A fourth complement type, involving the 'passive' participle (see e.g. Quirk et al. 1985: §16.54), will be left as a topic for future research.

1. THE TIME REFERENCE OF NON-FINITE COMPLEMENTS

A frequent observation in the literature on temporal marking is that non-finite clauses, though temporally dependent upon their matrix clauses, are nevertheless able to locate a 'situation' at a time distinct from that established by the latter. The question that this naturally raises is what temporal features of these clauses allow them to do so. An important first step in addressing this question is to recognize that the degree of 'temporal independence' of non-finite clauses — judging from the predictability of their temporal interpretations with a given matrix verb — varies from one type to another; and that these differences are directly reflected in the different temporal interpretations associated with each type. Thus, gerunds can describe 'situations' that are anterior to, posterior to, or simultaneous with the 'situation' described by the matrix clause; TIs can generally describe posterior or simultaneous 'situations', although the 'perfect infinitive' form permits them to describe anterior 'situations' also; and BIs can generally describe simultaneous 'situations' only. Just why 'temporal independence' should correlate in this way with available temporal interpretations is one of the central questions that we shall be addressing in this chapter. In order to do so, we must first examine the relevant data in greater detail, describing and comparing the three clause types under consideration. This will be the task of the following sections.

1.1. '*TO*-INFINITIVES'

1.1.1. BASIC PATTERNS

Let us begin with TIs, which represent the largest class of non-finite complements. For this reason, discussion of them will necessitate the most taxonomic groundwork. In order to simplify this task somewhat, and to ensure broad coverage of data (the lack of which has undermined many previous analyses, as we shall see), we shall be making use both here and in the following sections of the taxonomy presented in Quirk *et al.* 1985: ch. 16, which classifies verbs by type of non-finite complement and number of arguments they take, and by certain broad semantic properties, examples of which we shall see presently.[3] Despite these differences between TI types, our taxonomic efforts will demonstrate quite strikingly that they exhibit a very small range of temporal properties.

The largest class of verbs that select TIs are those that create monotransitive 'subject control' structures — that is, those in which the TI is the sole complement of the verb, and its 'understood' subject is the same as the subject of the matrix clause.

[3] Note also that the complement constructions to be discussed in this chapter will be illustrated with 'past'-tensed matrix verbs, for reasons which will be given below.

Within this broad class, Quirk *et al.* identify the following (semantic) subclasses:[4] (i) 'volitional' verbs, such as *love* and *hate*; (ii) 'aspectual' verbs, such as *begin* and *cease*; (iii) 'retrospective' verbs, such as *forget* and *remember*; (iv) verbs of 'intention', such as *intend* and *want*; (v) verbs of 'influencing', such as *deign* and *help*; (vi) 'suasive' verbs (which 'imply intentions to bring about some change in the future'), such as *ask* and *demand*; (vii) 'public factual' verbs (which 'introduc[e] what one might generally describe as factual or propositional information'), such as *claim* and *profess*; and (viii) 'conative' verbs, such as *attempt* and *manage* (ibid., §§16.30, 16.32, 16.44, 16.51). These subclasses are given below:

(1) a. 'VOLITIONAL': (can't) bear, desire, dread, hate, like, loathe, love, prefer
a'. Joe couldn't bear to see Frankie.

b. 'ASPECTUAL': begin, cease, commence, continue, start
b'. Joe's behaviour began to weaken Trish's desire to remain with him.

c. 'RETROSPECTIVE': forget, regret, remember
c'. They said that they regretted to cancel Joe's policy.

d. 'INTENTIONAL': choose, hope, intend, mean, need, plan, propose, want, wish
d'. Joe meant to meet with Trish.

e. 'INFLUENCING': deign, disdain, help, scorn, venture
e'. Seth helped to hush up the whole sordid business.

f. 'SUASIVE': ask, beg, decline, demand, offer, promise
f'. Joe promised to tell the whole story.

g. 'PUBLIC FACTUAL': affect, claim, profess
g'. Chester professed to be ignorant about the matter.

h. 'CONATIVE': (can) afford, attempt, contrive, endeavour, fail, learn, manage, neglect, omit, try
h'. Trish tried to say nothing about it. (based on ibid., §16.38)

[4] While Quirk *et al.* present the following groups of verbs together in §16.38, the labels associated with them in the text are not themselves from this section of their study, but from various sections of their discussion of verb complementation (except for 'conative', which I have supplied).

A small number of these verbs may also take TIs with overt subjects (ibid., §16.41), forming 'exceptional-case-marking' structures:

(2) a. (can't) bear, hate, like, love, prefer
a'. They don't like the house to be left empty. (ibid.)

b. intend, mean, want, wish
b'. Joe wanted this matter to be resolved.

One verb, *promise*, may also appear in a ditransitive 'subject control' structure:

(3) Joe promised Trish to be a better boyfriend.

A second class of TI-selecting verbs — which display some overlap with the 'subject control' verbs just enumerated — are those that select both an indirect object and a TI (ibid., §16.63), forming 'object control' structures. Examples of these are given in (4):

(4) a. advise, ask, beg, beseech, challenge, command, counsel, detail, direct, enjoin, entreat, exhort, forbid, implore, incite, instruct, invite, order, persuade, pray, remind, request, recommend, teach, tell, urge

b. They begged her to stay another week. (ibid.)

Quirk *et al.* (ibid., §16.50) distinguish these from verbs that select a (semantic) direct object and a TI:

(5) a. 'PUBLIC FACTUAL': announce, declare, proclaim, pronounce, report, repute
a'. Joe declared the evening to be a success.

b. 'PRIVATE FACTUAL': assume, believe, conceive, consider, expect, feel, find, imagine, know, presume, reckon, suppose, take, think, understand[5]
b'. Seth imagined Joe's apology to be genuine.

c. 'INTENTIONAL': intend, mean
c'. They intended the occasion to be light-hearted.

[5] Quirk *et al.* (ibid., §16.50) also include *rumour* and *say* ('public factual') and *see* ('private factual'), which appear only in the passive.

d. 'CAUSATIVE' (*to be* omissible): appoint, elect, name, vote
d′. They appointed him to be the chief flak-catcher for the organization.

e. 'CAUSATIVE': cause, drive, force, get, lead, prompt
e′. Joe's obnoxious behaviour finally drove Trish to leave him.

f. 'MODAL CHARACTER': allow, authorize, compel, constrain, enable, equip, fit, oblige, permit, require
f′. C.W.'s constant presence obliged them to be very quiet.

g. 'INFLUENCING': assist, bother, bribe, condemn, dare, defy, encourage, help, induce, inspire, press, summon
g′. The situation inspired Joe to make fun of C.W. in his comic strip.

(Notice, however, that this grouping conflates verbs which are usually identified in Chomskyan terms as 'exceptional-case-marking' verbs (5a–c) with ones which are usually identified as 'object control' verbs (5d–g).)

Finally, Quirk *et al.* (§16.38, n. [a]) identify a category of TI-selecting verbs that they call 'catenative' verbs of 'seeming' and 'occurrence'. These take TIs that 'are not direct objects, but... relate semantically to a *that*-clause as subject':

(6) a. appear, come, fail, happen, manage, seem, tend, turn out
b. Their company turned out to be quite enjoyable. (based on ibid., §3.49)

From our perspective, what is interesting about all of these verbs[6] is that despite the great range of meanings that they express, their TI complements all describe 'situations' as either simultaneous with or posterior to those described by their matrix clauses — an observation frequently reported in the literature (see e.g. Baker 1989: 442; Declerck 1991: 181; Ogihara 1989: 190–91). We can verify this observation by testing for the ability of these various TIs to coöccur with past- or future-time-denoting adverbials (see Hornstein 1990: 152). Note, however, that various complications arise in the use of this diagnostic, so that we must construct our examples carefully. One of these complications concerns the use of the 'present' tense, which is not always acceptable in TI complement constructions with adverbial modification, as the sentence in (7) shows:

[6] Quirk *et al.* (ibid., §16.38) also identify a class of prepositional verbs that select TI, NP, and in some cases gerundial, complements; and display the interesting property of omitting their prepositions before TIs but not before NPs or gerunds. We shall have to say about these in our discussion of gerunds in §1.2.3 below.

(7) * I remember to go {tomorrow / yesterday / now}.

We can control for this effect, which is irrelevant to our present concerns, by constructing our examples with 'past' tenses.

Once we do so, however, we observe certain more interesting complications, as the following examples demonstrate:

(8) a. We expected to arrive yesterday.
b. We remembered to do the laundry yesterday.

Here we can see that the adverbial yesterday produces rather different interpretative effects in these two sentences. In the first, it indicates that the time of expecting is prior to yesterday; while in the second, it indicates that the time of remembering to do the laundry is yesterday. (We shall have much more to say about these effects during the course of this chapter.)

In order, then, to ensure that the adverbial is producing the intended results, and modifying only the TI, we must make use of two temporal adverbials, as shown in (9)–(10) below:

(9) a. * Yesterday, we expected to arrive the day before.
b. Yesterday, we expected to arrive tomorrow.

(10) a. * Yesterday, Joe forgot to do the laundry the day before.
b. * Yesterday, Joe forgot to do the laundry tomorrow.

These sentences confirm our observations about the respective effect of *yesterday* in the two sentences in (8). In addition, they clearly reveal the sentences whose TI clauses have a 'simultaneous' reading: these are the ones in which the TI clause can host neither a past- nor a future-time-denoting adverbial.

In many cases, the results of this diagnostic are rather surprising, given the reasonable expectation that the complements of 'prospective' verbs should accept future-time-denoting adverbials, and those of 'retrospective' verbs should accept past-time-denoting adverbials (and that the semantic categories posited by Quirk *et al.* should respond uniformly to the diagnostic). As it happens, we find such expectations denied with verbs of the former type, like *try* and *like*, and verbs of the latter type, like *remember* and *regret*:

(11) a. Yesterday, Seth expected to leave tomorrow.
b. * Yesterday, Seth tried to leave tomorrow.

(12) a. Yesterday, Joe preferred to leave tomorrow.
b. * Yesterday, Joe liked to leave tomorrow.

(13) a. * Yesterday, Chester remembered to leave the day before.
b. * Yesterday, Chester regretted to leave the day before.

The results of this diagnostic, then, suggest the following classification of verbs, which the reader can verify:

(14) 'SIMULTANEOUS' COMPLEMENTS:
a. 'aspectual' verbs
b. 'retrospective' verbs
c. 'conative' verbs
d. 'catenative' verbs
e. some 'volitional' verbs: like, love

(15) 'POSTERIOR' COMPLEMENTS:
a. 'influencing' verbs
b. 'suasive' verbs
c. 'intentional' verbs
d. some 'volitional' verbs: bear, desire, dread, hate, prefer

Another interesting result that emerges from this diagnostic is that the temporal interpretation of TI complements appears to be consistent across the different complement types that certain verbs may take. This can be demonstrated with verbs that appear in both monotransitive 'subject control' and 'object control', ditransitive 'subject control', and 'exceptional-case-marking' (ECM) structures, respectively, as illustrated below:

(16) 'SUBJECT CONTROL' —> 'OBJECT CONTROL'
a. Yesterday, Joe asked to leave tomorrow.
b. Yesterday, Joe asked Trish to leave tomorrow.

(17) 'SUBJECT CONTROL' —> 'SUBJECT CONTROL':
a. Yesterday, Joe promised to leave tomorrow.

b. Yesterday, Joe promised Trish to leave tomorrow.

(18) 'SUBJECT CONTROL' —> 'ECM':

a. Yesterday, Joe expected to leave tomorrow.

b. Yesterday, Joe expected Trish to leave tomorrow.

Here we can see that the TI complements in both members of each example pair bear a 'posterior' reading. This observation strongly suggests that gross differences in infinitival structure are not the source of different temporal interpretations for TIs, just as we found with embedded finite clauses. (We shall be taking up this matter again when we examine Stowell's (1982) claim about the interpretative effect of such differences in §2.1.1 below.)

1.1.2. THE 'PERFECT INFINITIVE'

In the previous section, we observed that two readings — 'simultaneous' and 'posterior' — were available for TI verb complements. However, a TI form does exist to express a relation of anteriority between the 'situation' described by the TI and that described by the matrix clause. This is the 'perfect infinitive' (e.g. Jespersen 1940: §7.3(1)). Because this form indicates only anteriority relative to the time established by the matrix clause, rather than pastness, it may appear with matrix verbs specified for 'past', 'present', or 'future' tenses, just like the 'present infinitive' described above. It may also appear with verbs that select either 'simultaneous' or 'posterior' TIs, as the sentences in (19) demonstrate:

(19) a. Joe seemed to have finished his colouring job.

b. Joe hoped to have finished his colouring job.

This observation gives some support to the analysis of 'perfect' forms offered in chapter 2, according to which they are specified for a [Perfective] feature, which describes a 'transition', rather than being specified for temporal features that express a relation of anteriority directly. This is because such a specification of 'perfect' forms does not give rise to any 'clashes' in the case of a 'posterior' 'perfect infinitive'. (It will thus permit a simple description of the 'linking' properties of TI complement structures, as we shall see in §3.)

1.2. GERUNDS

1.2.1. BASIC PATTERNS

In the previous section, we examined the distribution of TIs, and observed some of their temporal properties. In particular, we observed that 'present' forms always describe 'situations' as simultaneous with or posterior to the 'situation' described by the matrix, and that 'perfect' forms function analogously to their finite counterparts, indicating a time anterior to that indicated by their 'nonperfect' counterparts (we shall be determining the identity of these times later in the discussion.) We turn now to gerundial complements, with which TI complements are commonly compared. What we shall discover here are a number of differences, temporal and other, which are significant enough to suggest that the structure of these complements is rather different from that of TIs.

Quirk *et al.* (1985: §16.39) give the following three categories of verbs that form monotransitive gerundial complement constructions, noting that 'further semantic grouping is difficult':

(20) a. 'EMOTIVE': (can't) bear, begrudge, detest, dislike, dread, enjoy, (not) fancy, hate, like, loathe, love, (not) mind, miss, regret, relish, resent, (can't) stand

a′. Joe resented having to spend so much money on flowers.

b. 'ASPECTUAL': cease, commence, continue, quit, resume, start, stop

b′. They continued shouting at each other.

c. MISCELLANEOUS: admit, avoid, confess, consider, deny, deserve, discourage, envisage, escape, forget, (can't) help, imagine, involve, justify, need, permit, propose, recall, recommend, remember, repent, require, risk, save, try, want

c′. They avoided talking to each other.

It is perhaps no surprise that these verbs are more difficult to categorize than the TI-selecting verbs examined above, since these seem much more heterogeneous with respect to a number of properties, both syntactic and semantic. For example, as Quirk *et al.* (ibid.) note, three different possibilities exist among them for the interpretation of their 'understood' subjects. The possibility of a coreferential interpretation is the most common, as (21) indicates:

(21) a. admit, avoid, (can't) bear, begrudge, cease, commence, confess, consider, continue, deny, detest, dread, enjoy, escape, fancy, hate, (can't) help, like, loathe, love, (not) mind, miss, propose, quit, regret, relish, repent, resent, resume, (can't) stand, start, stop, try, want

b. i. Trish had considered leaving before.

ii. Joe did not mind doing colouring work.

Alongside this possibility, we find the possibility of an 'independent' interpretation, according to which the subject of the complement need not be coreferential with that of the main verb, and may have an 'indefinite' reading. This possibility is associated with the verbs given in (22):

(22) a. discourage, envisage, forget, involve, justify, permit, recall, recommend, remember, risk, save

b. i. That did not justify treating Trish so badly.

ii. Trish recommended seeking professional help.

A third possibility, which is associated with only the small group of verbs given in (23), is that of a 'passive' interpretation. According to this interpretation, the subject of the main clause is coreferential with the 'understood' object of the complement, so that the complement's 'understood' subject refers to some 'agent' of the action described by the gerund, and performed on the referent of its object:

(23) a. deserve, need, require, want (dialectal)

b. Your shoes need mending. (= 'Your shoes need to be mended.')

This range of interpretations available to gerundial complements seems to make any unitary 'clausal' analysis of them rather problematic, since it would leave the differences that we have just observed without much explanation.

Interestingly, the differences betwen these three groups of verbs are neutralized in the ditransitive constructions in which many of them appear,[7] in which the gerundial complement takes an explicit subject (ibid., §§16.39, 16.42). This construction is illustrated below:[8]

---

[7] Quirk *et al.* (ibid.) also note that the verbs of 'negative meaning' *stop*, *prevent*, and *prohibit* appear in a related construction in which the gerundial forms are preceded by the preposition *from*, as illustrated in (i):

(i) They tried to prevent the plane from landing on the runway.

[8] It should be noted that instances of this construction look strikingly like those of another construction: the 'progressive' version of 'perceptual reports'. Compare (ia) with (ib):

(24) a. (can't) bear, begrudge, detest, discourage, dislike, dread, envisage, (not) fancy, forget, hate, (can't) help, imagine, involve, justify, like, loathe, love, (not) mind, miss, need, permit, recall, recomend, regret, relish, remember, resent, risk, save, start, want

b. i. I dislike him/his driving my car.
ii. Seth could not imagine Joe selling out and becoming rich.

Another difference between gerund-taking verbs noted by Quirk *et al.* (ibid.) pertains to their ability to occur with the 'perfect' gerundial complement, and thus to receive an 'anterior' reading, whereby the 'situation' described by the complement is prior to that described by the matrix clause. As it happens, this ability is associated with a quite restricted class of verbs — in contrast to TI-taking verbs, which may readily occur with a 'perfect' complement. The verbs that Quirk *et al.* include in this class[9] are given in (25):

(25) a. admit, confess, deny, forget, recall, regret, remember
b. I admit having seen it. (ibid.)

Quirk *et al.* add, apropos this class of verbs, that their complements receive an 'anterior' reading even if they are 'nonperfect' in form. This is illustrated in (26):

(26) a. I admit doing it.
b. I confess doing it.
c. I deny doing it.

This indicates a temporal possibility for 'nonperfect' gerundial complements that we did not observe with TIs: namely, that of 'anteriority' with respect to the time of the 'situation' described by matrix clause. In fact, consideration of the temporal properties

---

(i) a. I dislike him driving my car.
b. I saw him lying on the beach.

We shall have more to say about these differences in §1.3.2 below.

[9] Although Quirk *et al.* do not include them, it seems that at least some of the 'emotive' verbs are also felicitous with a 'perfect' complement:

(i) I { dislike / don't mind / resent } having been treated this way.

of the gerund-taking verbs that we have seen suggests that they form four classes with respect to their temporal relation to the matrix clause:

(27) a. 'POSTERIOR': consider, dread, envisage, imagine, need, propose, recommend, require, risk, save, want [dialectal]

a'. i. Yesterday, they considered leaving tomorrow.

ii. * Yesterday, they considered leaving the day before.

b. 'ANTERIOR': admit, confess, deny, recall, regret, remember, repent

b'. i. Yesterday, they recalled leaving the day before.

ii. * Yesterday, they recalled leaving tomorrow.

c. 'SIMULTANEOUS': avoid, cease, commence, continue, enjoy, escape, hate, (can't) help, like, loathe, need, quit, relish, risk, resume, (can't) stand, start, stop, try, want

c'. i. Yesterday, they stopped working.

ii. * Yesterday, they stopped working tomorrow.

iii. * Yesterday, the stopped working the day before.

d. 'SIMULTANEOUS' OR 'POSTERIOR': (can't) bear, deserve, discourage, resent, involve, justify, (don't) mind

d'. i. Yesterday, he didn't mind helping you.

ii. Yesterday, he didn't mind helping you tomorrow.

This gives us still further reason to believe that gerundial complements differ in many respects from their TI counterparts, and in particular, that they have rather different temporal properties. We shall address this question in more detail below, where we shall be comparing these properties directly.

1.2.2. COMPARISON WITH TIs

In the previous section, we observed that the range of temporal interpretations available to gerundial and TI complements differed significantly. A distinction in the temporal qualities of these two complement types has often been noted, and various attempts have been made to offer a generalization that captures it. One of the more widely accepted of these has been offered by Quirk *et al.* (1985: §16.40), among others.[10] This is that '[a]s a rule, the infinitive gives a sense of mere "potentiality" for action',

[10] See also e.g. Jespersen 1931: §10.6; Swan 1980: §322.

whereas 'the participle gives a sense of actual "performance" of the action itself'.[11] Such a characterization is claimed to capture the difference between sentences like the following ones:

(28) a. Trish hoped to learn French.
b. Trish enjoyed learning French.

The first sentence is seen to emphasize Trish's desire to learn French, and the second her actual learning of French. It is not obvious, though, that the observed difference should not be attributed primarily to the meanings of the respective main verbs themselves rather than to that of their complements; and since neither verb takes both complement types, it is difficult to decide the matter for these particular verbs. A more tractable case is that of *try*, which does take both complement types, the two producing quite noticeable differences in interpretation:

(29) a. She tried to bribe the jailor.
b. She tried bribing the jailor. (ibid., (1)–(2))

As Quirk *et al.* (ibid.) observe, the former sentence 'implies that Sheila attempted an act of bribery, but did not manage it'; while the latter 'implies that she actually did bribe the jailor, but without (necessarily) achieving what she wanted.'

Unfortunately, this distinction between 'potentiality' and 'performance' loses much of its sharpness in the face of a greater range of verbs, where, as Quirk *et al.* (ibid.) admit, differences between the two complement types become subtler, and may be 'overruled or neutralized by the meaning of the verb of the main clause'. This, they claim, lies behind the absence of a sense of 'performance' in the following sentence, where this sense is 'cancelled out' by the 'negative meaning' of the main verbs *avoid* and *escape*:

(30) He $\left\{\begin{matrix}\text{avoided}\\\text{escaped}\end{matrix}\right\}$ being branded as a traitor.

While the 'masking' effect of main verbs seems a plausible enough explanation for an obscuring of the 'potentiality'/'performance' distinction in certain cases, it may lead us

[11] This claim is similar to the one advanced by Kiparsky and Kiparsky (1970), according to which the type of complement that a verb selects is determined by the verb's 'factivity', TIs occurring only with 'non-factive' verbs, and (certain) gerunds only with 'factive' verbs. Like the 'potentiality'/'performance' distinction discussed in the text, however, Kiparsky and Kiparsky's account faces considerable empirical problems, which suggests that TIs and gerunds do not display any consistent interpretative contrast.

to doubt the utility of this distinction as a tool for describing the difference between TI and gerundial complements.

These doubts are reinforced when we consider the more detailed remarks that Quirk *et al.* (ibid.) offer of three classes of verbs that take both types of complements: (i) 'emotive' verbs, such as *like*; (ii) 'aspectual' verbs, such as *begin*; and (iii) 'retrospective' verbs, such as *remember*. What we find here are rather suggestive differences between the two complement types with certain verbs, but little appreciable difference with others, and thus no significant generalizability regarding the respective semantic contributions of each type. Yet even when the observed differences do lend credence to this distinction, the distinction itself is arguably too impressionistic to bear much empirical weight.

Quirk *et al.* claim, for example, that 'emotive' verbs tend to take TI complements 'in hypothetical and nonfactual contexts', given the 'bias' of this complement type 'towards "potentiality"'; and to take gerundial complements in instances 'where the speaker is referring to something which definitely happens or has happened'. These contrasting uses are exemplified in (31)–(32):

(31) HYPOTHETICAL AND NONFACTUAL CONTEXTS:

a. Would you like to see my stamp collection?

a′. * Would you like seeing my stamp collection?

b. I hate to seem rude, but you're blocking my view.

b′. ? I hate seeming rude, but you're blocking my view.

(32) FACTUAL CONTEXTS:

a. ? Brian loathed to live in the country.

b. Brian loathed living in the country.

Significantly, the difference between the two complements types in (32) largely vanishes in (33), where the 'situation' described by each sentence becomes hypothetical:

(33) a. Brian would loathe to live in the country.

b. Brian would loathe living in the country.

Sentences like those given in (31)–(33) thus provide some interesting support for a 'potentiality'/'performance' distinction between TI and gerundial complements.

However, there is much about the behaviour of these two complement types that this distinction does not elucidate. Among them is the considerable variability from one

context to another in the effects of using the contextually 'inappropriate' complement type: the gerund in (31a') is quite unacceptable, but in (31b') only marginally so; and the TI in (32a), while perhaps also marginal, suggests a subtly different reading, 'impl[ying] that Brian could exercise choice about where to live', in contrast to the gerund, which 'presupposes that he actually did live in the country, and probably had no choice in the matter' (ibid.). Since neither the differences in acceptability across these sentences nor the differences in interpretation displayed in (33) follow in any obvious way from the distinction between 'potentiality' and 'performance', it is not clear whether this distinction is basic to these complement types, or whether the differences between them lie in other properties that they possess.

Similarly problematic for this distinction are those contexts, as exemplified in (34), in which the two complement types display 'little appreciable difference' in interpretation:

(34) a. Do you prefer to cook for yourself, or to eat in a restaurant?
b. Do you prefer cooking for yourself, or eating in a restaurant?

Given the interpretative differences between the two complement types just observed with other verbs in the same narrow semantic field, the absence of such differences in this instance is rather surprising, and might again make us wonder whether a 'potentiality'/'performance' distinction is really at play here.

These doubts also surround the few cases in which 'emotive' verbs may appear in ditransitive constructions with both TI and gerundial complements (ibid., §16.42). This is because only some of the contrasts that emerge between the two complement types here can be described in terms of the 'potentiality'/'performance' distinction, and can thereby offer any support for it. Consider the following examples:

(35) a. I hate the children to quarrel (... they're ordinarily such good friends).
b. I hate the children quarreling (... all the time). (ibid., (1)–(2))

(36) a. I hate the clock to chime (... just when I'm going to sleep).
b. I hate the clock chiming (... all night long).

The sentences in (35) are readily characterized in terms of this distinction, the former 'focus[sing] on the children's "potential" for quarrelling', and the latter 'emphasiz[ing] their "performance" — the point being that they do quarrel, rather often in fact' (ibid.). But the sentences in (36) are not: since both describe 'potential situations', the contrast

in their interpretations — the former 'suggest[ing] a single chime', the latter 'continual chiming' (ibid.) — is necessarily of a quite different nature.

The same difficulties with this distinction are repeated with some variation in the case of 'aspectual' verbs 'of beginning, continuing, and ending'. Many instances in which these verbs may take either complement type display 'no observable difference of meaning' (ibid.), as illustrated in (37):

(37)

a. Lucy {ceased / continued / started} to write while in hospital.

b. Lucy {ceased / continued / started} writing while in hospital.

However, even when there are observable differences, the 'potentiality'/'performance' distinction is neither precise nor general enough to offer much insight into the nature of these differences. Consider, for example, the sentences in (38) and (39):

(38) a. He started to speak, but stopped because she objected.
b. He started speaking, and kept on for more than an hour.

(39) a. He began to open all the cupboards.
b. He began opening all the cupboards. (ibid.)

The former pair of sentences seems readily describable in terms of the distinction in question: the sentence in (38a) suggests a 'potential' act of speaking which is not fully realized, and that in (38b) a fully realized or 'performed' act of speaking. However, this distinction does not lend itself to a description any more precise than this one, and it is even difficult to determine to what extent the difference just described is due to the respective continuations of these sentences rather than the TI and gerund constructions themselves. This difficulty is increased by the fact that transposing these continuations reduces the acceptability of the resulting sentences somewhat, but does not significantly alter their interpretations:

(40) a. ? He started to speak, and kept on for more than an hour.
b. ? He started speaking, but stopped because she objected.

It is increased still further by the emergence of an even less distinct difference between the two complement types when we substitute *begin* for *start* as the main verb, as indicated in (41):

(41) a. He began to speak, but stopped because she objected.
a′. He began speaking, but stopped because she objected.

b. He began to speak, and kept on for more than an hour.
b′. He began speaking, and kept on for more than an hour.

The sentences in (39) resist a description in terms of the 'potentiality'/'performance' distinction altogether, since each seems to describe the same beginning of some extended cupboard-opening 'event'. Again, however, one sentence — in this case, that in (39b) — is more acceptable than the other, but it is not obvious that we should attribute this contrast to the semantic differences reflected in the 'potentiality'/ 'performance' distinction (nor, for that matter, to '[t]he association of the *-ing* participle with the progressive aspect', as Quirk *et al.* claim).

We do finally find systematic differences between the TI and gerundial complements of one group of verbs that takes both: the 'retrospective' verbs *forget*, *remember*, and *regret*. Yet here, too, it is not clear how successfully the 'potentiality'/ 'performance' distinction captures these differences, which are illustrated in the following pairs of sentences, adduced by Quirk *et al.* (ibid.):

(42) a. I remembered to fill out the form.
[= 'I remembered that I was to fill out the form and then did so.']

b. I remembered filling out the form.
[= 'I remembered that I had filled out the form.']

(43) a. I forgot to go to the bank.
[= 'I forgot that I was to go to the bank, and therefore did not do so']
b. I forgot (about) going to the bank. [rare without *about*]
[= 'I forgot that I went to the bank' or '...that I should have gone...']

(44) a. I regret to tell you that John stole it.
[= 'I regret that I am about to tell you that John stole it']
b. I regret telling you that John stole it.
[= 'I regret that I told you that John stole it' or '... that I am now telling you']

According to Quirk *et al.*, the 'potentiality'/'performance' distinction as it applies here is 'extended into the past so that there is a temporal (as well as in part modal) difference between the two constructions', the TI construction 'indicat[ing] that the action or event takes place after (and as a result of) the mental process denoted by the verb has begun', and the gerundial construction that 'a preceding event or occasion [comes] to mind at the time indicated by the main verb.' While such a generalization is consistent with the distinction in question, it does not do justice to the observed contrasts in the interpretations of the two complement types, as perspicuously described in the glosses that Quirk *et al.* themselves provide. As their glosses reveal, the contrasts in question are not reducible to a difference in the temporal relation of the 'mental process' described by the main verb (or, in the case of *forget*, the absence of some such 'process') to the 'situation' that is its 'object'. This is because the TI constructions, unlike their gerundial counterparts, indicate not merely that some 'mental process' has or has not occurred, but rather some 'event' that presupposes the relevant sort of 'mental process'. This difference is highlighted by Hornstein (1990: 226, n. 40), in his discussion of TI constructions with *remember* and *forget*, as illustrated in (45):

(45) a. Yesterday, John forgot to bring the wine.
b. At 6 o'clock, John remembered to bring the wine.
(Hornstein 1990: 226, n. 40)

What Hornstein observes is that while a sentence like in (45a) is understood to describe a 'potential event' of wine-bringing, 'one could not say that the forgetting was prior to the wine-bringing.' In other words, the sentence does not describe merely John's failure to have a 'remembering event', but his failure to bring the wine. Similarly, the sentence in (45b) does not describe a 'remembering event', but rather that John 'did what he was supposed to do.'

The foregoing comparison of TI and gerundial complements, then, suggests that their respective interpretations do not reflect any consistent contrast, whether this is described in terms of a 'potentiality'/'performance' distinction or of some other opposition. What we have seen, instead, is that in some instances their differences in interpretation do conform to this distinction, while in others these differences suggest some other kind of distinction, and in still others their interpretations are essentially the same. However, one difference between them is consistent: this is the difference in their grammatical properties. Such a difference, as we shall see below, will be the surest guide to an explanation of the pattern of similarities and differences between the two complement types that we have just observed.

1.2.3. GERUNDS AND NPS

In the closing remarks of the previous section, we suggested that the most likely site of the uneven interpretative differences between TI and gerundial complements was their different grammatical properties. Unfortunately, while the structure and properties of TI complements have been reasonably well studied (although their temporal properties are still a matter of some controversy, as we shall see below), those of gerundial complements remain rather poorly understood. Nevertheless, certain well documented properties of these complements suggest a plausible possibility for their analysis.

The possibility in question is that gerundial complements are, in some sense, NP-like.[12] Perhaps the strongest support for this possibility is the fact that gerundial but not TI complements may bear Case (e.g. Hornstein 1990: 226, n. 40). This can be seen most strikingly in the case of 'prepositional verbs' that take prepositions with gerunds but not TIs (Quirk *et al.* 1985: §16.38).[13] These are exemplified in (46):

(46) a. i. She didn't bother to feed the baby.
ii. She didn't bother about feeding the baby.
iii. She didn't bother about the baby.

b. i. Trish decided to leave Joe.
ii. Trish decided on leaving Joe.
iii. Trish decided on this course of action.

c. i. Chester hesitated to mention the bad news.
ii. Chester hesitated about mentioning the bad news.

---

[12] Another possibility, given the morphological form of gerundial complements, is that they are simply non-finite 'progressive' verb forms. Such a possibility does not seem a very plausible one, however, since there seems to be good evidence against such a treatment, given certain attested properties of 'progressive' forms. Among these is their ability to be modified by PPs with *for* but not *in*, as shown below:

(i) a. Joe was drawing cartoons for an hour.
b * Joe was drawing cartoons in an hour. [except on a 'scheduling state' reading]

Gerundial complements, however, do not follow this pattern. Consider the following sentences:

(ii) I remember doing this
a. in an hour
b. for an hour

These are equally acceptable, and describe quite different 'situations': the first an 'event', the second a 'process'. And while it still remains possible that these forms share many of their morphosyntactic features with 'progressive' forms (see Gazdar, Pullum & Sag 1982 for a discussion of this point), it is not clear that any insights accrue from their assimilation to the class of 'progressive' verb forms.

[13] A similar observation is made by Kiparsky and Kiparsky (1970: 160), who note that '[a]fter prepositions, infinitives are automatically converted to gerunds, *e.g., I decided to go vs. I decided on going*; or *I forced John to do it vs. I forced John into doing it.*'

iii. Chester hesitated about the matter.

Of course, this account of gerundial complements cannot be complete without a more detailed explanation of how they are 'NP-like'. We shall be offering such an explanation in §2.2.

1.3. BARE INFINITIVES

We turn now to a third category of verbal complements: namely, 'bare infinitives' (BIs), whose name derives from the fact that the verb forms that occur in such complements are neither inflectionally marked, like gerundial complements, nor accompanied by *to*, like TIs, as the example in (47) shows:

(47) Joe heard Trish leave.

Quirk *et al.* (1985: §16.52) identify the following three classes of verbs that take BI complements:

(48) a. 'COERCIVE': have, let, make
a'. We must make the public take notice of us.

b. 'PERCEPTUAL': feel, hear, notice, observe, overhear, see, watch
b'. The crowd saw Gray score two magnificent goals.

c. [RESIDUAL CLASS]: help, know[14]
c'. Sarah helped us edit the script.

Now, while they note many interesting facts about BIs,[15] what is most noteworthy about these complements from our standpoint is their temporal properties. According to many authors (e.g. Hornstein 1990: 154), BIs always describe a 'situation' the time of which coincides with that of the 'situation' described by the matrix clause. Hornstein (ibid.) illustrates this claim with the following set of sentences, in which the time of Bill's leaving varies directly with the time of the matrix 'situation':

---

[14] Quirk *et al.* (ibid., §16.52) note that *know* followed by a BI 'is confined mainly to BrE, and to the perfective aspect: *have known*.'

[15] Among these is their inability to survive passivization, as illustrated in (i):

(i) a. They made him understand.
b. He was made to understand. (Quirk *et al.* 1985: §16.52)

Unfortunately, the investigation of such facts is beyond the scope of this study.

(49) a. John saw Bill leave
b. John made Bill leave.
c. John will make Bill leave.
d. John is watching Bill leave. (ibid., (67))

1.3.1. COMPARISON WITH TIS AND GERUNDS

From this basic temporal property of BIs, a number of contrasts between BIs and TIs and gerunds are seen to follow. Among these, as Hornstein observes, are that BIs cannot have 'perfect' forms, and cannot be modified by adverbials that establish a time distinct from that of the matrix clause (ibid., 154). The data on which he bases these claims are given below (the judgements for the (a) and (c) sentences are his):

(50) a. John wanted Bill to have left.
b. John remembered Bill having left.
c. * John saw Bill have left. (based on ibid., (68))[16]

(51) a. John wanted Bill to leave tomorrow.
b. John envisaged Bill leaving tomorrow.
c. * John $\left\{\begin{matrix}\text{saw}\\\text{made}\end{matrix}\right\}$ Bill leave tomorrow. (ibid., (69))

(52) a. At 6 o'clock, John wanted Bill to leave at 7 o'clock.
b. At 6 o'clock, John envisaged Bill leaving at 7 o'clock.
c. * At 6 o'clock, Bill $\left\{\begin{matrix}\text{saw}\\\text{made}\end{matrix}\right\}$ Bill leave at 7 o'clock.
(based on ibid., 155, (69c–d))

Now, while Hornstein's claim regarding 'perfect' BIs is unproblematic, that regarding the possibility of establishing a distinct time for BI complements is less so. This is because (contrary to the judgements given above) only the BI complements of 'perceptual' verbs appear to be clearly unacceptable with adverbials that establish a distinct time, the complements of the verbs in the other two categories being either marginal or fully acceptable:

[16] I have supplied the gerundial complement sentence in this and the following examples.

(53) a. 'PERCEPTUAL':
* John saw Bill leave tomorrow.

b. 'COERCIVE':
i. ? John made Bill leave tomorrow.
ii. John let Bill leave tomorrow.

c. [RESIDUAL CLASS]:
John helped Bill leave tomorrow.

What this suggests is that the constraint against the establishment of such a distinct time may be a pragmatic one. This certainly accords with the clear unacceptability that we find with the BI complements of 'perceptual' verbs, given that the 'situation' described by the BI complement must occur at the same time as the perceptual 'event' described by the matrix clause in order for it to be part of this 'event'. It also accords with the oddness of the sentence in (53bi):[17] since the sentence asserts that John succeeded in causing Bill to leave after the time of speech, it can only mean that Bill's leaving tomorrow is an unalterable fact; and to the extent that this sentence is acceptable, it has just this (rather unusual) reading. Notice that a 'pragmatic' account of the unacceptability of 'perfect' BIs is also plausible, since neither 'causative' nor 'perceptual' verbs are readily construed as pertaining to some 'situation' that holds before the causing or perceiving 'event'. This observation is highlighted by the unacceptability of the following constructions

(54) a. * John will see Bill as he has left.[18]
b. * John caused Bill to have left.
c. * John helped Bill to have left.

This 'pragmatic' account of the constraint that Hornstein has observed will allow for a more straightforward analysis of BIs — which we shall be offering in §3— given the greater resemblance that emerges between them and the VPs contained in finite clauses.

---

[17] Some native speakers whom I consulted, however, found this sentence fully acceptable.

[18] Notice that the following sentence, in which *see* takes a CP complement, suggests an inference rather than a direct perception:

(i) John saw that Bill had left.

For discussion of this point, see e.g. Declerck 1982: 86 and references cited there.

1.3.2. PERCEPTUAL REPORTS AND GERUND DITRANSITIVES

In our discussion of BIs so far, we have considered only the 'simple' forms exemplified in (48)–(53). However, many of the verbs that select these forms also select what appear to be 'progressive' counterparts of BIs. These are illustrated below, grouped into the semantic classes given in Quirk *et al.* 1985: §16.53:

(55) a. 'PERCEPTUAL': feel, hear, notice, observe, overhear, perceive, see, smell, spot, spy, watch

a'. Seth noticed Joe carrying a suspicious-looking brown bag.

b. 'ENCOUNTER': catch, discover, find, leave

b'. Trish caught Joe carrying a suspicious-looking brown bag.

c. 'COERCIVE': have, get

c'. Joe has his friends doing strange favours for him.

The question that arises when we consider these 'progressive' BIs more carefully is whether are they bear a closer resemblance to 'object + gerund' structures or to 'simple' BIs. As it happens, there is substantial evidence that these should be treated as 'progressive' BIs.

Among this evidence are two marked differences between these forms and gerundial complement constructions (ibid.). One is that the NP following the main verb (which in each case functions as the subject of the complement) can take the genitive form in the latter constructions but not the former constructions, as demonstrated in (56):

(56) a. I saw $\left\{\begin{matrix} \text{him} \\ *\text{ his} \end{matrix}\right\}$ lying on the beach. (ibid.)

b. I dislike $\left\{\begin{matrix} \text{him} \\ \text{his} \end{matrix}\right\}$ driving my car. (ibid., §16.42)

Another is that the verbal form 'can normally be omitted without radically altering the meaning' of the former but not the latter construction, as demonstrated in (57):[19]

[19] Note, in addition, that there is no 'progressive' BI construction corresponding to the monotransitive gerundial construction:

(i) a. * Joe saw going. [= 'saw himself']
b. Joe remembered going.

(57) a. I saw him lying on the beach. [entails: 'I saw him.']
b. I hate my friends leaving early. [does not entail: 'I hate my friends.']
(ibid., §16.53)

Even more compelling evidence for treating these complements as 'progressive' counterparts of BIs is that they display just the sorts of contrasts with BIs that are attributable to a difference between 'simple' and 'progressive' forms. For example, the ability of the sentence in (58a) but not that in (58b) to accept a continuation that indicates a 'situation' of drowning 'in progress' can be readily explained if the BI complement in the former sentence is 'progressive', and thus describes an 'unbounded situation', while that in the latter sentence is 'simple', and thus (given the absence of elements that have an 'unbounding' effect)[20] describes a 'bounded situation' (see Declerck 1982: 93ff.):

(58) a. I saw her drowning, but I rescued her.
b. * I saw her drown, but I rescued her. (ibid., (24c–d))

On the basis of considerations like these,[21] we shall be assuming that these are the 'progressive' variant of 'simple' BI complements, whose properties follow from this difference alone; and shall not pursue this distinction in BI types any further, treating the two types together.

2. Toward an analysis of temporal differences in non-finite complements

In §1, we examined the temporal (and other) properties of TI, BI, and gerundial complements, and observed certain significant similarities and differences between them. In particular, we found that all three types of complements were temporally dependent on their matrix clauses, but that the nature of the temporal relation between matrix and complement differed from type to type. Accordingly, the 'situation' described by a given TI could be either posterior to or simultaneous with that described by the matrix (with the 'perfect' infinitive additionally making an 'anterior' reading

---

However, since it is unclear whether the absence of this construction is related to the nature of BI complements, or simply to the thematic and Case-assigning properties of the verbs that take these complements, it cannot be considered very strong evidence for the distinction between them and gerunds.

[20] Declerck (1982: 101) notes that 'simple' BIs may be assigned an 'unbounded' interpretation if they occur, for example, with indefinite plural objects. We saw the same effects in sentences with 'simple present perfect' forms in chapter 2.

[21] For further discussion, see Declerck 1982.

available); that described by a given gerund could be anterior to, posterior to, or simultaneous with that described by the matrix (with some gerunds permitting both 'posterior' and 'simultaneous' readings); and that described by a given BI could generally be only simultaneous with that described by the matrix (although we saw that adverbial modification could, in some instances, permit a 'posterior' reading). The question that we shall be addressing in this section is how these observations might be accounted for. Since we also observed certain structural differences between these complement types, a promising possibility, which has already been explored by a number of researchers, is that a structural basis exists for the similarities and differences in question. In what follows, we shall be examining some of the proposals offered in the literature for relating temporal interpretation to syntactic structure, before presenting a new proposal, which develops the insights of these earlier ones.

2.1. STOWELL 1982

Let us begin with one frequently cited 'structural' analysis, Stowell 1982, which seeks to relate the temporal differences between TI and gerundial complements to the presence of a Comp node in the former but not the latter structure. The relevance of this difference, according to Stowell, is that Comp is the site of a tense operator, which in TIs specifies a 'possible future' with respect to the time of the matrix clause (and in finite clauses specifies a 'past' or 'present' value for the clause) (ibid., 562). Stowell argues that gerunds do not possess this node, on the basis of the contrasts illustrated in (59), which all show the impossibility of *wh*-movement in gerund structures:

(59) a. I don't remember who to visit.
a'. * I don't remember who (our) visiting.

b. The table on which to put your coat is in the next room.
b'. * The table on which putting your coat is in the next room.

c. The city to visit is Paris.
c'. * The city (his) visiting is Paris.

Given the absence of this node, and in turn of a tense operator, in the structure of gerunds, their temporal interpretation is, as Stowell puts it, 'completely malleable to the semantics of the governing verb' (ibid., 563). The attested temporal differences between TIs and gerunds thus follow directly from this structural difference.

Unfortunately, while Stowell's claim about the temporal 'malleability' of gerunds is confirmed by our observations in §§1.2.1–2, his claims about the temporal

interpretation of TIs is at odds both with our own observations in §1.1.1 and §1.2.2 and with those of other studies. It would be useful, then, to examine the rather controversial claims that he makes about the latter structure in greater detail.

These claims pertain to the contrast in the temporal interpretation of the TI and gerundial complements in these two pairs of sentences:

(60) a. Jenny remembered [PRO to bring the wine]
b. Jenny remembered [PRO bringing the wine]

(61) a. Jim tried [PRO to lock the door]
b. Jim tried [PRO locking the door] (ibid., 563, (8)–(9))

Stowell's claim about the TIs in these sentences is that the 'situation' that each describes 'is understood as being unrealized' with respect to that described by the matrix clause, following his general claim that such complements 'have a uniform internally determined tense, just as finite tensed clauses do' (ibid.). Thus, in (60a), 'Jenny has not yet brought the wine at the point at which she remembers to do so'; while in (61a), 'Jim does not succeed in locking the door when he tries to do so' (ibid.). In contrast, the gerundial complements in these sentences — which 'ha[ve] no internally determined tense[s]', but rather 'understood tense[s]', which are 'determined externally by the semantics of the control verb' — are understood as describing 'situations' that are respectively prior to and simultaneous with or unrealized with respect to the 'situations' described by their matrix clauses.

Although Stowell is certainly correct in pointing out a contrast between the TI and gerundial complements in these sentences, his description of the former is consistent neither with the descriptions given in Quirk *et al.* 1985, which we examined in §1.2.2, nor with the diagnostics that we offered in §1.1.1 for determining the temporal specifications of TI complements. Recall that Quirk *et al.* (1985: §16.42) gloss the '*remember* + TI' and *try* + TI' sentences repeated below as 'I remembered that I was to fill out the form and then did so' and 'Sheila attempted an act of bribery, but did not manage it', respectively:

(62) a. I remembered to fill out the form. (= (42a))
b. Sheila tried to bribe the jailor. (= (29a))

The latter gloss is consistent with Stowell's remarks, indicating an 'unrealized' act of bribery. The former, however, is clearly not: Stowell's remarks suggest that this sentence should describe 'an ordered set of events', in which a 'remembering event'

precedes a 'form-filling event'; but this suggestion is contradicted by the unacceptability of the continuation of this sentence given in (63):

(63) * I remembered to fill out the form, but my pen broke, so I couldn't.

If, as suggested earlier, '*remember* + TI' constructions do not describe 'events' in which the subject remembers what he or she 'is supposed to do', but rather ones that presuppose such 'remembering events', then the unacceptability of (63) is readily accounted for.

Recall that this conclusion is also supported by the results of the 'adverbial diagnostic' that we applied to TI complements in §1.1.1:

(64) a. * Yesterday, Seth remembered to leave tomorrow.
b. * Yesterday, Seth tried to leave tomorrow.

Interestingly, these two sentences are similarly unacceptable with future-time-denoting adverbials, despite the rather different 'situations' that they describe. This gives us good reason to believe that their TI complements do share many syntactic properties — even if these do not appear to be the ones suggested by Stowell.

As it happens, similar empirical difficulties surround Stowell's efforts to relate the temporal interpretation of other TI structures to the presence or absence of a Comp position. Observe that the structures described so far have all been instances of 'control' structures, which take the form a CP with a PRO subject, as schematized in (65a). However, one class of TI complements — namely, 'exceptional-case-marking' structures — do not have this structure, but rather the IP structure schematized in (65b) (in which the indicated NP is overt):

(65) a. $[_{IP}[_{CP}$ e $[_{IP}$ PRO to VP]]] (based on ibid., 564, (10))
b. $[_{IP}[[_{IP}$ NP to VP]]]

Given the rôle that Stowell claims for Comp in temporal interpretation, sentences with CP complements, like those in (66), should have temporal interpretations different from those with IP complements, like those in (67):[22]

[22] Stowell's claim applies similarly to passive and 'raising' structures like those given in (i), since these are understood to contain IP complements, and should thus display the same temporal behaviour as the sentences given in (67).

(i) a. John appears to like poker.
b. The president is believed to be guilty. (Stowell 1982: 567, (15))

(66) a. John convinced his friends [$_{CP}$ e [$_{IP}$ PRO to leave].
b. Sally persuaded her son [$_{CP}$ e [$_{IP}$ PRO to buy the camera].
c. Frank advised the teacher [$_{CP}$ e [$_{IP}$ PRO to inflate the grades].
d. Jim reminded Jenny [$_{CP}$ e [$_{IP}$ PRO to lock the door].
(based on ibid., 564, (11))

(67) a. Bill considers [$_{IP}$ himself to be the smartest].
b. The boys found [$_{IP}$ them to be amusing].
c. Jane showed [$_{IP}$ the solution to be trivial]. (based on ibid., 565, (12))

At first blush, the predicted differences in interpretation are confirmed: the complements in the former set of sentences appear to describe 'situations' unrealized at the time of those described by their matrix clauses, and those in the former set of sentences to describe 'situations' simultaneous with the time of those described by their matrix clauses. Since the structural difference that Stowell claims for these two sets of sentences is well supported (see ibid., 564–66), his case for the difference in question seems to be a persuasive one.

However, closer examination of the data reveals significant problems for the analysis. One pertains to the difference in interpretation between the sentences in (66a–b) and those in (66c–d), as demonstrated in (68):

(68) a. * John convinced his friends to leave, but they ended up staying after all.
b. * Sally persuaded her son to buy the camera, but he was mugged on the way to the camera shop and couldn't buy it after all.
c. Frank advised the teacher to inflate the grades, but the teacher didn't listen.
d. Jim reminded Jenny to lock the door, but she forgot anyhow.

What these contrasts suggest is that TI complement constructions with *convince* and *persuade* behave much like those with *remember*, describing not only an intention to perform the action described by the complement but also its actual performance. However, those with *advise* and *remind* describe the embedded 'situation' only as unrealized at the time of the 'situation' described by the matrix clause, and thus remain acceptable when this 'situation' is indicated not to have taken place.[23]

---

[23] Notice, though, that modification of the TI complements in (67a–b) by future-time-denoting adverbials is possible, although the requirement observed in (68) that the embedded 'situation' be realized apparently still applies:

(i) a. John convinced his friends to leave tomorrow (* but they ended up staying after all).
b. Sally persuaded her son to buy the camera tomorrow (* but he couldn't buy it after all).

This apparent contradiction can be reconciled if the sentences in (69) are understood to suggest a fixed or scheduled 'situation', just as we saw earlier with similarly modified BIs. As such, each of these

Another significant problem pertains to the temporal interpretations of the following sentences, whose complements each have IP structures:

(69) a. I expect [$_{IP}$ John to win the race].
b. I remember [$_{IP}$ John to be the smartest]. (ibid., 566, (13))

According to Stowell, the complements in these sentences describe 'situations' that are respectively posterior to and anterior to those described by their matrix clauses. Since neither complement structure contains a Comp node, Stowell attributes these interpretations to 'understood tenses... determined largely by the meaning of the governing verb'. Thus, the complement of the former sentence contains an 'understood future tense', and that of the latter an 'understood past tense' (ibid., 566). His claims about each sentence, however, are open to question. The difficulty with the former sentence is that the interpretation of its complement, contrary to prediction, is entirely parallel to that of TI complements with CP structures, leading Stowell to resort to the stipulation that the interpretation in question has a different source. The difficulty with the latter sentence is that it does not have the 'anterior' interpretation that Stowell attributes to it, being more naturally paraphrased by the sentence in (70a') than by the sentence in (70b'). (This is supported by the pattern of acceptability that results from the continuation given in each of the sentences in (70)):

(70) a. I remember John to be the smartest (* but he isn't any more).
a'. I remember that John is the smartest (* but he isn't anymore).
b. I remember John to have been the smartest (but he isn't any more).
b'. I remember that John was the smartest (but he isn't anymore).

These empirical difficulties are repeated in the final source of evidence that Stowell presents for his claims about tense operators and Comp. This is the contrast between the sentences in (71a) and (71b), whose subjects, by hypothesis, respectively do and do not have a CP structure and thus a tense operator:

(71) a. ? [$_{CP}$ For John to kill his goldfish] is wrong.
b. [$_{IP}$ To kill animals] is wrong. (based on ibid., 569, (20a), (22a))

Stowell claims that the contrast indicated in (71) arises because 'the unrealized tense of the infinitive' in (71a) 'is perceived to clash with the tense of the predicate' (ibid., 569), whereas no tense is present in (71b) to create such a clash. However, the contrast that

---

constructions can be seen to represent non-finite counterparts of the 'futurate' constructions which we examined in chapter 2. (We shall have more to say about these in §3 below.)

Stowell claims here is hardly a robust one; and the relative acceptability of the sentences in this pair seems to vary from speaker to speaker. The same can be said of other predicted contrasts, such as that displayed in the following set of sentences:

(72) a. [$_{IP}$ To lock the door] was stupid (of me). (ibid., (20b))
b. ? [$_{CP}$ For me to lock the door] was stupid.
c. It was stupid [$_{CP}$ for me to lock the door].
c′. It was stupid of me [$_{CP}$ PRO to lock the door].

Since, by hypothesis, the first sentence does not contain a tense operator in its infinitival clause, while the other three do, it should be significantly more acceptable than them. Yet the variability of judgements that these sentences elicit gives little support to this prediction. Note, however, that there are reasons to doubt that even the degraded acceptability of the sentence in (72b), which many speakers do report, should be attributed to 'tense clash'. One is that its acceptability is noticeably greater than clear instances of 'tense clash', like that in (73), as discussed in chapter 3:

(73) * It seemed that the new President is a CIA agent. (Costa 1972, 46 (32))

Another reason is that there are many plausible sources for the degraded acceptability of the sentence in (72b) — in particular, the sentence-initial position of the infinitive and its 'present' rather than 'perfect' form, neither of which provides any cue to the clause's 'past' reading. The plausibility of these explanations is supported by the increased acceptability of the sentence in (72c), in which the order of clauses is reversed, and of the sentence in (74), in which the 'present' infinitive form has been replaced by a 'perfect':

(74) For me to have locked the door was stupid.

Our examination of Stowell's analysis suggests, then, that he has located the syntactic source of the temporal properties of TIs, and in turn of the temporal differences between TIs and gerunds, in the wrong place. In other words, the connection that he claims between the presence of Comp and the availability of a 'posterior' interpretation in non-finite constructions is a spurious one.[24]

[24] These criticisms apply similarly to such analyses of TIs as given in van Gelderen 1993: ch. 5, which follows Stowell 1982 in tracing temporal differences between TI complements to the presence or absence of Comp. Van Gelderen's predictions regarding these temporal differences are considerably more accurate than Stowell's, because she takes a greater range of TI complements to have a CP structure. Nevertheless, the TI complement of at least one verb, namely *expect*, appears to pattern in all relevant respects like the ECM verb *believe*, and should thus, according to van Gelderen's arguments, describe a 'situation' simultaneous with that described by the matrix clause, rather than posterior to the latter

2.2. GERUNDIAL COMPLEMENTS AND THE 'DP HYPOTHESIS'

Stowell's analysis nevertheless serves to highlight significant temporal properties of TIs and gerunds, and intriguing differences between them — both of which have been largely neglected in the generative literature. Yet because of the intractable problems of his analysis, we are still left with the question of how the respective temporal properties of these constructions should be characterized.

In §1.2.3, we noted a promising possibility in Hornstein's (1990: 226, n. 40) observation that 'gerunds are NP-like in a way that infinitival clauses aren't.' This observation has been given syntactic form in Abney's (1987) 'Determiner Phrase' (DP) analysis. According to this analysis, the gerund has a DP structure, in which the VP is dominated by DP, the nominal correlate of IP; in such a structure, then, the VP is the locus of the gerund's verbal properties and the DP of its nominal properties (see ibid., 20). This suggests a labelling of the gerundial complement as indicated in (75), in which it is nominal rather than clausal:

(75) I remember $[_{DP}$ PRO leaving]

Such an analysis of gerundial complements not only offers a straightforward account of their 'NP-like' properties, but also suggests a likely source for their varied temporal interpretations. The suggestion, then, is that they receive their temporal interpretations in much the same way that NP complements do — namely, in virtue of the lexical properties of their matrix verbs and the tense features associated with these verbs, as Stowell (1982: 563) has argued. This possibility receives strong support from the following pairs of sentences, in which the 'situations' respectively described by the gerund and the NP are each located anterior to, posterior to, or simultaneous with the 'situation' described by the matrix clause:

(76) 'ANTERIOR':

a. Joe recalled being humiliated in front of Trish.

a'. Joe recalled his humiliation.

b. Joe admitted lying to Trish.

b. Joe admitted his lie.

'situation', as it in fact does. Note that this association between the presence of Comp and the availability of a 'posterior' reading is even more difficult to sustain if Comp is present in ECM constructions, as argued by Ormazabal (in preparation, cited in Lasnik 1995: 622–23, n. 10).

(77) 'POSTERIOR':

a. Joe dreaded having to leave tomorrow.

a′. Joe dreaded the prospect.

b. She considered murdering her husband.

b′. She considered murder.

(78) 'SIMULTANEOUS' OR 'POSTERIOR':

a. Joe couldn't bear sitting near Frankie.

a′. Joe couldn't bear Frankie's company.

b. Seth didn't mind {dusting all the furniture / getting up early the next morning}.

b′. Seth didn't mind {the housework / an early morning}.

In addition, this analysis can help us to account for the absence of a consistent contrast between the gerundial and TI complements of verbs that select both, as we discussed in §1.2.2. Recall that comparison of these complement types gave little support to the claim of Quirk *et al.* (1985: §16.40) that TIs give 'a sense of mere "potentiality" for action' and gerunds 'a sense of actual "performance" of the action itself'. If we take gerundial morphology to serve a 'nominalizing' function, rather than to provide any temporal information of its own, as infinitival forms appear to do, we can understand the behaviour of gerundial complements as simply following that of their NP counterparts. As such, this behaviour will sometimes resemble that of TIs and sometimes not, depending on the lexical properties of the matrix verb and the temporal properties of the TI forms themselves. As we noted earlier, the gerundial and NP complements of certain verbs, like *try*, *remember*, and *forget*, have interpretations quite different from their TI counterparts:

(79) a. She tried bribing the jailor.

a′. She tried bribery.

b. She tried to bribe the jailor.

(80) a. Chester {remembered / forgot (about)} getting drunk.

a′. Chester {remembered / forgot (about)} his drunk.

b. Chester remembered to get drunk.

However, the various complements of other verbs, such as *prefer* and *continue*, have little or no difference in interpretation:

(81) a. Do you prefer eating at home or in a restaurant?
a′. Do you prefer your own food or restaurant food?
b. Do you prefer to eat at home in a restaurant?

(82) a. Lucy continued writing while in hospital.
a′. Lucy continued her work while in hospital.
b. Lucy continued to write while in hospital.

The key to this range of effects, then, is to be found in differences in the selectional properties of particular verbs, rather than in differences between gerundial and TI forms themselves.

A 'DP analysis' of gerundial complements also suggests a solution to a puzzle, described in §1.2.1, that pertains to the identity of their covert subjects. Recall that this subject was most commonly coreferential with the matrix subject, as in the sentence in (83a); although some verbs did permit an 'arbitrary' reading in which the two were disjoint in reference, as in the sentence in (83b). In both cases, though, the subject had the thematic rôle of 'agent'. Neither of these two possibilities, however, raises any special problems, since they can be readily described in terms of controlled and arbitrary PRO, respectively:[25]

(83) a. Trish had considered PRO leaving home.
↑_____|

b. Trish recommended PRO_{arb} seeking professional help.

The puzzle lies instead with one small class of verbs, whose complements, we noted, had subjects that were coreferential with the matrix subject, but had the thematic rôle of 'patient', the 'agent' in this case being 'arbitrary'. This case is illustrated in (84):

[25] I use 'linking' instead of 'coindexing' in this and subsequent examples for the sake of methodological consistency. Of course, the relation between the two NPs in question can be recast in terms of the latter device.

(84) Your shoes need mending. (= 23b))

The problem that these cases raise is that their analysis appears to require the positing of a covert 'patient' that is base-generated in an object position, and raises to subject position, although the sentence's interpretation is the only obvious motivation for such abstract structures and elements. However, a 'DP analysis' of gerunds makes simpler solution available, given that DP complements can be either gerunds or true NPs. We might speculate, then, that the DP complement in the above example has the internal structure of an NP rather than a VP, and thus has no arguments. In other words, its structure would be entirely parallel to that of the DP complement given in (85):

(85) Yours shoes need repair.

This analysis derives solid support from the fact that the complements of *need*, unlike clearly gerundial complements, can readily take determiners and adjectives, as demonstrated in the following examples:

(86) a. These shoes need a good mending.
b. These shirts need a good ironing.
c. This room needs a good painting.

(87) a. Chester remembered (* a quick) eating.
b. Joe continued (* a careful) drawing.
c. Seth avoided (* an ugly) arguing.

A 'DP analysis' of gerundial complements thus demonstrates itself to be a useful tool in explaining the temporal, aspectual, and thematic dimensions of their behaviour. Consideration of their internal structure, moreover, suggests a way to account more directly for the differences between their temporal properties and those of TI complements. Given that the latter complements contain an Infl node, which is widely assumed to the locus of temporal features in a finite clause, it is a distinct possibility that the temporal differences between TIs and gerunds can be traced to the presence of this node, and in turn of particular temporal features, in the former but not the latter construction. The association of such features with untensed Infl (which will be described in more detail below) would go some way toward explaining both the narrow range of temporal interpretations that 'simple' TIs bear — describing 'situations' that are either simultaneous with or posterior to that described by the matrix clause — and the sharp interpretative contrast that they may display with respect to other types of complements selected by the same verb, as we have seen. (Note that this account of TIs

and gerunds captures Stowell's basic insight about the difference between them, but locates this difference elswhere in their syntactic representations.)

If it is the case that gerundial structures do not contain an Infl node, then one possibility for them that they simply contain a D that selects a VP.[26] As it happens, the postulation of such a structure permits a very straightforward account of Case assignment to gerundial complements, which were described briefly in §1.2.3, given certain assumptions about the subjects of gerunds. These assumptions are (i) that the subjects in question are base-generated in the specifier of the VP; (ii) that the subjects of 'accusative *-ing*' gerunds move to the specifier of DP; and (iii) that the subject of both 'possessive *-ing*' gerunds and those without overt subjects is PRO, which in the former case is 'linked' to a genitive NP adjoined to D′. These three types of gerunds, and the structures posited for them, are given in (88):

(88) a. 'ACCUSATIVE *-ING*':
I remember [$_{DP}$ John [$_{VP}$ e [$_{V'}$ leaving]]]

b. 'POSSESSIVE *-ING*':
I remember [$_{DP}$ [$_{D'}$ John's [$_{VP}$ PRO [$_{V'}$ leaving]]]]
↑_____|

c. NON-OVERT SUBJECT:
I remember [$_{DP}$ [$_{D'}$ [$_{VP}$ PRO [$_{V'}$ leaving]]]]

These assumptions about these three types of gerunds appear to yield the correct results: the verb governs the specifier of DP position and thus assigns Case to John in (88a), but does not govern the genitive NP[27] in (88b), which receives its Case inherently; or PRO in (88b) or (88c), which does not receive Case.

It should be noted, of course, that the labelled bracketings given in (88) leave important details of the internal structure of these DPs unspecified — in particular, the identity of D^0 and the structure of the verb form itself. In Abney's original analysis of the first two of these (he does not treat the last), D^0 is null, and the gerundial

---

[26] Notice that it also suggests a way of distinguishing gerundial complements from 'progressive' BI complements: the former, but not the latter, have DP structures. We shalll be returning to this matter briefly in §3.

[27] At least according to definitions like that of Barss (1995: 684), which was given in chapter 3 and is repeated here:

(i) A head α governs β iff α c-commands β, no other Σ exists that c-commands β and does not c-command α, and no maximal projection separates α and β other than the complement of α.

In the case that we are considering, α, the verb *remember*, does not govern β, the NP *John's*, since β but not α is c-commanded by the D′ that is sister to β.

morphology is represented a distinct 'nominalizer *-ing*', which attaches to the verb in a process of 'syntactic affixation' (see Abney 1987: 139–44). Abney (ibid., 139) also posits that one gerund construction — that of 'accusative *-ing*' — contains an IP, although its head is not associated with any temporal features. The motivation for such a structure appears to be largely to permit a 'scope' account of the three gerund constructions that Abney considers — this one, 'possessive *-ing*', and '*-ing of*' (as exemplified in *John's singing of the Marseillaise*) —, according to which the differences between them lie only in their 'nominalization' by *-ing* at IP, VP, and V^0, respectively (ibid.). Whether the results that Abney achieves can be duplicated by the technical means suggested here — in particular, a 'D VP' structure and the assumption of a 'VP-internal' subject — is an open question, and one which must await further study.

2.3. Toward an analysis of TIs: Back to Reichenbach

In the previous section, we canvassed a 'DP analysis' of gerunds, which seemed able to capture a range of salient differences between them and TIs. We return now to a consideration of the latter complement type, to which we have not yet given any satisfying analysis. The one analysis that we did examine in §2.1 — that of Stowell (1982) — turned out to have empirical problems serious enough to call its viability into question. Equally serious, however, was its failure to clarify the nature of the two 'tenses' that it posited for non-finite constructions — those that were 'tense operators' in Comp and those that were simply 'understood' — and how these differed from the tenses of finite clauses; and more basically, how the form and function of either these or 'finite' tenses were related.[28] A more promising syntactic approach to tense and time reference, as our discussion throughout this study has suggested, is one that seeks to relate the syntactic structure of temporal expressions to Reichenbach's temporal primitives 'S', 'R', and 'E'. In the following sections, we shall be examining two such 'Reichenbachian' treatments of TIs, those of Rigter and Hornstein, which each form part of studies that we have examined in considerable detail in previous chapters. While neither analysis, as we shall see, will provide a definitive answer to the analysis of TIs, each will serve to bring important issues into sharper relief, and thus will be instrumental in the development of a more satisfying account of these constructions, which we shall be examining in §3.

[28] Stowell's claim that infinitival tenses are 'operators' might be another serious difficulty with his account, given the weaknesses of this approach to tense as outlined in chapter 1. However, since it is not clear what semantic weight Stowell's operators are meant to bear, the point remains a moot one.

2.3.1. RIGTER 1986

Perhaps the most important task for an 'Reichenbachian' analysis of TIs is to describe how their temporal dependence on matrix clauses is reflected, if at all, in their temporal structure. The analyses that we shall be examining both describe this structure as poorer than that of finite clauses, although they do not agree on the nature of this impoverishment — Hornstein (1990) taking it to consist in the absence of 'S', and Rigter (1986) in the absence of 'R'. What we shall see is that both descriptions capture significant differences between TIs and finite clauses, which any analysis of the former must take into account. At the same time, both descriptions appear to overstate these differences — an observation which suggests that the differences in question are finer than either analysis has assumed, and demand a description in terms other than a simple absence of one or the other 'Reichenbachian' element. Let us consider the two analyses in turn, starting with Rigter's, in order to see the relevant issues clearly.

Rigter's analysis draws a parallel between the temporal behaviour of TIs and that of embedded 'past' tenses, taking each to exhibit the loss of 'precisely those oppositional possibilities' that are associated with the presence of 'R' (Rigter 1986: 107). In other words, TI complements, like embedded 'past'-tensed clauses, are able to establish only relations of simultaneity or anteriority with their matrix clauses — a fact which, by hypothesis, is directly reflected in their 'Reichenbachian' structures. These structures indicate only relations between 'S' and 'E', as the representations in (89) and (90) show (recall once more that '=' and '>' are equivalent to ',' and '-', respectively; and that subscripts indicate level of embedding):

(89) a. Jane seems to be angry.
a′. $S_a = R_a = E_a = S_{aa} = E_{aa}$

b. Jane seems to have been angry.
b′. $S_a = R_a = E_a = S_{aa} > E_{aa}$

(90) a. He thought that Jane was angry.
a′. $S_a > R_a = E_a = S_{aa} = E_{aa}$

b. He thought that Jane had been angry.
b′. $S_a > R_a = E_a = S_{aa} > E_{aa}$ (ibid., 106–7, (21), (22), (27), (28))

As such, the TI in (89a) and the 'past'-tensed clause in (90a) are the 'R-less' counterparts of the embedded 'present'-tensed clause in (91a); and the TI in (89b) and

the 'past'-tensed clause in (90b) are the 'R-less' counterparts of the three embedded clauses in (91b–c):

(91) a. It seems that Jane is angry.
$S_a = R_a = E_a = S_{aa} = R_{aa} = E_{aa}$

b. It seems that Jane was angry.
$S_a = R_a = E_a = S_{aa} > R_{aa} = E_{aa}$

c. It seems that Jane has been angry.
$S_a = R_a = E_a = S_{aa} = R_{aa} > E_{aa}$

d. It seems that Jane had been angry.
$S_a = R_a = E_a = S_{aa} > R_{aa} > E_{aa}$ (ibid., 106, (17), (19), (18), (20))

While the absence of 'R' in the embedded clauses in (89a) and (90a) creates no obvious temporal contrast between them and the embedded 'present'-tensed clause in (91a), it is its absence in the embedded clauses in (89b) and (90b) that leaves their temporal interpretations indeterminate between those of the embedded clauses in (91b–d). This permits the speaker to locate the 'R' of the former clauses at the time simultaneous with the embedded 'S', yielding a 'present perfect' reading; simultaneous with 'E', yielding a 'past' reading, or at some interval between them, yielding a 'past perfect' reading (ibid., 115).

Rigter attributes the absence of 'R' in the temporal structure of TIs and embedded 'pasts' to the absence in their syntactic structures of what he calls a 'domain tense'. Such a tense, as we saw in chapter 3, serves precisely to introduce an 'R' into the 'discourse domain', and to relate it to 'S' of this domain (ibid., 107). Accordingly, the embedded 'past' tenses in (90) are not associated with 'R' because they are not 'domain tenses'; and the TIs in (89) are not associated with 'R' because they do not contain tenses (ibid., 114–15).

Now, while Rigter's analysis of TIs and embedded 'past' tenses is certainly consistent with the data just presented, it appears not to be the most plausible one. In the latter case, which we examined in chapter 3, this is because the analysis attributes substantial lexical differences to 'past' tense forms in different syntactic positions when the interpretative differences that this is intended to capture may be traced to the syntactic differences themselves. In the former case, this is because the analysis claims similarities and differences between tensed and non-tensed clauses to which the data themselves give little warrant. More specifically, Rigter ties the difference between these forms, as we have just seen, to their respective abilities to introduce 'R' into an

embedded 'discourse domain', rather than to their abilities to establish the domain itself — in other words, to properties related to 'R' rather than to 'S'. In doing so, however, he is left with no real explanation for a basic fact about TI complements: namely, that their 'temporal interpretation... is always dependent on the temporal interpretation of the matrix clause under which [they are] embedded' (Hornstein 1990: 146). This fact suggests that it is in the respective 'S-related' properties of TIs and finite clauses that they are truly distinguished. Adding further support to this contention is the observation, which we made in chapter 3, that a more likely source of the temporal indeterminacy that Rigter claims for the clauses in (89b) and (90b) is that they fail to specify the location of 'E', rather than 'R'. This becomes clear from consideration of the interpretations of these sentences: if we utter the sentence in (89b), for example, we are asserting that the 'situation' of Jane's being angry is located at some time in the past, although we do not know (or are simply not indicating) when in the past precisely.

What also casts doubt on Rigter's account of the temporal properties of TIs and embedded 'past' tenses is that it assigns a temporal representation to the 'perfect' forms of each, as in (89b) and (90b), respectively, that is different from their 'domain tense' counterparts in (91c–d). More specifically, it assigns the former cases 'E-S' and the latter 'E-R'. Such a non-unitary analysis of finite 'perfect' forms is at odds with the results of our own investigation of these forms in chapter 2, according to which they could all be assigned the latter representation. Further consideration of the 'perfect' TI suggests that it, too, can be given the same analysis once we permit its temporal representation to contain 'R'.[29] This is because it likewise serves, as we just suggested, to place 'E' before 'R' — the only difference from its finite counterparts being in its dependence on the matrix clause for the determination of a value for 'R' itself.

Interestingly, however, there do seem to be instances in which the 'R' of a 'perfect' TI may be determined independently of the matrix clause. These are instances like the following one, in which the same possibility of 'E' and 'R' readings that we have found with finite 'perfects' is available to the TI:

---

[29] Rigter himself suggests that TIs may be specified for 'R' at least in certain instances, such those in which the TI is modified by two temporal adverbials, as in (i):

(i) The conjuror seems, at that point, to have placed the pigeon in the box before he closed it. But it is not in the box, of course. (Rigter 1986: 116, (43))

Rigter observes that the adverbial at that point must be serving to specify an embedded 'R', since the *before*-clause is clearly specifying the embedded 'E', and the interval specified by the adverbial in question is distinct from that of the embedded 'S', which is the time of speech. The only problem with the case that Rigter has made for the presence of 'R' here (which would give further support to the claim made in the text) is that the sentence in (i) is quite unacceptable: as we saw in chapter 2, 'perfect' forms cannot bear determinate values for both 'R' and 'E', and the two adverbials in this sentence appear to do just that.

(92) They seem to have arrived yesterday.

a. [= 'It seems that they were already here yesterday': 'R' reading]

b. [= 'It seems that they arrived yesterday': 'E' reading]

We shall be canvassing an analysis of these two readings in §3.

The foregoing considerations, then, clearly tell against Rigter's treatment of TIs, just as analogous ones offered in chapter 3 told against his treatment of embedded 'past' tenses. Despite its difficulties, Rigter's analysis nevertheless offers an important insight: this is that TIs establish their own 'discourse domain', and must establish their own 'S', the 'present' of this domain, in order to do so. Clearly, they do not do so in the same fashion that a tensed clause does, since their 'S' is dependent on that of a higher tensed clause. In fact, Rigter does not suggest that they do, but rather that the 'S' associated with a TI may be determined on the basis of the selectional properties of clause-taking verbs, or perhaps only by inference (see ibid., 114–115). While it is thus a syntactic fact about TIs that they cannot establish an 'S' independently, it does not follow from this that 'S' is simply absent from the temporal representation of TIs. On the contrary, closer inspection of the range of the readings that TIs license leads inevitably to the conclusion that 'S' is present in their temporal representations. This we shall see in the next section, where we shall be reviewing Hornstein's (1990) analysis of TIs.

2.3.2. HORNSTEIN 1990

Hornstein's view of TIs, as we have already noted, contrasts sharply with Rigter's in taking the 'key characteristic of infinitival clauses [to be] the absence of an S point.' For Hornstein, this follows from his claim that 'it is the tense morpheme that goes surrogate for the S point and provides the information about the relationship between S and R.' Given that such a morpheme is absent from syntactic representation of TIs, 'it is natural to suppose' that 'S' is absent from their corresponding temporal representations, which accordingly specify only a relation between 'R' and 'E' (ibid., 146). These considerations offer Hornstein a simple means to distinguish TIs from tensed clauses, on the one hand, and BIs, on the other: namely, that the temporal representation of the former contains 'S', 'R', and 'E', and that of the latter contains only 'E' (ibid., 156).

Yet if it is true, as we have just suggested, that an adequate analysis of TIs requires them to have an 'S', then Hornstein's claim about the difference between finite and non-finite clauses cannot be correct. Now, we have already seen in chapter 3 that Hornstein's analysis of tensed clauses is a deeply problematic one, which rests on an untenable claim about the correspondence between 'Reichenbachian' and syntactic elements. Inasmuch as his analysis of both TIs and BIs rests on the same claim, it is

also problematic. We shall not, however, be appealing to these arguments here. Instead, we shall be considering his analysis of the temporal representations of TIs and BIs themselves, and more specifically his claim that these representations are 'impoverished' counterparts of those associated with tensed clauses. What we shall see is that this claim, in fact, overstates the temporal differences between finite and non-finite verbal forms, and is inconsistent with the data of both TIs and BIs. The conclusion that will thus emerge is that Hornstein's analysis of these forms presents an problematic interpretation of Reichenbach's (1947) temporal system itself, in addition to a problematic syntactic implementation of this system, as our discussion in chapter 3 has already shown.

Let us begin with Hornstein's discussion of TIs, which is quite detailed. His basic claim about these clauses is that in their basic form they always express the relation 'R,E', and obligatorily undergo the 'SOT rule' that serves to associate their 'R' with the 'E' of the matrix clause. Thus, for example, both of the 'past'-tensed sentences given in (93) have the temporal structure given in (93c), with 'R_2' associated with 'E_1':

(93) a. John wanted to leave. (ibid., 148, (54c))

b. John remembered to take his medicine. (based on ibid., 149, (56))

c. $E_1, R — S$
$|$
R_2, E_2 (ibid., 148, (55c))

In other words, the structure in (93c) indicates that both 'John's desired departure' and John's taking his medicine are located prior to the moment of speech (see ibid., 148–49).

Since TIs are always specified 'R,E' and are always subject to the 'SOT rule', their 'E' will always bear the same relation to the matrix clause in the absence of further operations on their temporal structure. An operation that does serve, however, to alter the position of 'E' is that of modification by a temporal adverbial (ibid., 151). Thus, TIs — just like finite clauses, as we saw in chapter 2 — may have their 'Es' 'shifted' by a rule of adverbial modification, as illustrated below:

(94) a. John expected to win tomorrow.

b. $E_1, R — S$ $\longrightarrow$ $E_1, R — S$
$|$ $|$
R_2, E_2 $R_2 — E_2$
$|$
tomorrow (based on ibid., 153, (65a), (66a))

Another element that induces a different 'RE' relation is the auxiliary form *have*, which, as Hornstein notes, has the same effect in TIs that it does in finite clauses: namely, to place 'E' before 'R' (ibid.). Accordingly, the 'situation' of John's winning in the following sentences is located prior to those of John's wanting and hoping, respectively:

(95) a. John will want to have won.
b. John is hoping to have won. (ibid., (61a–b))

Because the 'E-shifting' effects of 'perfect' forms and temporial adverbials may or may not be compatible with the basic 'ER' relation dictated by the matrix tense form (as implemented by the 'SOT rule'), the presence of these 'E-shfting' elements may or may not lead to acceptable 'derived tense structures'. This is illustrated by the sentences in (96); the temporal structures corresponding to the two unacceptable sentences in this set are given in (97):

(96) a. John expected to win tomorrow.
a'. * John expected to have won tomorrow. (ibid., 153, (65))
b. John will expect to have won yesterday.
b'. * John will expect to win yesterday. (ibid., 152 (63e–f))

(97) a. * John expected to have won tomorrow.

$E_1, R — S$

|

$E_2 — R_2$

└——×——→

tomorrow

b. * John will expect to win yesterday.

$S — R, E_1$

|

R_2, E_2

←——×——┘

What the temporal structure in (97a) shows is that modification of the embedded 'E' by a future-time-denoting adverbial like *tomorrow*, which places it after 'R', is incompatible with the effect of a 'perfect' form, which places this 'E' before 'R'.

Contrariwise, what the temporal structure in (97b) shows is that modification of the embedded 'E' by a past-time-denoting adverbial like *yesterday*, which places it before 'R', is incompatible with the effect of a 'future' tense form, which (in concert with the 'SOT rule') places this 'E' after 'R'.

Hornstein's analysis thus appears to capture many of the basic patterns that TIs display. Yet closer inspection reveals that it suffers from very serious empirical problems. Perhaps the most damaging is related to his claim that all TIs encode the same relation of 'R,E' in their basic form. As it happens, such a claim is at odds with the results of our earlier examination, which revealed two different classes of TIs: namely, those that describe 'situations' as simultaneous with the 'situations' described by matrix clauses and those that describe the former as posterior to the latter. These two classes are exemplified below:

(98) a. 'SIMULTANEOUS':

i. They said that they regretted to cancel Joe's policy. (= (1c'))

ii. I remembered to fill out the form. (= (42a))

b. 'POSTERIOR':

i. Joe meant to meet with Trish. (= (1d'))

ii. Joe promised to tell the whole story. (= (1f'))

Now, the empirical consequences of Hornstein's conflation of these two classes of TIs — and his attempt to capture their various readings by means of rules that manipulate their basic 'R,E' structure — are considerable. Among them is his incorrect prediction of a contrast between the sentences in (99) but not between those in (101) in the 'RE' relations expressed by their TIs:

(99) a. Joe expected to leave.

b. Joe expected to leave tomorrow.

(100) a. Joe expected to take his medicine.

b. Joe remembered to take his medicine.

Inspection of the sentences in (99) clearly reveals that both place the embedded 'E' after the matrix 'E'; and thus that their 'posterior' reading is more plausibly attributed to the properties of the TI itself (and of the verb that selects it) than to the effect of a temporal

adverbial.[30] Inspection of the sentences in (100) thus reveals a clear contrast, only the latter being satisfactorily analysed as expressing the relation 'R,E'.

A further difficulty with Hornstein's attempt to derive the 'posterior' reading of TIs like that in (99b) from adverbial modification alone pertains to the 'R-E' structure which this derivation yields. The difficulty is that the assignment of such a structure to TIs results in the creation of a significant asymmetry between them and their finite clause counterparts, which have an 'R,E' structure, even though there is no independent evidence for such an asymmetry. In fact, comparison of the finite and non-finite complements in question, as exemplified in (101), suggests that they both express 'R,E', and that the differences in their temporal structures lie elsewhere:

(101) a. Joe expects to leave tomorrow.
b. Joe expects that he will leave tomorrow.

In other words, the asymmetry that Hornstein purports to find in the 'RE' relations that these sentences respectively express seems to be merely an artefact of his claim that TIs all have the same 'R,E' structure. (Notice that these remarks also serve to cast doubt on the plausibility of admitting 'R-E' into the temporal system as a second basic structure for TIs, as a way of correcting some of the empirical weaknesses that we have just observed.)

A final, and even greater, difficulty for Hornstein's analysis of TIs pertains to the 'posterior perfect' reading associated with TIs like that in the following sentence:

(102) I expect them to have finished tomorrow night (before they leave the office).[31]

The TI in this sentence describes a 'situation' subsequent to my expecting, by virtue of its future-time-denoting adverbial (or more accurately, of the 'posterior' reading of the TI complement of *expect*); but prior to 'R', by virtue of its 'perfect' form. Given Hornstein's assumptions, this should give rise to conflicting values for the 'RE' relation: the adverbial should establish 'R-E', while the 'perfect' form should establish

---

[30] Hornstein also claims that adverbial modification of 'E' in TIs may yield sentences like the following ones:

(i) a. At 6 o'clock, John remembered to take his medicine at 7 o'clock.
b. At 6 o'clock, I will remember to take my medicine at 7 o'clock.
(Hornstein 1990: 150, (59))

However, none of the many native speakers whose judgements on these sentences I have elicited has found them to be acceptable.

[31] Such 'perfect' TI sentences, which are analogous to 'future perfect' sentences, are much more acceptable when, as in this case, they indicate a future time to which the 'future situation' is prior.

'E-R'. Since the sentence is acceptable, the temporal structure that Hornstein claims for TIs cannot be the correct one. On the contrary, the TI in this sentence appears to express both 'S-R' and 'E-R', just as its 'future perfect' counterpart does — a possibility which Hornstein's system has simply no means to accommodate. Such 'posterior perfect' TIs thus deal a decisive blow to Hornstein's claim that TIs can be described in terms of an 'RE' relation alone.

Similar comments apply to Hornstein's analysis of BIs, which involves the claim that the temporal structures of these complements contain neither 'R' nor 'S', as we noted above; and that BIs, like TIs, obligatorily undergo the 'SOT rule' (ibid., 155). Hornstein intends this analysis to account for the highly restricted temporal relation that appears to hold between matrix verbs and their BI complements, given patterns like the one displayed in (103):

(103) a. John {saw / made} Bill leave. (based on ibid., (67a–b))

b. * John {saw / made} Bill leave tomorrow. (= (51c))

It is this pattern that Hornstein takes to be definitive of the temporal relations that hold between matrix verbs and BIs, which he accordingly takes to include only that of simultaneity. However, consideration of a greater range of data, as we found in §1.3, reveals that the temporal interpretation of BIs is not nearly so restricted as Hornstein has supposed. In fact, only the BI complements of 'perceptual' verbs exhibit the degree of restrictedness that Hornstein attributes to all BIs, as these examples suggest:

(104) a. 'PERCEPTUAL':
* John saw Bill leave tomorrow.

b. 'COERCIVE':
i. ? John made Bill leave tomorrow.
ii. John let Bill leave tomorrow.

c. [RESIDUAL CLASS]:
John helped Bill leave tomorrow. (= (53))

We also found that the temporal restrictedness that Hornstein claims for BIs is not unique to them, but is also associated with TI and other constructions that describe similar 'situations':

(105) a. * John saw Bill have left. (= (50c))
b. * John will see Bill as he has left.
c. * John caused Bill to have left.
d. * John helped Bill to have left. (= (54))

Since Hornstein's analysis of BIs assigns them a temporal structure that permits them to describe 'situations' only as simultaneous with those described by their matrix clauses, it has no means to account for the data that we have just adduced. Once again, we see that Hornstein's analysis of tenses, which attempts to account for their form and meaning by positing a direct relation between syntactic and 'Reichenbachian' structure, simply does not achieve empirical adequacy, and must be rejected on these grounds.

3. A LINKING ANALYSIS OF NON-FINITE COMPLEMENTS

In the previous section, we examined two 'Reichenbachian' analyses of non-finite constructions, those of Hornstein (1990) and Rigter (1986); and concluded that each account solved only part of the puzzle that TIs posed. Hornstein's analysis revealed, on the one hand, that TIs are temporally dependent on a higher finite clause — in his terms, that they undergo the 'SOT rule' obligatorily. Riger's analysis revealed, on the other hand, that TIs nevertheless establish their own 'discourse domain', and thus their own 'S', although they cannot do so independently of a finite clause. The task now before us, therefore, is to devise an analysis that can combine the insights of both Rigter's and Hornstein's analyses.

As it happens, the feature analysis and 'linking' mechanism developed in the previous two chapters give us most of the tools that we need to built such an analysis. All that is required is a small addition to the inventory of temporal expressions, in order to include the head of non-finite IP; and some minor adaptations of the 'linking conditions' already proposed for finite clauses, in order to allow them to apply to the non-finite constructions that we have been examining. These modifications, in concert with well-established assumptions about the structure of TIs and BIs, will thus permit a 'linking' analysis of them, as we shall see in the following sections.

3.1. TIs

Our discussion of TIs has revealed two basic requirements for our analysis: it must capture the fact (i) that TIs are 'dependent' forms, and must be interpreted relative to their matrix clauses; and (ii) that they describe 'situations' that are either simultaneous with or posterior to those described by their matrix clauses. We can fulfil both of these

requirements by associating the Infl nodes of TIs — and more specifically, the element *to* under non-finite Infl — with 'impoverished' feature matrices, which contain a specification only for the feature [Posterior]. This provides for (at least) two classes of TI complements — namely, those whose heads are specified [+ Posterior] and those whose heads are specified [- Posterior][32] — corresponding to the two that we have identified. We can capture the dependence of non-finite Infl elements on a higher tense by positing that Infl elements without a complete feature matrix must be 'linked'. As such, their 'linking' behaviour can be seen as analogous to that of verbs, as described in chapter 2. Unlike verbs, however, these elements must be 'linked' to a finite Infl in another clause; and in this respect display 'linking' behaviour analogous to that of tenses, as described in chapter 3. This hybrid 'linking' behaviour of non-finite Infl might be expressed in terms of the following condition:

(106) CONDITION ON NON-FINITE INFL LINKING:
If α and β are the heads of two distinct IPs in a complex IP, the maximal projection of α embeds the maximal projection of β, and α is lexically associated with the feature matrix [Anterior, Posterior], while β is associated only with the feature [Posterior], then β must be linked to α.

This condition serves, then, to ensure that non-finite Infl elements are always 'linked', and 'linked' only to finite Infl elements. Note that one of the significant consequences of this 'linking' is to permit certain TIs — namely, those specified [+ Posterior] — to establish an 'SR' relation distinct from that of the matrix tense, although doing so only in collaboration with this tense. This appears to capture the insights of both Hornstein and Rigter regarding the availability of 'S' in the temporal structure of a TI.

We must now consider the 'linking' properties of the verbs associated with TI complements. The simplest assumption would be that these properties are identical to those of verbs whose maximal projections are selected by finite Infl, and thus may be 'linked' either to Infl or to an adverbial. This appears to be consistent with the interpretation of verbs selected by both [+ Posterior] and [- Posterior] Infl, as shown by the sentences in (107)–(108). Unfortunately, it is at odds with the range of adverbial modification that we find with the two classes of TI complements, as shown by the sentences in (109)–(110), which is considerably more restricted than our assumption predicts:

[32] Note that this feature system allows for a third class of TIs: namely, those that are simply unspecified for 'posteriority'. While we did not identify such a class of TI complements in our examination, it remains possible that some TIs are more accurately characterized in this way; another possibility for this specification is that it is associated with non-complement TIs. The investigation of these possibilities must, however, be left for future research.

(107) a. They expect to arrive.
b. They expected to arrive.
c. They will expect to arrive.

(108) a. They always remember to write.
b. They remembered to write.
c. They will remember to write.

(109) a. They expect to arrive $\left\{\begin{array}{l}\text{tomorrow}\\ *\text{ yesterday}\end{array}\right\}$.

b. They expected to arrive $\left\{\begin{array}{l}\text{tomorrow}\\ \text{yesterday}\end{array}\right\}$.

c. They will expect to arrive $\left\{\begin{array}{l}\text{tomorrow}\\ *\text{ yesterday}\end{array}\right\}$.

(110) a. They always remember to write $\left\{\begin{array}{l}\text{the next day}\\ \text{the day before}\end{array}\right\}$.

b. They remembered to write $\left\{\begin{array}{l}\text{yesterday}\\ *\text{ tomorrow}\end{array}\right\}$.

c. They will remember to write $\left\{\begin{array}{l}*\text{ yesterday}\\ \text{tomorrow}\end{array}\right\}$.

Of course, the difficulty in assessing the relevance of the pattern in (109)–(110), as we saw with analogous examples in chapter 2, is that it is not obvious whether the unacceptability of some of the sentences that it contains should be traced to a grammatical or a non-grammatical source. Here we shall appeal to the latter possibility, as we did in chapter 2, and claim that the unacceptable tense-TI-adverbial combinations exhibited in (109)–(110) simply describe 'situations' in a fashion inconsistent with the meanings and functions of the TI constructions in question. For example, the use of past-time-denoting adverbials with 'present'- and 'future'-tensed versions of the *expect* + TI construction, much like their use with simple 'future'-tensed sentences, as we discussed in chapter 2, seems to ignore the function of this construction to describe a 'situation' — the 'object' of an expecting 'situation' — that is not yet verified. Similarly, the use of future-time-denoting adverbials with a 'past'-tensed version of the *remember* + TI construction seems incompatible with the 'situation' that this

construction describes — which, as we observed in §1.2.2, is one of both remembering and doing what one is supposed to do. While this non-grammatical account of the unacceptable sentences in (109)–(110) is hardly a precise one, it is arguably more plausible than an account that appeals, say, to a more restricted structural relation between adverbials and TIs. One reason for believing this is that — notwithstanding the unacceptable combinations that we have just examined — TI constructions do not appear to impose very strict requirements on the time of the 'situation' described by the embedded VP. This can be seen in (110a), for example, where both 'anterior' and 'posterior' adverbials may occur acceptably with a 'present'-tensed version of the *remember* + TI construction. This should remind us of an obvious fact: namely, that the relation between the respective 'situations' described by matrix and embedded clauses is not exhaustively described in temporal terms. Thus, while we have been exploring the possibility that many of the syntactic patterns displayed by TI constructions can be described in these terms, it would be unlikely for these patterns to be traceable to a single source, syntactic or other. Such considerations do not, of course, rule out the possibility that the patterns in (109)–(110) will ultimately be revealed to have a grammatical source, but they do cast some doubt on the likelihood of this possibility. Granting this possibility, we might nonetheless suggest as a tentative proposal that the 'linking' behaviour of verbs in non-finite IPs may be assimilated to that of their finite counterparts. This can be done by means of the following conditions on verb 'linking' in TI complements, which closely parallel those proposed in chapter 2 for verb 'linking' in simple sentences:

(111) CONDITIONS ON VERB LINKING IN NON-FINITE CONSTRUCTIONS:

a. [+ V, - N] elements must be in a chain linked to an element lexically associated with the feature [Posterior].

b. No chain may contain α, a head, and β, a maximal projection, each lexically associated with the feature matrix [Anterior, Posterior].

Notice that the 'linking conditions' that we have now given for non-finite Infl elements and for verbs in the clauses headed by them reflect the same distinction between 'intraclausal' and 'interclausal' temporal dependencies that we have seen with finite clauses — the former holding between the verb and Infl or the verb and an adverbial, the latter between lower and higher Infl elements. Once more, then, our analysis has served to draw a parallel between the properties of the two clause types, while at the same time recognizing their differences.

The parallels that we have thus observed between the 'linking' behaviour of verbs in finite and non-finite clauses might lead us posit a similar parallel between the behaviour of 'perfect' forms in these clauses. Inspection of the sentences in (112)

suggests that 'perfect' TIs do, in fact, permit the same range of readings that we have found with their finite counterparts:

(112) a. They seem to have arrived.
b. They seem to have arrived yesterday.
c. They expect to have arrived tomorrow.

Observe that the adverbially unmodified sentence in (112a) has only a single reading, in which the TI's 'R' is located at the time of speech and the 'situation' that it describes is located prior to this time, by virtue of the [Perfect] feature of its 'past' participle. The sentences in (112b–c), however, each have two readings: namely, those which correspond to the 'E' and 'R' readings of their temporal adverbials. Recall that these readings respectively identify the time of the 'situation' and 'R' as the intervals specified by the adverbial. Given these possibilities, we can say that the 'linking' configurations associated with 'perfect' TIs are the same as those associated with finite 'perfect' constructions. Accordingly, TIs without temporal adverbials have a 'linking' configuration in which both the auxiliary verb and the 'past' participle are 'linked' to Infl; and TIs with temporal adverbials have two possible configurations: one in which the verb is 'linked' to the adverbial and the auxiliary to Infl, yielding the adverbial's 'E' reading; and one with the converse 'linking', yielding the adverbial's 'R' reading.

The 'linking' analysis of TIs that we have canvassed in this section thus seems to offer a straightforward account of various readings that we have observed for these clauses, both when they do and when they do not occur with temporal adverbials. A final question that our analysis raises, given our parallel analysis of tense relations in the previous chapter, is whether these two varieties of 'interclausal linking' interact. A clear answer to this question is available in the form of sentences like the following ones:

(113) a. John promised to say that he did not know anything about the crime.
a′. John will promise to say that he did not know anything about the crime.
(Ogihara 1989: 164, (104)–(105))
b. John regretted to say that he did not know anything about the crime.
b′. John will regret to say that he did not know anything about the crime.

As Ogihara (ibid., 164) observes, the temporal interpretation of the lower finite clauses in these sentences is dependent on that of the higher finite clauses, rather than on that of the intervening TI clauses, even though it is the verbs of the latter clauses that select the lower clauses. These data provide good evidence, then, that the tense-tense interactions

described in chapter 3 are independent of the interactions between non-finite Infl elements and tenses that we have described here.

3.2. BIs

In this section we can turn finally to BIs, to which we can offer a very simple analysis, based on the framework that we have already constructed. Since BIs, like TIs, are dependent on matrix clauses for their temporal interpretation, we might posit that they, too, are obligatorily 'linked' to their matrix Infl. As for their particular 'linking' properties, we might see these as following from the absence of inflectional marking on BIs, which has been taken to signal their status as VPs (see e.g. Li 1990: 402–3). Such a status is consistent with the inability of BIs to establish an 'SR' relation distinct from that of the matrix clause; unlike TIs, they have no Infl node, and thus cannot be associated with the temporal feature [Posterior] — which, we have suggested, is the source of the ability to TIs to establish such a relation. In fact, consideration of the data of BIs, as illustrated in (114) (repeated from above), suggests that their temporal behaviour is essentially parallel to that of verbs in other clause types. In other words, BIs are temporally dependent on Infl when they contain no temporal adverbial, and accordingly locate their 'situations' at the same time as the 'R' determined by this Infl. However, they are able to locate 'situations' at a time distinct from this 'R' when they do contain such adverbials (notwithstanding certain 'gaps' in the acceptability of adverbial modification, which likely have a pragmatic source):

(114) a. John saw Bill leave.

a. * John saw Bill leave tomorrow.

b. i. John $\left\{\begin{matrix}\text{made}\\ \text{let}\end{matrix}\right\}$ Bill leave.

ii. John $\left\{\begin{matrix}\text{? made}\\ \text{let}\end{matrix}\right\}$ Bill leave tomorrow.

c. John helped Bill leave tomorrow. (based on (53), (104))

Since BIs thus exhibit the same two 'linking' possibilities as other verbs, and may be 'linked' to a tense, just as verbs in finite clauses may, the 'linking conditions' on the latter verbs, as given in chapter 2 and repeated below, can be applied to them without further stipulation:

(115) CONDITIONS ON INTRACLAUSAL TENSE LINKING:

a. [+ V, - N] elements must be in a chain linked to an element lexically associated with the feature matrix [Anterior, Posterior].

b. No chain may contain α, a head, and β, a maximal projection, each lexically associated with the feature matrix [Anterior, Posterior].

Notice, too, that the 'linking' of BIs is accurately assimilated to 'intraclausal linking', given that these constructions are not associated with their own IP.

4. SUMMARY

In this chapter, we have examined three types of non-finite complements — *to*-infinitives, gerunds, and bare infinitives — with the aim of describing the temporal properties of each. What we found was that a description of gerunds as DPs captured their distinctive propertes, temporal and other; and that a description of TIs and BIs in terms of the 'linking' analysis developed in the previous chapters was similarly successful in capturing their respective temporal properties.

CHAPTER 5

SUMMARY AND CONCLUSIONS

In this study, we have examined both a general approach to the investigation of meaning in natural language and a specific analysis of tense and time reference. The general approach, following the work of McGilvray, has been to take the meaning of a sentence (as opposed to its 'meaningfulness') to be determined largely by its syntax, the latter term being understood to include both lexical and structural properties of a sentence's constituents. Given such an approach, the compositionality of meaning is '[i]n effect... the compositionality of syntax' (McGilvray 1994: III.4). The specific analysis of tense and time reference pursued here has accordingly been syntactic in orientation. However, its basic form has derived as much from the temporal schemata proposed by Reichenbach (1947) as from the devices made available by current syntactic theory.

In accordance with the study's 'Reichenbachian' assumptions, then, it has described tenses as combinations of two morphosyntactic features, [Anterior] and [Posterior], that serve to express relations between 'S' and 'R'. Crucial to this description has been the claim that tenses themselves express no more than an 'SR' relation, and thus significantly underdetermine temporal interpretations. What this means is that the range of readings that tensed sentences receive is due not to the ambiguity of tenses themselves, but to the contribution of other syntactic elements — specifically, verbs and their arguments, temporal adverbials, complementizers, and other tenses — and context in determining these readings. Also crucial to this description of tenses has been the claim that the interpretative relations between verbs and adverbials, verbs and tenses, and tenses and tenses are subject to conditions imposed by a 'linking' mechanism that applies both intra- and interclausally. Such an analysis has been able to account for a wide range of data related to the form and interpretation of tenses.

The discussion of tense and time reference has proceeded as follows. In chapter 1, we examined many proposals for characterizing tense — in particular, those couched in 'notional', 'morphological', 'morphosyntactic', 'semantic', and 'syntactic' terms — in order to find the most advantageous point of departure for this study. What we found was that the first three characterizations did not provide the descriptive tools necessary for a deep understanding of the form and function of tense; and that two of the 'semantic' characterizations that we examined — the 'sentential operator' view and Vlach's (1993) view of tenses as semantically inert — were simply not sensitive enough to the properties of natural language tenses to serve as a useful tool in investigating them. A third 'semantic' characterization of tense, however, that of Reichenbach (1947), turned out to offer a solid foundation for an analysis of tense. An examination

of 'syntactic' characterizations of tense provided us with further analytical structure — in particular, the hypothesis that tenses are syntactically encoded as features associated with an Infl node. This examination also revealed many precedents for the translation of Reichenbach's temporal schemata into syntactic terms, whose strengths and weaknesses we noted, by way of discovering promising approaches to this task. We concluded that the most promising was a feature analysis of tense, along the lines proposed by Rigter (1986) and others. In the final sections of the chapter, we discussed the theory of meaning developed by McGilvray (e.g. 1991), as described above, which would guide our investigation of the relation between the form and meaning of tenses. We examined McGilvray's distinction between 'meaning', which involves 'a speaker's ability to refer to or specify sentential contents', and 'meaningfulness', which involves 'a speaker's ability to judge and make claims about the world' (McGilvray 1991: 145). We also examined the three different kinds of reference that his theory posits: 'picture-reference', which is broadly 'syntactic' in nature, involving a speaker-hearer's ability to 'see' the 'situation' 'displayed in a sentence-in-context' by recognizing its syntactic form and lexical content (ibid., 165, 173, 184); 'identifying reference', which serves to make 'something not immediately present to the speaker salient' by means of abilities associated with our perceptual systems (ibid., 33); and 'exemplificational reference', which requires 'real-world' referents.

Chapter 2 pursued a 'Reichenbachian' approach to the analysis of tenses, focussing on the readings available to sentences with 'future', 'present', and 'perfect' forms. Here we saw that tenses could be described in terms of relations between Reichenbach's 'S' and 'R'; and that the relations between 'R' and 'E' that tensed sentences also specified were best seen to be determined by other factors, including the 'aspectual' morphology associated with 'progressive' forms; the 'telicity' and 'boundedness' of the 'situation' described by the VP; the various properties of temporal adverbials; and context. Our examination of a number of approaches for capturing readings that we had observed, including those that made use of derivational rules, 'hidden structure', and lexical ambiguity, revealed serious empirical inadequacies. More than this, these approaches appeared to miss a crucial generalization about the temporal properties of tenses: namely, that these were 'underspecified', and that the temporal interpretation of tensed sentences was highly dependent on other syntactic elements and context. The chapter ended with an attempt to cash out this observation. This involved a feature analysis of tenses and temporal adverbials, which posited two features, [Anterior] and [Posterior]; and a 'linking' mechanism (based on Higginbotham's (e.g. 1983) 'linking' alternative to standard binding theory), which served to associate verbs with adverbials or Infl. Together, these devices served to describe 'SR' and 'RE' relations in syntactic terms, and thus to model the readings that tensed sentences receive.

In chapter 3, we explored the nature of dependencies between matrix and embedded tenses in relative and verb complement clause constructions; and examined a number of proposals for capturing them, which we divided into two categories: 'derivational' and 'non-derivational'. In the former category were traditional 'SOT' accounts like those of Baker (1989) and Comrie (1986), the more syntactically-oriented account of Hornstein (1990), and the 'interpretatively sensitive' account of Ogihara (1989). In the latter were Rigter's (1986) account in terms of lexical ambiguity, Smith's (1978, 1981) account in terms of 'orientation' and 'sharing', Hornstein's (1990) account in terms of government, and Enç's (1987) and Zagona's (1990) accounts in terms of binding theory. While all of these studies provided important insights into the nature of tense-tense interactions, none of them, on closer inspection, provided an account of these interactions that was either empirically adequate or conceptually satisfying. More specifically, the derivational accounts each posited an 'SOT rule' that altered the form of tenses for mysterious reasons, generated unmotivated ambiguities, and applied within domains that defied syntactic description. Non-derivational accounts removed this empirically suspect rule, but otherwise fared little better, likewise generating unmotivated ambiguities, and suffering from various other conceptual and methodological problems. The alternative that we explored was an extension of the 'linking' analysis proposed in chapter 2, which treated the behaviour of tenses in relative clause and complement clause constructions as essentially the same, and attributed the differences between them to independent factors. We also saw how this analysis could be applied to a description of temporal clauses in English — in particular, the restriction on the occurrence of 'future' tenses in these clauses.

Finally, in chapter 4, we examined the temporal properties of three non-finite complement constructions: those containing '*to*-infinitives' (TIs), gerunds, and 'bare infinitives' (BIs). What we found was that gerunds had the greatest 'temporal freedom', and could describe 'situations' that were either anterior to, posterior to, or simultaneous with the 'situation' described by the matrix clause; that TIs had somewhat less 'temporal freedom', and generally described posterior or simultaneous 'situations'; and that BIs had the least 'temporal freedom', and could generally describe only simultaneous 'situations'. By way of embarking on an analysis of these constructions, we reviewed one proposal, that of Stowell (1982), for describing the differences between TIs and gerunds. While we found that this proposal was unable to account for the relevant data, it nevertheless revealed an important difference between TIs and gerunds: namely, the much greater temporal dependence of the latter on their matrix clauses. This dependence, in turned out, had a simple analysis in terms of Abney's (1987) 'DP hypothesis', which assigned gerunds the status of nominal, rather than clausal, complements. As for the temporal properties of TIs and BIs, these were accounted for by means of an extension of the 'linking' analysis proposed in the previous chapters,

which combined the insights of two 'Reichenbachian' analyses of non-finite complements, those of Rigter (1986) and Hornstein (1990). The basic claims of this analysis were (i) that TIs had an 'impoverished' feature specification, consisting only of [Posterior], which permitted them to establish an 'SR' relation distinct from that of their matrix clauses but still required their heads to be 'linked' to higher tenses; and (ii) that BIs, which displayed essentially the same 'linking' behaviour as main verbs, could be analysed in the same fashion as them.

A number of general conclusions about the analysis of tense have also emerged from this study. One is that the complex data of tense appear to be best analysed not in terms of complex devices or elaborate abstract structure, but rather in terms of complex interactions between quite simple properties, grammatical and other, of sentences in use. We found, in particular, that a close attention to the lexical properties of the verbs that figured in various constructions and to the rôle of context in making certain readings more salient provided the key to an explanation of otherwise mysterious patterns. We also found that the data of tense were more readily explained in terms of conditions on representations rather than in the derivational terms to which much of the research on tense has appealed.

A second conclusion is that the difference between acceptability and grammaticality plays a crucial rôle in understanding the nature of the phenomenon of temporal reference. Indeed, a great deal of our discussion was spent 'problematizing' simple accounts of the unacceptability of sentences that involved complex interactions between structural, semantic, and pragmatic factors; and seeking to determine a more plausible account of this unacceptability. Given that the difference between competing analyses rests crucially on the interpretation of such data, it seems necessary to cast a wide net in considering explanations of them.

A third conclusion is that the study of tense will require a good deal more assessment and comparison of coexisting approaches if any real progress in this study is to be made. In an area that boasts such a burgeoning literature, the importance of determining the strengths and weaknesses of various approaches, and of distinguishing problems of conception from those of execution, is becoming increasingly clear. Much of our discussion was, in fact, devoted to precisely this task, the result of which was the discovery of many promising ideas that have so far gained little currency in the literature, and of many serious conceptual and empirical weaknesses in studies whose claims and assumptions have been readily adopted in others.

In the course of this study, many issues have inevitably been left unresolved. Two in particular stand out. One is the treatment of 'perfect' forms that we have canvassed. Although we have seen good evidence that the basic meaning of the 'past' participle in these forms is not a temporal one, the attempt to describe this meaning in terms of an opposition between 'p' and '¬p' remains too sketchy to represent more

than a direction for future research. The second issue pertains to the 'temporal freedom' that the analysis has claimed for VPs. Given the proposed 'linking conditions', a VP may establish an 'E' by virtue of its relation to a temporal adverbial, and thus independently of the finite or non-finite Infl with which it is associated. This claim, as we have seen, yields good results for certain sentences, such as those with 'futurate' readings, in which the adverbial specifies an interval subsequent to the 'R' determined by the tense. Yet it fares rather poorly for sentences in which the adverbial specifies an interval prior to this 'R', such as those in which a 'future' tense occurs with a past-time-denoting adverbial. These sentences it treats as syntactically well-formed, even though they are generally unacceptable. Because this asymmetry between anterior and posterior 'Es' is rather a robust one, it strongly suggests that the analysis has overlooked an important generalization. We have, however, seen some support for attributing such 'temporal freedom' to VPs, in the form of 'narrative present' sentences in which past-time-denoting adverbials could occur acceptably with 'present' tenses. Despite the apparent rarity of these sentences (which might even be overstated in linguistic discussions of them), their occurrence makes it preferable for an analysis of tense to include them among the structures licensed by the grammar, and to attribute their rarity to non-grammatical factors. The alternative of ruling them out on syntactic grounds seems considerably more problematic, since it offers no explanation of how or why such ungrammatical sentences have managed to become part of ordinary language use. Of course, these considerations hardly guarantee the correctness of the account that has been suggested; on the contrary, they represent no more than hand-waving until further research succeeds in describing the unacceptability of these sentences more precisely.

Finally, it should be noted that many broader questions have also been left open. Perhaps the most important among them is the question of how readily this analysis of tense in English may be applied to the corresponding data of other languages. Given the paucity of crosslinguistic data considered in this study, no 'universalist' cast has been given to the claims made here. It would, nevertheless, be reasonable to suggest that the general description of tenses that has been offered, according to which they significantly 'underspecify' times, and the 'linking' analysis in terms of which this description has been couched, could be fruitfully applied to the study of other languages. Another important question concerns the compatibility of this approach with various current theoretical developments in both syntax and semantics, including Chomsky's 'Minimalist' programme and the theory of 'Optimality' proposed by McCarthy, Prince, Smolensky and others; and such discourse-oriented approaches as 'Discourse Representation Theory' (DRT), as outlined in Kamp & Reyle 1993. Since this study has not considered in any detail the theoretical concerns of the first two approaches, it remains to be seen whether the claims made here can be translated into the terms proposed by either of them. The same remarks, however, do not apply to the

relation of this study to an approach such as DRT, many of whose concerns it shares, and whose results largely complement those that have been reached here.

REFERENCES

Abney, Steven P. 1987. The English noun phrase in its sentential aspect. Doctoral dissertation, Massachusetts Institute of Technology, Cambridge.

Abusch, Dorit. 1988. Sequence of tense, intentionality and scope. In Hagit Borer, ed., *Proceedings of the Seventh West Coast Conference on Formal Linguistics*. Stanford, CA: Stanford Linguistics Association, Stanford University, 1–14.

Ackema, Peter, Ad Neeleman & Fred Weerman. 1992. Deriving functional projections. In Amy J. Schafer, ed., *Proceedings of NELS 23(1)*. Amherst, MA: Graduate Linguistic Student Association, University of Massachusetts, 17–31.

Anderson, John. 1973. *An essay concerning aspect*. The Hague: Mouton.

Anderson, Stephen R. 1988. Inflection. In Michael Hammond & Michael Noonan, eds., *Theoretical morphology: Approaches in modern linguistics*. New York: Academic Press.

———. 1992. *A-morphous morphology*. Cambridge: Cambridge University Press.

Aoun, Joseph, Norbert Hornstein, Gordon Lightfoot & Amy Weinberg. 1987. Two types of locality. *Linguistic Inquiry* 18: 537–77.

Aoun, Joseph & Dominique Sportiche. 1983. On the formal theory of government. *Linguistic Review* 2: 211–36.

Baker, C. Lee. 1989. *English syntax*. Cambridge, MA: MIT Press.

Baker, Mark C. 1988. *Incorporation: A theory of grammatical function changing*. Chicago: University of Chicago Press.

Bally, C. 1912. Le Style indirect libre en français moderne. *Germanisch-Romanistische Monatsschrift* 4: 549–56, 597–606.

Barss, Andrew. 1995. Extraction and contraction. *Linguistic Inquiry* 26: 681–94.

Belletti, Adriana & Luigi Rizzi. 1981. The syntax of 'ne': Some theoretical implications. *The Linguistic Review* 1: 117–54.

Bierce, Ambrose. 1911. *The collected works of Ambrose Bierce. Volume 7: The Devil's dictionary*. New York: Doubleday & Company.

Binnick, Robert. 1991. *Time and the verb*. New York: Oxford University Press.

Bouchard, Denis. 1984. Having a tense time in grammar. *Cahiers linguistiques d'Ottawa* 12: 89–113.

Boyd, Julian & J. P. Thorne. 1969. The semantics of modal verbs. *Journal of Linguistics* 5: 57–74.

Bromberger, Sylvain & Morris Halle. 1991. Why phonology is different. In Asa Kasher, ed., *The Chomsyan turn*. Oxford & Cambridge, MA: Basil Blackwell, 56–77.

Brunot, Ferdinand. 1899. *Précis de grammaire historique de la langue française*. Paris: Masson et Cie.

Chomsky, Noam. 1957. *Syntactic structures*. The Hague: Mouton.

———. 1965. *Aspects of the theory of syntax*. Cambridge, MA: MIT Press.

———. 1981. *Lectures on government and binding*. Dordrecht: Foris.

———. 1986a. *Barriers*. Cambridge, MA: MIT Press.

———. 1986b. *Knowledge of language: Its nature, origin, and use*. New York: Praeger.

———. 1991. Some notes on economy of derivation and representation. In Robert Freidin, ed., *Principles and parameters in comparative grammar*. Cambridge, MA: MIT Press, 417–54.

———. 1993. A minimalist program for linguistic theory. In Hale & Keyser, 1–52.

Close, R. A. 1980. *Will* in *if*-clauses. In Sidney Greenbaum, Geoffrey Leech & Jan Svartvik, eds., *Studies in English linguistics for Randolph Quirk*. London: Longman.

Comrie, Bernard. 1976. *Aspect*. Cambridge: Cambridge University Press.

———. 1985. *Tense*. Cambridge: Cambridge University Press.

———. 1986. Tense in indirect speech. *Folia Linguistica* 20: 265–96.

Costa, Rachel. 1972. Sequence of tenses in that-clauses. In Paul M. Peranteau, Judith N. Levi & Gloria C. Phares, eds., *Papers from the eighth regional meeting of the Chicago Linguistic Society*. Chicago: Chicago Linguistic Society, 41–51.

Cowper, Elizabeth. 1991. a compositional analysis of English tense. In Tom Wilson, ed., *Proceedings of the 1991 annual conference of the Canadian Linguistic Association*. Toronto: Toronto Working Papers in Linguistics, Linguistics Graduate Course Union, Department of Lingusitics, University of Toronto.
Cresswell, Max J. 1973. *Logics and languages*. London: Methuen.
Dahl, Östen. 1985. *Tense and aspect systems*. Oxford: Basil Blackwell.
———. 1992. Review of Hornstein 1990, *As time goes by: Tense and Universal Grammar*. *Language* 68: 645–50.
Declerck, Renaat. 1981. On the role of progressive aspect in nonfinite perception verb complements. *Glossa* 15: 83–114.
———. 1991. *Tense in English: Its structure and use in discourse*. London & New York: Routledge.
Depraetere, Ilse. 1995. On the necessity of distinguishing (un)boundedness and (a)telicity. *Linguistics and Philosophy* 18: 1–19.
Dinsmore, John. 1982. The semantic nature of Reichenbach's tense system. *Glossa* 16: 216–39.
DiSciullo, Anna-Maria & Edwin Williams. 1987. *On the definition of word*. Cambridge, MA: MIT Press.
Dowty, David R. 1979. *Word meaning and Montague Grammar: The semantics of verbs and times in Generative Semantics and in Montague's PTQ*. Dordrecht: Reidel.
———. 1982. Tense, time adverbs, and compositional semantic theory. *Linguistics and Philosophy* 5: 23–55.
Dubinsky, Stanley & Kemp Williams. 1995. Recategorization of prepositions as complementizers: The case of temporal prepositions in English. *Linguistic Inquiry* 26: 125–37.
Ejerhed Braroe, Eva. 1974. *The syntax and semantics of English tense markers*. Stockholm: Institute of Linguistics, University of Stockholm.
Enç, Mürvet. 1981. Tense without scope: An analysis of nouns as indexicals. Doctoral dissertation, University of Wisconsin, Madison. [Distributed by the Indiana University Linguistics Club, Bloomington.]
———. 1986. Towards a referential analysis of temporal expressions. *Linguistics and Philosophy* 9: 405–26.
———. 1987. Anchoring conditions for tense. *Linguistic Inquiry* 18: 633–57.
———. 1990. On the absence of the present tense morpheme in English. Ms., University of Wisconsin, Madison.
Fassi Fehri, Abdelkader. 1993. *Issues in the structure of Arabic clauses and words*. Dordrecht: Kluwer.
Fleischman, Susan. 1982. *The future in thought and language*. Cambridge: Cambridge University Press.
Fowler, Henry W. 1965. *A dictionary of modern English usage*. 2nd edition, revised by Sir Ernest Gowers. New York & Oxford: Oxford University Press.
Fukui, Naoki & Margaret Speas. 1986. Specifiers and projection. *MIT Working Papers in Linguistics* 8: 128–72.
Galton, Antony. 1984. *The logic of aspect: An axiomatic approach*. Oxford: Clarendon Press.
Gazdar, Gerald, Geoffrey K. Pullum & Ivan A. Sag. 1982. Auxiliaries and related phenomena in a restrictive theory of grammar. *Language* 58: 591–638.
Geis, Michael. 1975. English time and place adverbials. *Ohio State University Working Papers in Linguistics* 18: 1–11.
Gelderen, Elly van. 1993. *The rise of functional categories*. Amsterdam & Philadelphia: John Benjamins.
Gillon, Brendan. In press. Autonomy of word formation: Evidence from Classical Sanskrit. *Indian Linguistics* 56.
Giorgi, Alessandra & Fabio Pianesi. 1991. Toward a syntax of temporal representations. *Probus* 3: 187–213.
Green, Georgia. 1974. *Semantics and syntactic irregularity*. Bloomington: Indiana University Press.

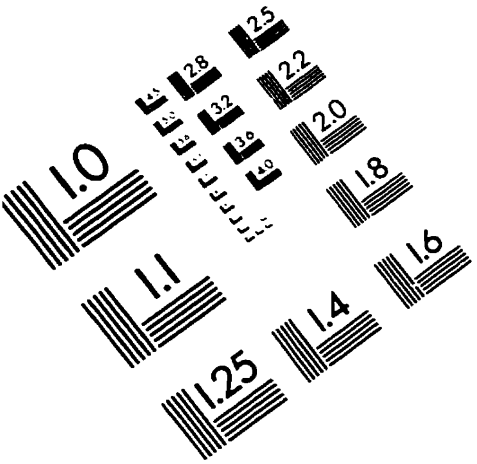
Grice, H. Paul. 1975. Logic and conversation. In Peter Cole & Jerry M. Morgan, eds., *Syntax and semantics 3: Speech acts*. New York: Academic Press.
Guenther, Franz. 1977. Remarks on the present perfect in English. In Christian Rohrer, ed., *On the logical analysis of tense and aspect*. Tübingen: Narr.
Guéron, Jacqueline & Teun Hoekstra. 1989. T-chains and the constituent structure of auxiliaries. In Anna Cardinaletti, Guglielmo Cinque & Giuliana Giusti, eds., *Constituent structure*. Dordrecht: Foris.
———. 1995. The temporal interpretation of predication. In Anna Cardinaletti & Maria Teresa Guasti, eds., *Syntax and Semantics 28: Small clauses*. New York: Academic Press.
Hale, Kenneth, & Samuel Jay Keyser, eds. 1993. *The view from Building 20: Essays in honor of Sylvain Bromberger*. Cambridge, MA: MIT Press.
Halle, Morris & Alec Marantz. 1993. Distributed morphology and the pieces of inflection. In Hale & Keyser, 111–76.
Heim, Irene R. 1982. The semantics of definite and indefinite noun phrases. Doctoral dissertation, University of Massachusetts, Amherst.
Heinämäki, Orvokki. 1978. Semantics of English temporal connectives. Bloomington: Indiana University Linguistics Club.
Heny, Frank. 1982. Tense, aspect, and time adverbials, II. *Linguistics and Philosophy* 5: 109–54.
Higginbotham, James. 1983. The logic of perceptual reports: An extensional alternative to situation semantics. *Journal of Philosophy* 80: 100–27.
———. 1983. Logical form, binding, and nominals. *Linguistic Inquiry* 14: 395–420.
———. 1985. On semantics. *Linguistic Inquiry* 16: 547–593.
Higgins, F. Roger. 1976. The pseudo-cleft construction in English. Doctoral dissertation, Massachusetts Institute of Technology, Cambridge. [Distributed by the Indiana University Linguistics Club, Bloomington.]
Hirtle, Walter H. 1981. Meaning and form in "when"-clauses. In A. Joly & Walter H. Hirtle, eds., *Langage et psychomécanique du langage: études dediées à Roch Valin*. Lille: Presses Universitaires de Lille; Québec: Presses de l'Université Laval, 217–28.
Hornstein, Norbert. 1977. Towards a theory of tense. *Linguistic Inquiry* 8: 521–57.
———. 1990. *As time goes by: Tense and Universal Grammar*. Cambridge, MA: MIT Press.
———. 1995. *Logical Form: From GB to Minimalism*. Oxford & Cambridge, MA: Basil Blackwell.
Huddleston, Rodney. 1969. Some observations on tense and deixis in English. *Language* 45: 777–806.
———. 1977. The futurate construction. *Linguistic Inquiry* 8: 730–36.
Iatridou, Sabine. 1990. About Agr(P). *Linguistic Inquiry* 21: 551–77.
———. 1991. Topics in conditionals. Doctoral dissertation, Massachusetts Institute of Technology, Cambridge.
Jackendoff, Ray. 1990. On Larson's treatment of the double object construction. *Linguistic Inquiry* 21: 427–56.
———. 1990. *Semantic structures*. Cambridge, MA: MIT Press.
Janda, Richard & David Kathman. 1992. Shielding morphology from Exploded INFL. *CLS 28: Papers from the Chicago Linguistics Society*. Chicago: Chicago Linguistics Society, 141–57.
Jenkins, Lyle. 1972. Will-deletion. In Paul M. Peranteau, Judith N. Levi & Gloria C. Phares, eds., *Papers from the eighth regional meeting of the Chicago Linguistic Society*. Chicago: Chicago Linguistic Society, 173–82.
Jespersen, Otto. 1924. *The Philosophy of Grammar*. London: George Allen & Unwin.
———. 1931. *A modern English grammar on historical principles*. Part IV: *Syntax*, Volume III: *Time and tense*. Copenhagen: Ejnar Munksgaard & London: Allen & Unwin.
———. 1940. *A modern English grammar on historical principles*. Part V: *Syntax*, Volume IV. Copenhagen: Ejnar Munksgaard & London: Allen & Unwin.

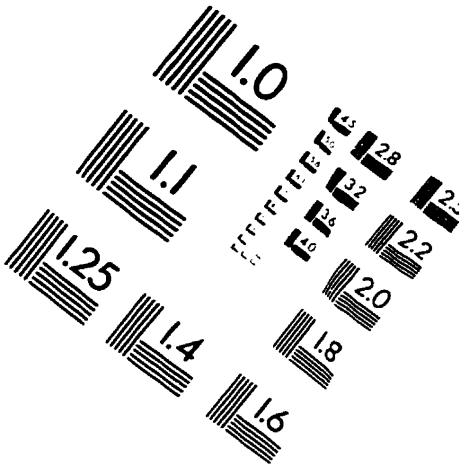
Johnson, Marion. 1981. A unified temporal theory of tense and aspect. In Tedeschi & Zaenen, 145–75.
Joos, Martin. 1964. *The English verb.* Madison & Milwaukee: University of Wisconsin Press.
Joseph, Brian D. & Irene Phillipaki-Warburton. 1987. *Modern Greek.* London, Sydney & Wolfeboro, NH: Croom Helm.
——— & Jane C. Smirniotopolous. 1993. The morphosyntax of the Modern Greek verb as morphology and not syntax. *Linguistic Inquiry* 24: 388–98.
Kamp, Hans & Uwe Reyle. 1993. *From discourse to logic: Introduction to modeltheoretic semantics of natural language, formal logic and Discourse Representation Theory.* Dordrecht: Kluwer.
Kiparsky, Paul. 1968. Tense and mood in Indo-European syntax. *Foundations of Language* 4: 30–57.
——— & Carol Kiparsky. 1970. Fact. In Manfred Bierwisch & Karl Erich Heidolph, eds., *Progress in linguistics: A collection of papers.* The Hague & Paris: Mouton, 143–73.
Klein, Wolfgang. 1992. The present perfect puzzle. *Language* 68: 525–52.
———. 1994. *Time in language.* London & New York: Routledge.
———. In press. A simplest analysis of the English tense-aspect system.
Koopman, Hilda & Dominique Sportiche. 1988. Subjects. Ms., University of California, Los Angeles.
Ladusaw, William. 1977. Some problems with tense in PTQ. *Texas Linguistic Forum* 6, University of Texas, Austin.
Lakoff, Robin. 1970. Tense and its relation to participants. *Language* 46: 838–49.
Landman, Fred. 1992. The progressive. *Natural Language Semantics* 1: 1–32.
Larson, Richard K. 1989. On the double object construction. *Linguistic Inquiry* 19: 335–91.
Lasnik, Howard. 1989. On the necessity of binding conditions. *Essays on anaphora.* Dordrecht: Kluwer, 149–67.
———. 1995. Case and expletives revisited: On Greed and other human failings. *Linguistic Inquiry* 26: 615–33.
——— & Juan Uriagereka. 1988. *A course in GB syntax: Lectures on binding and empty categories.* Cambridge, MA: MIT Press.
Li, Yafei. 1990. On X^0-binding and verb incorporation. *Linguistic Inquiry* 21: 399–426.
Löbner, Sebastian. 1989. German *Schon — Erst — Noch:* An integrated analysis. *Linguistics and Philosophy* 12: 167–212.
Lyons, John. 1977. *Semantics.* Volume 2. Cambridge: Cambridge University Press.
Marantz, Alec. 1984. *On the nature of grammatical relations.* Cambridge, MA: MIT Press.
Matthews, Peter H. 1972. *Inflectional morphology: A theoretical study based on aspects of Latin verb conjugation.* Cambridge: Cambridge University Press.
McCawley, James D. 1971. Tense and time reference in English. In Charles Fillmore & Terence Langedoen, eds., *Studies in linguistic semantics.* New York: Holt, Rinehart, and Winston.
———. 1988. *The syntactic phenomena of English.* Volumes 1–2. Chicago: University of Chicago Press.
McCoard, Robert W. 1978. *The English perfect: Tense-choice and pragmatic inferences.* Amsterdam: North-Holland.
McConnell-Ginet, Sally. 1982. Adverbs and logical form: A linguistically realistic theory. *Language* 58: 144–84.
McGilvray, James A. 1991. *Tense, reference, and worldmaking.* Montréal & Kingston: McGill-Queen's.
———. 1994. A sketch of a sensory-referential theory of meaning. Ms., McGill University, Montréal.
———. 1995a. Let's return to Reichenbach's Reference Point. Ms., McGill University, Montréal.

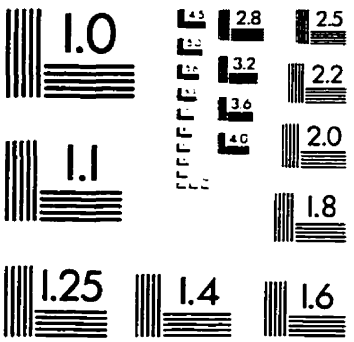
———. 1995b. Properties as intentional objects: How to refer to a property. Ms., McGill University, Montréal.
———. 1995c. A sketch of a syntactic theory of meaning. Ms., McGill University, Montréal.
Michaelis, Laura A. 1994. The ambiguity of the English present perfect. *Journal of Linguistics* 30: 111–57.
Munn, Alan. 1987. Coordinate structure and X-bar theory. *McGill Working Papers in Linguistics* 4(1).
Neale, Stephen. 1988. Events and 'Logical Form'. *Linguistics and Philosophy* 11: 303–21.
Oakeshott-Taylor, John. 1984. Factuality and intonation. *Journal of Linguistics* 20: 1–21.
Oehrle, Richard. 1975. The grammatical status of the English dative alternation. Doctoral dissertation, Massachusetts Institute of Technology, Cambridge.
Ogihara, Toshiyuki. 1989. Temporal reference in English and Japanese. Doctoral dissertation, University of Texas, Austin.
Ollivier, Jacqueline. 1978. *La grammaire française*. Montréal: Editions Etudes Vivantes.
Ormazabal, Javier. In preparation. The syntax of complementation. Doctoral dissertation, University of Connecticut, Storrs.
Oversteegen, Eleonore. 1989. Tracking time: A proposal for the representation of temporal expressions in Dutch. Doctoral dissertation, University of Utrecht.
Page, Steven & Ed Robertson. 1992. If I had $1000000. Scarborough, ON: Warner Music Canada.
Palmer, Harold E. 1924. A grammar of spoken English. Cambridge: Heffer.
Palmer, Frank R. 1974. *The English verb*. London: Longman.
———. 1988. *The English verb* (2nd edition). London: Longman.
Parsons, Terence. 1990. *Events in the semantics of English: A study in subatomic semantics*. Cambridge, MA: MIT Press.
Partee, Barbara H. 1973a. The semantics of belief-sentences. In K. J. Jaakko Hintikka, Julius M. E. Moravcsik & Patrick Suppes, eds., *Approaches to natural language: Proceedings of the 1970 Stanford Workshop on Grammar and Semantics*. Dordrecht & Boston: Reidel, 309–36.
———. 1973b. Some structural analogies between tenses and pronouns in English. *Journal of Philosophy* 70: 601–09.
———. 1984. Nominal and temporal anaphora. *Linguistics and Philosophy* 7: 243–86.
Pollock, Jean-Yves. 1990. Verb movement, Universal Grammar, and the structure of IP. *Linguistic Inquiry* 20: 365–424.
Postal, Paul 1969. On so-called 'pronouns' in English. In David Reibel & Sanford Schane, eds., *Modern studies in English*. Englewood Cliffs, NJ: Prentice-Hall.
Prior, Arthur. 1967. *Past, present, and future*. Oxford: Oxford University Press.
Pullum, Geoffrey K. 1982. Syncategorematicity and English infinitival *to*. *Glossa* 16: 181–215.
———. 1991. English nominal gerund phrases as noun phrases with verb-phrase heads. *Linguistics* 29: 763–99.
——— & Arnold Zwicky. 1991. A misconceived approach to morphology. In Dawn Bates, ed., *Proceedings of the 10th West Coast Conference on Formal Linguistics*. Stanford: Center for the Study of Language and Information, 387–98.
Pustejovsky, James. 1991. The syntax of event structure. *Cognition* 41: 47–81.
———. 1995. *The generative lexicon*. Cambridge, MA: MIT Press.
Quirk, Randolph, Geoffrey Leech, Sidney Greenbaum & Jan Svartvik. 1972. *A grammar of contemporary English*. London: Longman.
———. 1985. *A comprehensive grammar of the English language*. London & New York: Longman.
Raposo, Eduardo. 1987. Case theory and Infl-to-Comp: The inflected infinitive in European Portuguese. *Linguistic Inquiry* 18: 85–109.

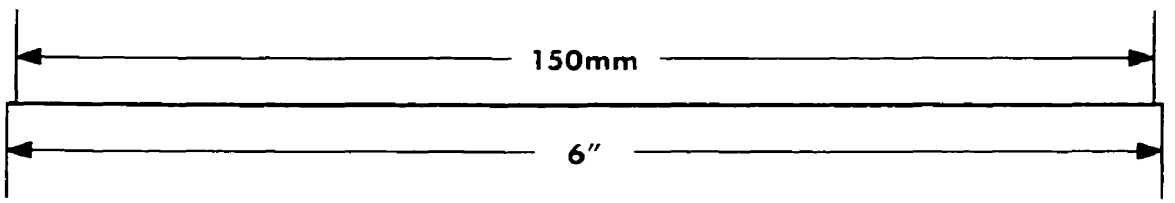
Reichenbach, Hans. 1947. *Elements of symbolic logic.* New York: Macmillan.
Richards, Barry. 1982. Tense, aspect, and time adverbials, I. *Linguistics and Philosophy* 5: 59–107.
Riddle, Elizabeth M. 1978. Sequence of tenses in English. Doctoral dissertation, University of Illinois, Urbana-Champaign.
Rigter, Bob. 1986. Focus matters. In Vincenzo Lo Cascio & Co Vet, eds., *Temporal structure in sentence and discourse.* Dordrecht: Foris, 99–132.
Rivero, Maria-Luisa. 1990. The location of nonactive voice in Albanian and Modern Greek. *Linguistic Inquiry* 21: 135–46.
Russo, Joseph L. 1929. *Elementary Italian grammar.* Boston: Heath.
Sadock, Jerrold M. 1991. *Autolexical Syntax: A theory of parallel grammatical representations.* Chicago: University of Chicago Press.
Sag, Ivan A. 1976. Deletion and Logical Form. Doctoral dissertation, Massachusetts Institute of Technology, Cambridge. [Published, New York: Garland, 1980.]
Salkie, Raphael. 1989. Perfect and pluperfect: What is the relationship? *Journal of Linguistics* 25: 1–34.
Shaer, Benjamin M. 1990. Functional categories, reference, and the representation of tense. Paper presented to the 13th annual GLOW colloquium, Cambridge.
———. 1992. Tense, time reference, and the Eskimo verb. Comprehensive Evaluation paper presented to the Department of Linguistics, McGill University, Montréal, QC.
Shakespeare, William. 1956. *Macbeth.* Alfred Harbage, ed. Baltimore: Penguin Books.
Smith, Carlota S. 1977a. The temporal interpetation of complements in English. *Texas Linguistic Forum* 6: 150-68.
———. 1977b. The vagueness of sentences in isolation. In Woodford A. Beach, Samuel E. Fox & Shulamith Philosoph, eds., *Papers from the 13th Regional Meeting, Chicago Linguistics Society.* Chicago: Chicago Linguistics Society, 568–77.
———. 1978. The syntax and interpretation of temporal expressions in English. *Linguistics and Philosophy* 2: 43-99.
———. 1981. Semantic and syntactic constraints on temporal interpretation. In Tedeschi & Zaenen, 213–37.
Stalnaker, Robert C. 1973. Tense and pronouns. *Journal of Philosophy* 70: 610–12.
Stowell, Timothy A. 1982. The tense of infinitives. *Linguistic Inquiry* 13: 561–570.
Stroik, Thomas. 1990. Adverbs as V-sisters. *Linguistic Inquiry* 21: 654–61.
Swan, Michael. 1980. *Practical English usage.* Oxford: Oxford University Press.
Tedeschi, Philip J. & Annie Zaenen, *Syntax and semantics 14: Tense and aspect.* New York: Academic Press.
Travis, Lisa deM. In preparation. *Inner aspect.* Dordrecht: Kluwer.
Vendler, Zeno. 1967. *Linguistics in philosophy.* Ithaca: Cornell University Press.
Verkuyl, Henk J. 1989. Aspectual classes and aspectual composition. *Linguistics and Philosophy* 12: 39–94.
———. 1993. *A theory of aspectuality.* Cambridge: Cambridge University Press.
Vlach, Frank. 1993. Temporal adverbials, tenses and the perfect. *Linguistics and Philosophy* 16: 231–83.
Wachtel, Tom. 1982. Some problems in tense theory. *Linguistic Inquiry* 13: 336–41.
Warner, Anthony R. 1993. *English auxiliaries: Structure and history.* Cambridge: Cambridge University Press.
Wekker, H. Chr. 1976. *The expression of future time in contemporary British English.* Amsterdam & New York: North-Holland.
Zagona, Karen. 1990. Times as temporal argument structure. Ms., University of Washington, Seattle.
———. 1992. Tense-binding and the construal of present tense. In Christiane Laeufer & Terrell A. Morgan, eds., *Theoretical analysis in Romance linguistics: Selected papers from the nineteenth Linguistic Symposium on Romance Languages.* Amsterdam & Philadelphia: John Benjamins.
Zydatiß, Wolfgang. 1978. 'Continuative' and 'resultative' perfects in English? *Lingua* 44: 339–62.

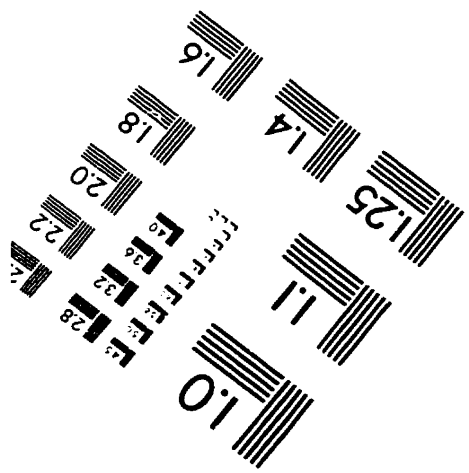
IMAGE EVALUATION
TEST TARGET (QA-3)

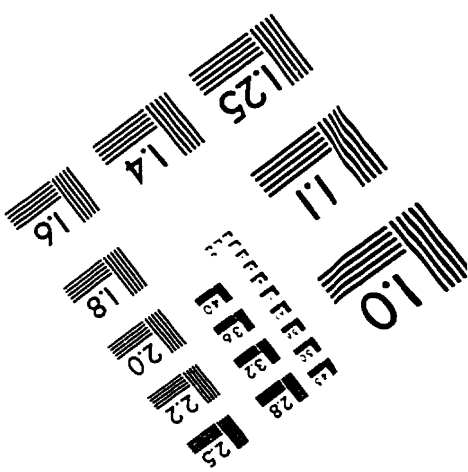












APPLIED IMAGE, Inc
1653 East Main Street
Rochester, NY 14609 USA
Phone: 716/482-0300
Fax: 716/288-5989

© 1993, Applied Image, Inc., All Rights Reserved