Tense, aspect, and modal markers
in Paciran Javanese

Jozina Vander Klok

Department of Linguistics
McGill Linguistics, Montréal

Honours B.A., *Études françaises*, York University, 2006

September 2012

A THESIS SUBMITTED TO MCGILL UNIVERSITY IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS OF THE DEGREE OF

DOCTOR OF PHILOSOPHY

Dedicated to my parents,

Don Vander Klok
and
Gwendolyn Dekker,

for their love and encouragement
every step of the way.

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ABSTRACT

This dissertation examines a number of syntactic and semantic aspects of the full set of TAM (tense-aspect-modal) markers in the dialect of Paciran Javanese (Western Malayo-Polynesian, Austronesian), spoken in East Java, Indonesia.

First, I identify the inventory of TAM markers in Paciran Javanese and determine their grammatical category. Specifically, I show that there is a set of adverbs (*koyoke, ketoke, jekene* 'direct.evidential', *watake, bonake* 'indirect.evidential', *mesthine* 'EPIST.should', *kudune* 'ought', *paleng* 'maybe', *mesthi* 'EPIST.must') as well as a set of auxiliaries (*kudu* 'DEONT.must', *lagek* 'PROG', *ape* 'FUT', *wes* 'PERF', *tau* 'EXP.PERF', *oleh* 'allow', *iso* 'can'). Furthermore, I establish that TAM markers individually observe a strict relative order in Paciran Javanese beyond the observation that TAM adverbs > TAM auxiliaries, maintaining the proposal for a universal hierarchy of TAM projections as in Cinque (1999). Investigating the order in Paciran Javanese provides insight in particular into the syntactic position of root modal projections, left open in Cinque (1999): the necessity root modal projection must be separated from the possibility projection by a low aspectual projection.

Second, I focus on the syntax of the set of TAM auxiliaries in Paciran Javanese. I show that three different constructions of (i) VP-topicalization, (ii) subject-auxiliary answers to yes-no questions, and (ii) auxiliary fronting in yes-no questions all partition the set of TAM auxiliaries into the same two groups. As well, I present the unique properties of each of these syntactic constructions in Paciran Javanese. In my analysis of each construction within the Minimalist framework (Chomsky 1995), I propose that an intermediate complementizer-like projection serving as a phase edge above vP mediates the partition of two sets of TAM auxiliaries in all three constructions despite their different properties.

Third, I establish the lexical specification of the modal system in Paciran Javanese based on results from a variety of fieldwork methods such as a modal questionnaire that I designed, storyboards (totemfieldstoryboards.org), elicitation and interviews. I find that many modals such as *oleh* 'allow', *iso* 'can', *mesthi* 'EPIST.must' in Paciran Javanese lexically specify for both the modal force (possibility vs. necessity) and the type of modality (e.g. *epistemic*, based on the available evidence; *deontic*, based on a body of rules and regulations; etc.). I show that other modals only lexically specify for the modal force, but not for the type of modality: for instance, *kudu* can only have necessity force, but allows for all root modal interpretations.

Marqueurs de temps, aspect et modalité en javanais de Paciran

Jozina Vander Klok

RÉSUMÉ

Cette dissertation examine plusieurs aspects syntaxiques et sémantiques d'un groupe de marqueurs de TAM (temps–aspect–modalité) du dialecte javanais de Paciran (Malayo-polynésien occidental, Austronésien), parlé à l'est de Java, Indonésie.

Premièrement, j'identifie l'inventaire des mots TAM en javanais du Paciran et je détermine leur catégorie grammaticale. Spécifiquement, je démontre qu'il y a un groupe d'adverbes (*koyoke, ketoke, jekene* 'DIR.connu', *watake, bonake* 'INDIR.connu', *mesthine* 'EPIST.devrait', *kudune* 'DEONT.devrait', *paleng* 'peut-être', *mesthi* 'EPIST.doit') ainsi qu'un groupe d'auxiliaires (*kudu* 'DEONT.doit', *lagek* 'PROG', *ape* 'FUT', *wes* 'PARF', *tau* 'EXP.PARF', *oleh* 'permet', *iso* 'CIRC.peut'). De plus, j'établie que chacun des marqueurs TAM observe un ordre relatif strict en javanais du Paciran au delà de l'observation que les adverbes > auxiliaires TAM, en conformité avec la proposition de Cinque (1999) pour une hiérarchie universelle des projections fonctionnelles TAM. L'investigation sur l'ordre des mots TAM en javanais du Paciran avance la recherche en particulier sur la position syntaxique des projections modales de racine, que Cinque (1999) n'a pas abordée: la projection de la modalité universelle de racine doit être séparée de la projection de la modalité existentielle de racine par une projection d'aspect.

Deuxièmement, je me concentre sur la syntaxe des marqueurs TAM auxiliaires du javanais du Paciran. Je montre que trois constructions différents, (i) la topicalization du syntagme VP, (ii) des réponses sujet–auxiliaire aux questions polaires et (iii) le mouvement de l'auxiliaire des questions polaires, séparent les marqueurs TAM auxiliaires en les mêmes deux groupes. De plus, je présente les propriétés uniques de chaque construction syntaxique ci-dessus du javanais du Paciran. Dans mon analyse formelle de chaque construction dans le programme Minimaliste de Chomsky (1995), je propose qu'une projection 'complémenteur' intermédiaire qui sert de limite de phase agit comme médiateur entre les deux groupes des marqueurs TAM auxiliaires dans les trois constructions malgré leurs propriétés différentes.

Troisièmement, en ce qui concerne l'aspect sémantique, j'établis le système de modalité du javanais du Paciran, basé sur une variété de méthodes de travail sur le terrain qui comprennent un sondage sur la modalité que j'ai créé, des *storyboards* (totemfieldstoryboards.org), des élicitations et des entrevues. Je trouve que plusieurs modaux dont *oleh* 'permet', *iso* 'CIRC.peut' et *mesthi* EPIST.doit' font partie en javanais du Paciran spécifient lexicalement la force de modalité (universelle vs. existentielle) ainsi que le type de modalité (*épistémique*, qui est compatible avec les données disponibles, *déontique,* qui est compatible avec un ensemble des règles, etc.). Je montre que d'autres modaux spécifient seulement la force et non le type de modalité : par exemple, *kudu* peut avoir seulement la force universelle, mais il permet tous les interprétations modales de racine.

Acknowledgements

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APPENDIX 1.

List of Abbreviations

1	1st person
2	2nd person
3	3rd person
AFM	aforementioned
APPL	Applicative
AV	Actor Voice
CL	Clitic
COMP	Complementizer
CP	Complimentizer Phrase
DEF	Definite
DEM	Demonstrative
DEONT	Deontic
DP	Determiner Phrase
EPIST	Epistemic
EXP.PERF	Experiential Perfect
FEM	Feminine
FOC	Focus
FUT	Future
K	*Krama* (Formal speech level)
LF	Logical Form
MASC	Masculine
NEG	Negation
NEGP	Negative Phrase
NOM	Nominal
PASS	Passive
PF	Phonological Form
PERF	Perfect
PL	Plural
PP	Prepositional Phrase
PROG	Progressive
PRT	Particle
Q	Question
RED	Reduplicate
REL	Relativizer
SG	Singular
SVO	Subject-Verb-Object
TAM	Tense-Aspect-Modal
TP	Tense Phrase
TOPP	Topic Phrase
uF	Uninterpretable/unvalued feature
v	'little *v*'
*v*P	'little *v*' Phrase
VP	Verb Phrase

Chapter 1.
Introduction

1   Introduction

There are two main objectives of this introductory chapter. The first objective is to present the main goals of this dissertation, discussed in §2, and provide a detailed outline of its organization, given in §3. The second goal is to situate the research of this dissertation. This involves presenting an outline of the general methodology used in this dissertation in §4, introducing the dialect of Javanese spoken in Paciran, East Java, Indonesia which is the focus in this dissertation in §5, speech levels in Javanese §6, and two key properties of this language in §7. Finally, in §8, I familiarize the reader to the TAM (tense-aspect-modal) markers that will be examined throughout this dissertation.

2   Goals of the dissertation

In this dissertation, I investigate a number of aspects of the TAM (tense-aspect-modal) marker system of Paciran Javanese, a dialect spoken in a village along the north coast of East Java, Indonesia.

The goals of this dissertation are threefold. One, I aim to provide the first complete inventory of TAM markers in the dialect of Paciran Javanese. Despite some initial research on the set of TAM markers in other dialects, such as Conners (2008) on Tengger Javanese, Cole et al. (2008) on Peranakan Javanese, and Horne (1961), Robson (1992) on 'Standard' Javanese as spoken in Yogyakarta and Solo, a detailed description of the full set of TAM markers in this Austronesian language has yet to be presented. It is my aim that the description of the full inventory of TAM markers I provide for Paciran Javanese will inform forthcoming descriptions of other dialects in Javanese and also other languages of the Austronesian family.

Two, I aim to further develop the syntax of the extended VP projection (Grimshaw 1991), concentrating on the syntax of the set of TAM auxiliaries in Paciran

Javanese. I show that three different constructions of (i) VP-topicalization, (ii) subject-auxiliary answers to yes-no questions, and (ii) auxiliary fronting in yes-no questions all partition the set of TAM auxiliaries into the same two groups. In my analysis of each construction within the Minimalist framework (Chomsky 1995), I propose that an intermediate complementizer-like projection serving as a phase edge above vP mediates the partition of two sets of TAM auxiliaries in all three constructions despite their different properties. In my formal analysis of this phenomena under Generative Grammar, I aim to provide further support for a universal syntactic structure.

Third, I establish the lexical specification of the modal system in Paciran Javanese based on results from a variety of fieldwork methods such as a modal questionnaire that I designed, storyboards (totemfieldstoryboards.org), elicitation and interviews. I find that many modals such as *oleh* 'allow', *iso* 'can', *mesthi* 'EPIST.must' in Paciran Javanese lexically specify for both the modal force (possibility vs. necessity) and the type of modality (e.g. *epistemic*, based on the available evidence; *deontic*, based on a body of rules and regulations; etc.). I show that other modals only lexically specifies for the modal force, but not for the type of modality: for instance, *kudu* can only have necessity force, but allows for all root modal interpretations. This semantic fieldwork on Paciran Javanese opens the door for cross-linguistic research towards a typology of modal systems based on lexical specification, which I speculate on in the final chapter.

3 Organization of the dissertation

The basic organization of this dissertation is the following. After introducing the full array of TAM markers at the end of this chapter, Chapters 2 and 3 are concerned with describing a number of properties of these markers; namely their grammatical category and their relative syntactic position. Chapter 4 then attacks the curious partition of two classes of TAM auxiliaries, and I provide a formal syntactic analysis of the three constructions that observe this partition: auxiliary fronting in yes-no questions, VP-topicalization, and subject-auxiliary answers to yes-no questions. In Chapter 5, I focus on the modal markers within the TAM system; specifically, I show how these markers carve up the modal space in Paciran Javanese. I now give a fuller summary of each of the chapters.

3.1 Chapter summaries

In Chapter 2, *Category types of TAM markers in Paciran Javanese*, I show that TAM markers in this dialect of Javanese are one of two grammatical categories: adverb or auxiliary. I follow some tests and review others used in Cole et al. (2008) in determining the grammatical category of six TAM markers in Peranakan Javanese. For Paciran Javanese, in determining whether a TAM marker is an adverb, I investigate their syntactic distribution as well as their morphology. Determining whether a TAM marker is an auxiliary is based on a fixed syntactic position as well as a number of negative results. For example, in order to show that a TAM marker is an auxiliary, I provide evidence that those markers are not any of the other grammatical categories such as an adverb, verb, adjective or noun. I conclude that *ketoke, koyoke, jekene* 'direct.evidential', *bonake, watake* 'indirect.evidential', *mesthine* 'epistemic.should', *kudune* 'ought', *mesthi* 'epistemic.must' and *paleng* 'maybe' are all TAM adverbials while *kudu* 'deontic.must', *lagek* 'PROG', *ape* 'FUT', *wes* 'PERF', *tau* 'EXP.PERF', *iso* 'can', *oleh* 'allow' are all TAM auxiliaries.

Chapter 3, *Relative ordering of TAM markers in Paciran Javanese*, considers the relative syntactic position of each TAM marker in light of the universal ordering of such markers as proposed in Cinque (1999). I show that TAM markers in Paciran Javanese follow the strict relative ordering as argued for in Cinque (1999). Further, the division in grammatical category of TAM markers in Javanese seems to be reflected in the syntactic height: high TAM markers are all adverbials while low TAM markers are all auxiliaries. In terms of individual strict relative order, however, some markers in Paciran Javanese appear to have free relative order. I show that these counterexamples to Cinque's strict hierarchy of TAM projections are only apparent, maintaining the proposal that such a hierarchy is universal. Specifically, I show that the apparent counterexamples are due to different structures (head-modification vs. phrasal selection) or a confusion regarding two positions for the marker *kudu* that have different semantics (low *kudu* is only interpreted as 'want' and high *kudu* is only interpreted as 'deontic.must'). In addition to providing support for a universal hierarchy of functional projections as advocated in Cinque (1999), this research on Javanese also offers new insight into the exact location of root modal

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projections in this hierarchy. Specifically, the necessity root modal and possibility root modal projections must be separated by a low aspectual projection.

Chapter 4, *Classes of auxiliaries in Paciran Javanese*, takes a closer look at the set of TAM auxiliaries, inspired by the partition found to hold in Peranakan Javanese by Cole et al. (2008) based on the ability of an auxiliary to front or not in yes-no questions. I find in the dialect of Paciran Javanese that this same partition also holds for auxiliary fronting in yes-no questions. One set consists of *kudu* 'deontic.must', *lagek* 'PROG', *wes* 'PERF', *ape* 'FUT' and the other consists of *tau* 'EXP.PERF', *oleh* 'allow', *iso* 'can'. Strikingly, I find that this same partition holds as well in two other constructions: VP-topicalization and subject-auxiliary answers.

This chapter combines both description and formal explanation of these three constructions. I first describe the specific properties of the three constructions, which to my knowledge has not been reported for VP-topicalization or types of answers to yes-no questions Javanese. In addition to the strategy of auxiliary fronting in yes-no questions as described in Cole et al. (2008) for Peranakan Javanese, I also identify other strategies to form a yes-no question in the dialect of Paciran Javanese.

I then offer an analysis for each construction, grounded in the fact that Javanese syntax displays properties of both an A-type language and a B-type language, similar to Indonesian (Travis 2008), within the proposed X/XP parameter (Travis 2005, 2006). That is, I propose that VP-topicalization and subject-auxiliary answers involve spec-to-spec movement, which exemplifies A-type language properties, while I suggest that auxiliary fronting in yes-no questions involves XP-remnant movement, which exemplifies B-type language properties (and is contrary to a head-movement analysis proposed in Cole et al. 2008). Despite these different properties, I propose that all three constructions are syntactically similar in that an intermediate complementizer-like projection, MP, mediates the distinction of the two groups of TAM auxiliaries. I suggest that this projection is a phase edge; as such, research on this partition in Javanese sheds light on the position of this projection along the universal spine. (By 'spine', I refer to the XPs that constitute the clause.) Specifically, the Javanese facts suggest that such a phase edge is above low NegP as well as some low auxiliaries but below TP, similar to proposals in

e.g. Aldridge (2010). Chapter 4 therefore provides additional data on the kind of partition among the set of auxiliaries in Javanese as well as insights on the universal clausal spine.

Turning to Chapter 5 on *The modal system in Paciran Javanese*, I focus on establishing the interpretation of each modal marker in this dialect through a number of different fieldwork methods. Although some research beyond description found in grammars has been done on modality in other Austronesian languages – such as Asarina and Holt (2005) on Tagalog; Copley (2011) and Fortin (2012) on Indonesian – most work focuses on a subset of the modality system. In the current work on Paciran Javanese, I aim to describe how the whole modal system is carved up. These markers include *kudune* 'ought'*, mesthine* 'EPIST.should'*, mesthi* 'EPIST.must'*, paleng* 'maybe'*, kudu* 'DEONT.must'*, oleh* 'allow'*, iso* 'can', introduced in this Chapter. In particular, I use methods such as elicitation, interviews, natural conversational recordings, storyboards (totemfieldstoryboards.org), and a questionnaire on modality that I designed. Each of these methods is used to better understand the interpretation of modal markers in Javanese based on the kind of modal force (e.g. possibility, necessity) and the type of modality allowed (e.g. *epistemic*, in view of the evidence available; *deontic*, in view of a body of rules or regulations; etc.). I find that many markers in Paciran Javanese lexically specify for both the modal force and the type of modality, different from typical modals in many well-studied Indo-European languages such as English, French, Italian or German (e.g. Kratzer 1977, 1981) as well as different from typical modals in St'át'imcets (Lilloet Salish) as analyzed in Rullmann et al. (2008). For example, a modal such as *mesthi* 'EPIST.must' can only be interpreted as having necessity modal force (and not possibility as well) and only allowing an epistemic interpretation (and not deontic or another type of modality as well).

In the final chapter, *Conclusion and further remarks*, I provide a conclusion as well as introduce an extension that arises from the research in this dissertation. This extension concerns the cross-linguistic implications of the type of modal system in Paciran Javanese. I explore the possibility of parameterizing the type of modal system based on two dimensions of (i) modal force and (ii) the type of modality. However, I ultimately conclude that such a parameterization may be too strong of a hypothesis and

that further work must be undertaken on modal systems in understudied languages to explicitly evaluate this idea.

I now turn to the second objective of the introductory chapter in the next sections, which aims to situate the research of this dissertation in terms of the methodology (§4), the dialect (§5), basic properties of Javanese (§6, §7), and the set of TAM markers explored (§8).

4   Methodology

In the data collection for this dissertation, I draw from a number of techniques such as interviews, natural conversation, elicitation, storyboards (totemfieldstoryboards.org) and questionnaires to ensure that the syntactic and semantic properties are explored from a variety of different angles. In effect, it is in the fieldworker's best interest to try to use as many tools as possible, as different methods have different advantages and disadvantages.

In the following subsections, I discuss the fieldwork methods I have used in gathering syntactic data; namely recorded interviews and conversations in §4.1 and elicitation in §4.2. Concerning semantic fieldwork, I have used additional methods such as storyboards and a questionnaire on modality; these tools are described in detail in Chapter 5.

4.1   Interviews and conversations

Recordings of interviews and conversations illustrate the use of a TAM marker in natural speech. In my database on Paciran Javanese, there is a total of approximately 9 hours of recorded interview/conversation. Of this total time, approximately 8 hours have been transcribed in ELAN by one language consultant from Paciran. I used an Olympus WS-331M audio recording device for all of the recordings.

Concerning the interviews, I conducted fourteen interviews towards the end of my stay. For nine of these interviews, I was accompanied by another speaker who had a good grasp of English, so in cases of miscommunication or misunderstanding, this speaker could clarify a question for me. Of these interviews, six speakers were between the ages of 20 to 35, four between 35 to 50 years old, and three speakers were older than 50 years old. Gender was balanced in each age category (with two female speakers, one male

speaker in the 50-plus year old category). The interviews centred on the speaker's introspection of the use of their dialect. For instance, the questions concerned the speaker's own use of the dialect spoken in Paciran, differences with other dialects in close-by villages and city centres further away, differences with the elaborate speech level distinction in Javanese, their thoughts on the education of Javanese, Indonesian, English in the school system, etc. These questions were an effort to bring out the use of certain TAM markers. Interviews ranged from 10 minutes to 45 minutes.

Concerning the recordings of natural conversation, I recorded four conversations and one speech. The conversation settings were, for example, when I went with a speaker to visit another home to pay respects to the family of a deceased (*ngelewat*) or to visit the newly wed couple (*kemantenan*). The recorded speech was at a *ngaji* for women, where women gather to recite the Holy Qur'an. Some women would make speeches at these events, which are similar to a sermon.

4.2 Elicitation

Elicitation comprised a major part of my data collection for this research, especially concerning the syntactic data. I follow the approach to fieldwork as outlined in Matthewson (2004): grammatical and felicity judgments about the target sentence are taken to be *results*, while translations and speaker's comments are taken to be *clues*.

I worked with four speakers in one-to-one elicitation sessions, and out of these four speakers, I worked closely with two of them in particular. I also had the opportunity to conduct elicitation in a group-setting with teachers at a local high school every week. It was culturally appropriate that I worked with women in individual elicitation sessions, and in group sessions, I also worked with men. All language consultants were born and raised in Paciran, and did not live outside the village for an extended period of time.

Gathering syntactic data on TAM markers primarily involved using only the object language (Javanese) and asking for grammatical judgments based on permutations of the target sentence in the object language. For instance, I used this approach in investigating the relative order of TAM markers. The procedure is as follows. A sentence in the object language such as (1)a is first presented to the language consultant, and the consultant is asked to give a grammaticality judgment of this first sentence. Following the grammaticality judgment, I would change the order of the TAM markers (here *ketoke*

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'direct.evidential' and *ape* 'FUT') to the inverse order of the first sentence, as shown in (1)b, and then ask for a grammaticality judgment of this permuted sentence.

(1)   a.   uwit-e   iku   **ketok-e ape** ruboh
                  tree-DEF   DEM seem-NE FUT fall
                  'That tree seems like it's going to fall' (1mar11.036)

        b.   * uwit-e   iku   **ape ketoke** ruboh
                  tree-DEF   DEM FUT   seem-NE fall
                  ('That tree seems like it's going to fall') (1mar11.037)

In addition to using the object language in elicitation, I also used a meta-language in the sense of a language known by both linguist and consultant that is not the object language (Mathewson 2004:379). The meta-language, in this case English or Indonesian, was particularly useful in the first stages (e.g. 'How do you say...?') and in follow-up. In follow-up in particular, consultants would often switch to English or Indonesian to talk about a concept or structure in Javanese. To this end, the primary language consultants I worked with had a good grasp of English. However, as mentioned, translations were only used as clues to how the structure or meaning of the particular TAM marker was used in Javanese.

I have also made use of overhearing certain words or constructions 'in the wild', living in Paciran for six months. Specifically, sometimes I would ask for felicity judgments on the spot: I would notice certain words that were used in a certain context, and then ask if they could replace it with another word in that same sentence. In addition to impromptu elicitation sessions in the middle of some one's conversation, I also made extensive use of overheard conversations as inspiration for discourse contexts in preparing for formal elicitation sessions.

I could not use text-gathering as a method for the Javanese dialect spoken in Paciran because, as far as I know, this dialect is not written (except for texting on cellphones, etc.). Dialects that are written in Javanese are those in city centres such as in Yogya or Solo ('standard' Javanese, Central Java), Surabaya (East Java) or Semarang (Central Java). For example, there are two magazines that are published in Surabaya: *Jaya Raya* and *Panyebar Semangat* (Hoogervorst 2009:69). In Paciran, written language is composed primarily in Indonesian, the national language, which is a dialect of Malay.

5 Dialect spoken in Paciran, East Java, Indonesia

Javanese has significant dialectal differences, most of which are under-documented. Therefore, in order to be consistent, the data reported and analyzed in this dissertation is only on Javanese spoken in Paciran, East Java, Indonesia. The data is almost exclusively from fieldwork conducted from September-December 2010 in Yogyakarta with one speaker from Paciran and then in January–August 2011 in the Paciran village with multiple speakers. In addition, I have included some examples from my first language consultant with whom I started working in Montreal, Canada in 2008 and who is from this village in Paciran. Although I have worked with other speakers, one from Malang, East Java and one from Jember, East Java, I have not included examples from these speakers due to potential dialectal variation. Throughout the dissertation, I have indicated for each example the reference of the data.

In order to situate the dialect of Paciran Javanese that is reported on in this dissertation, I first give an overview of the three main dialects of Javanese as spoken in Indonesia: West Javanese, Central Javanese, and East Javanese. The Javanese spoken in Paciran, East Java, would fall under the broad category of 'East Javanese'. Secondly, I discuss further dialectal variation within East Java as given in Hoogervorst (2008) to specifically locate the dialect as spoken in Paciran.

5.1 Main dialects of Javanese

There are approximately 90 million speakers of Javanese in Indonesia.[1] Javanese is the most populous language in Indonesia, a country of around 240 million people. It is primarily spoken on the island of Java, although there are pockets throughout other islands in Indonesia through resettlement programs by the government (*transimmigrasi*) such as in Papua (Irian Jaya), Sulawesi, Sumatra, and Kalimantan.[2] These different islands are shown in the map of Indonesia in Figure 1:

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[1] Javanese is also spoken in pockets of Malaysia, Singapore, the Netherlands, and the United States. Varieties of Javanese are spoken in Suriname and New Caledonia as well, but are reported to only be partially intelligible with difficulty with the variety spoken in Indonesia. (http://www.ethnologue.org/show_language.asp?code=jav, accessed July 25, 2012)
[2] Source: http://www.ethnologue.org/show_language.asp?code=jav

Figure 1. Map of Indonesia

Javanese is one of the main languages spoken on the island of Java, and it is primarily spoken in East and Central Java, as shown in Figure 2 below. Other languages spoken in Java include Madurese in parts of East Java and Sundanese in West Java. West Java also hosts pockets of Badui, Betawi, and Petjo (a Dutch-based creole). Furthermore, Indonesian, the national language of Indonesia, is widely spoken across Java. The aforementioned languages spoken in Java are all part of the Western Malayo-Polynesian branch of the Austronesian family.

Figure 2. Map of languages on Java and Bali
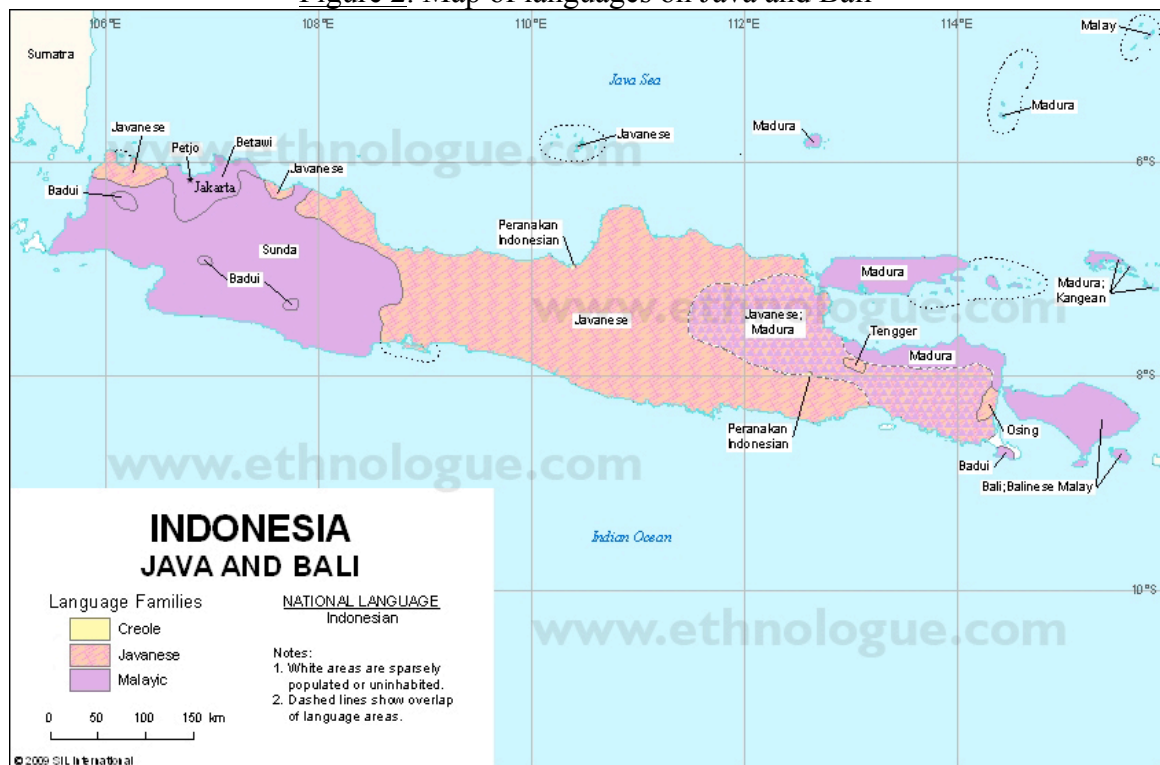
Dialects of Javanese as spoken on the island of Java are traditionally sub-divided into three main dialects based on lexical and grammatical affiliation (Hoogervorst 2008:10, *inter alia*): West Javanese, Central Javanese, and East Javanese, which roughly correspond with the geographic division of provinces in Java. This is shown by comparing the geographical division of languages in Figure 2 to that of provinces in Figure 3 below.[3]

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[3] Note that the dialectal terms here ('West Javanese, Central Javanese, East Javanese') do not refer strictly to geography – technically, Western East Java communities speak Central Javanese dialects (Hoogervorst 2008).

Figure 3. Map of Provinces in Java

Although these three main dialects are recognized, often from a Javanese point of view, the distinction lies in 'standard' vs. 'non-standard' Javanese. 'Standard Javanese' hails from Yogyakarta (Yogya) and Surakarta (Solo) (e.g. Suharno 1982:126); this dialect has prestige in these two court cities as they have been important cultural centres since the Mataram Kingdom in the 8th Century. Yogyakarta is designated as a special region (DIY, *Daerah Istimewa Yogyakarta*) and to this day is headed by the Sultan, the Javanese monarchy. Errington (1985:2) writes that these cities are "...of the most refined, sophisticated instances of traditional Javanese culture."

'Non-standard Javanese' is anywhere else. Geographically, Hoogervorst (2008:9) notes that the Javanese distinguish "...the Kejawèn dialects spoken in and around the principalities of Yogyakarta and Surakarta on one side and the Pesisir dialects spoken in the peripheries on the other side". Descriptively, Suharno (1982:126) writes "...non-standard Javanese is characterised by the use of vocabularies which are either unknown in standard Javanese or known only as *kasar* 'rude'." Paciran Javanese, hailing from East Java as I show in the following section, falls into the category of 'non-standard Javanese' or 'Pesisir dialects'.

5.2 Geographical location of Paciran

Paciran is located on the north coast of East Java between major city centres Semarang to the west and Surabaya to the east. The following map in Figure 4 indicates the location of Paciran (C) in relation to Yogyakarta (B) and Jakarta (A) on the island of Java.

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Figure 4. Map of Java indicating Jakarta-Yogyakarta-Paciran
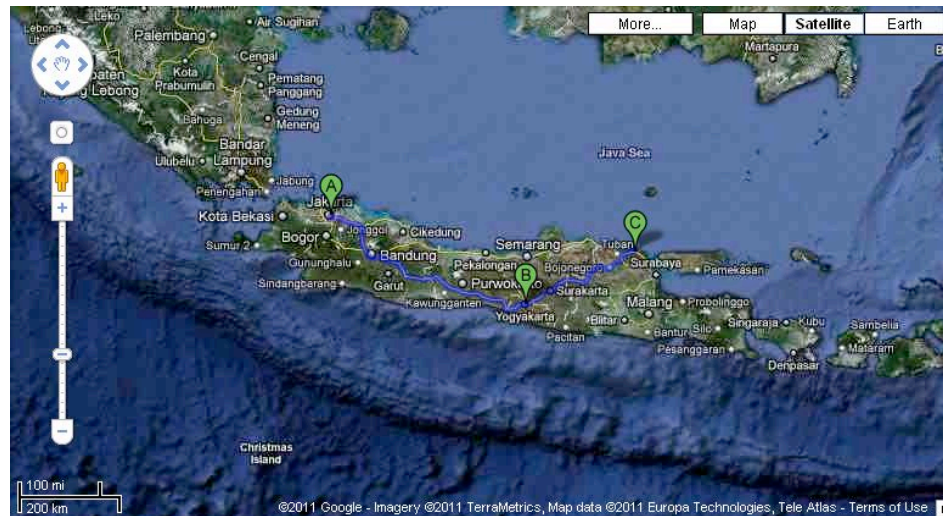
As shown in Figure 5 below, Paciran is flanked by the village *Kandang Semongkon* to the west, the village *Tunggul* to the east, the village *Sumur Gayam* to the south, and the Java Sea to the north. The population of the village of Paciran is approximately 15000 (*Profil desa,* village profile 2010). The village of Paciran is located in the district (*kecamatan*) of Paciran and in the region (*kabupaten*) of Lamongan.

Figure 5. Map of a section of the north coast of East Java
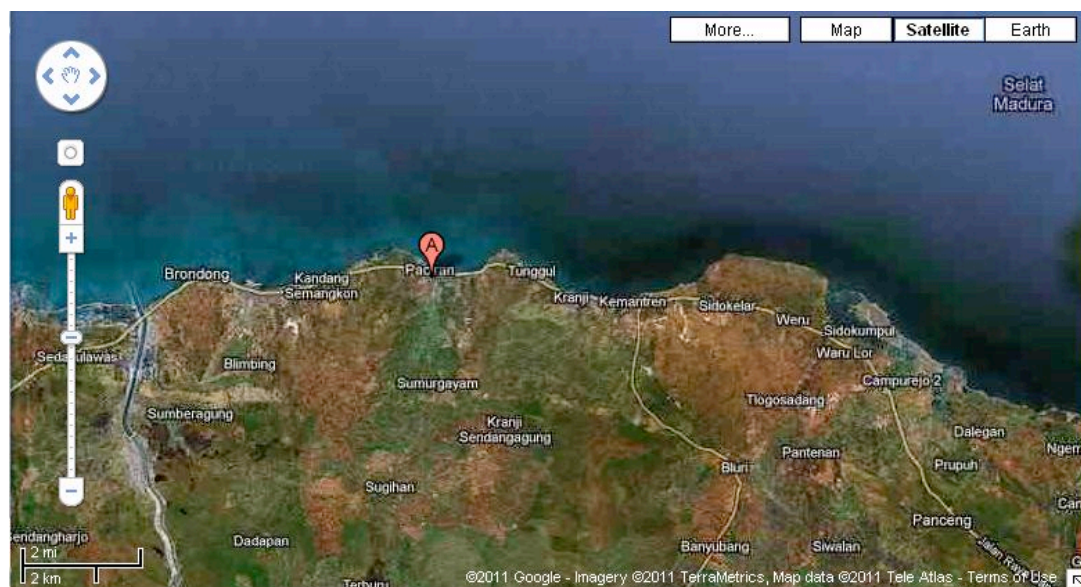
The fishing village (*deso*) of Paciran is composed of three hamlets (*dusun*): Paciran, Jetak, and Penanjan. A close-up view of the three hamlets of Paciran, Jetak and Penanjan is given in Figure 6 below. This is a map from 1998, but is still accurate today. Most of my consultants are from Paciran or Jetak within the village of Paciran.

Figure 6. *Peta Desa Paciran* Map of the village of Paciran
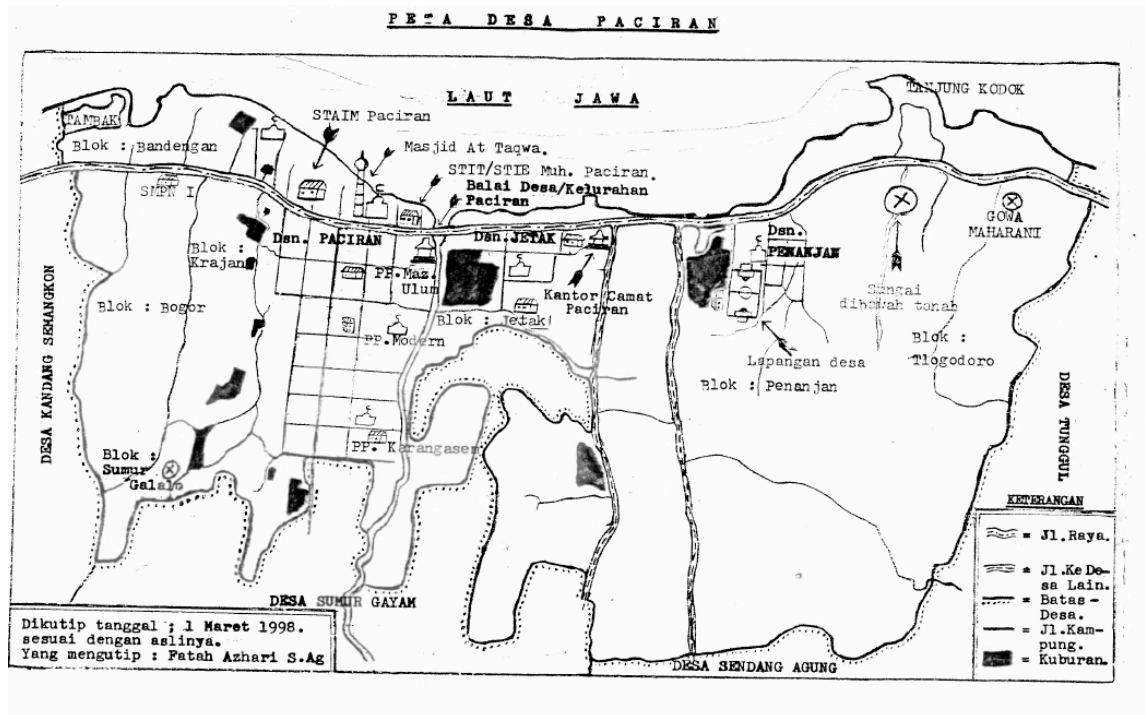
5.3   Paciran Javanese as a Northeast Coast dialect within East Javanese

Hoogervorst (2008, *inter alia*) identifies four subgroups of dialects within the dialect of East Javanese based on lexical and grammatical distinctions: (i) Surabayan Javanese dialect, (ii) Northeast coast dialects, (iii) Malang-Pasuruan dialects, and (iv) Tapal Kuda ('horseshoe') dialects. In addition to these sub-groups within East Javanese, there are three identified isolects which have retained a number of archaic features: Tengger, Using, and Gresik (Hoogervorst 2008:13-17). Hoogervorst (2008:18) describes the Northeast coast dialects as forming "...a continuum between Surabayan and Central Javanese Pesisiran (Japara, Blora, Rembang, etc.) dialects." This sub-group is spoken in the vicinity of Lamongan, Tuban and Bojonegoro. Considering the geographical location

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of the village of Paciran, the dialect spoken in Paciran can be recognized as part of the Northeast coast dialects, as it is situated in the Lamongan region.

In addition to being within the geographical location of Northeast Coast dialects, Javanese as spoken in Paciran shares a number of features identified in Hoogervorst (2008) to be unique to the Northeast Coast dialects. This includes epenthesizing [*n*] in the case when a root ends in a vowel and is followed by the suffix [*-an*], which also starts with a vowel: *klambi* 'clothes' + *an* → *klambinan* 'to wear clothes' or 'to put on clothes', *suri* 'comb' + *an* → *surinan* 'to comb s.o.'s hair'. This feature is noted in particular in the Lamongan region (Hoogervorst 2008:18).

Another feature that Paciran Javanese has in common with Northeast coast dialects is that words in Paciran Javanese also do *not* undergo regressive assimilation vowel harmony, where the penultimate vowel is influenced by the lowering of the ultimate vowel. This further innovation does not occur in Northeast coast dialects or Tengger, but does in other East Javanese dialects. In Northeast coast and Tengger dialects, only a first innovation occurs where /u/ and /i/ are lowered in the ultimate closed syllable to [o] and [e]. For example, *gunung* 'mountain' would undergo ['gunuŋ] → ['gunoŋ] in the first innovation, which is lowering (Hoogervorst 2008:11). This also occurs in the dialect spoken in Paciran. However, the second innovation, where *gunung* 'mountain' would undergo a further change ['gunuŋ] → ['gunoŋ] → ['gonoŋ] does not happen in Paciran Javanese.

That these features in the dialect spoken in Paciran are consistent with features that identify the Northeast coast dialects along with its geographical location strongly suggests that Paciran Javanese is part of the 'Northeast Coast dialects' sub-group of East Javanese. While it may be appropriate to call the dialect of Javanese spoken in Paciran simply as one of the 'Northeast Coast dialects', I will continue to call this dialect as 'Paciran Javanese' to be the most precise. Certainly, while Paciran Javanese seems to be very similar to the Javanese spoken in neighbouring villages and is definitely mutually intelligible, there are noticeable differences with villages even just two kilometres away. For instance, in the Javanese as spoken in Paciran, the question particle is *toh,* while in Blimbing, Javanese speakers say *ta,* and in Kranji, Javanese speakers use *leh,* similar to

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speakers in Bojonegoro. For this reason, I maintain the precise term of 'Paciran Javanese'.

6   Speech levels in Javanese

Before introducing the TAM markers that will be discussed in this dissertation, one cannot write a dissertation on Javanese without mentioning its elaborate speech level system. This concerns, for example, the distinction in second person singular pronouns in French between the familiar *tu* vs. the courteous, more distant *vous*. The use of one or the other pronoun is a reflection of the relationship between the speaker and the addressee based on age, social/economic status, etc.

In Javanese, this vocabulary distinction is not only found with pronouns like in French, but it is widespread across all grammatical categories. Further, there are more than two levels of distinction. The basic two level distinctions are between *ngoko* and *krama*: *ngoko* is basic, ordinary, familiar, informal speech while *krama* is polite, refined, formal speech (Errington 1985:8-9). A third level of speech is called *madya*, which is a mixture of certain *krama* words with *ngoko* affixes. This level is "...a kind of compromise [due to]...conflicting criteria of intimacy, age and/or social status" between the speaker and addressee (Robson 1992:16). Examples of these three speech levels are given in (2) from Robson (1992):

(2)   a.   NGOKO
           aku   wis   mangan sega-ne
           1SG   PERF AV.eat   rice-DEF
           'I have eaten the rice.'

      b.   MADYA
           kula mpun   nedha   sekul-e
           1SG   PERF   AV.eat rice-DEF
           'I have eaten the rice.'

      c.   KRAMA
           kula sampun   nedha   sekul-ipun
           1SG   PERF   eat   rice-DEF
           'I have eaten the rice.' (Robson 1992:16-17; *my glosses*)

In addition to these speech levels, there are two sets of honorifics which serve to boost the speakers' respect or humility towards the person spoken of: *krama inggil* 'high

krama' and *krama andhap* 'low krama'. *Krama inggil* marks "...speakers' deference or respect for the person spoken of..." which can be the addressee or not and *krama andhap* marks "...the relatively lower status of the [speaker] in relation to some higher status" (Errington 1988:99). These sets of honorifics are never used for self-reference; this would be considered rude and arrogant (Errington 1988:100).

These speech levels are prevalent in Standard Javanese; that is, in Yogyakarta and Solo, but outside of these exemplary city centres, it differs as to how prevalent the speech levels are. Further, Hoogervorst (2008:32) notes that the "...East Javanese notions on politeness differ from those in Central Java and are much more intertwined with the *padha-padha* ('same-same') concept, implying equality or acceptation as a group member." In Paciran, as it is located on the northeast coast of East Java far away from these city centres, while some *krama* is used it is not always very prevalent. In asking about the different speech levels of Javanese, people in Paciran refer to *boso ngoko* or *boso biasa* 'regular language' and *boso krama* or *boso alus* 'refined language'. *Krama inggil* is almost never used. For example, out of the set of second person singular pronouns, in Paciran I only observed the use of *kowe, awakmu* (both *ngoko*) and *sampeyan* (*krama*). The *krama inggil* second person singular form *panjenengan* was never heard.

Most villagers in Paciran admit that they do not know *krama* very well and instead use their own mix of *krama* when they can. They refer to their own speech as *kasar* 'coarse' but say that there are still other dialects that are *luweh kasar* 'more coarse' such as in the villages of Kranji, Weru or even the language of Madurese (further east). Some speakers relate the 'coarseness' of their speech in Paciran to the fact that they live by the sea: the sound of the waves and wind requires them to be loud and therefore shout. Due to the fact that *ngoko* is the everyday, familiar speech level, and not everyone can completely speak *krama* in Paciran, the data collected in this dissertation focuses on the *ngoko* speech level.

7   Two properties of Javanese

In order to situate the reader who is not familiar with this Austronesian language, I briefly go over two key properties of Javanese concerning word order and verbal morphology

that are important in this dissertation. These two properties hold across all dialects of Javanese, although the phonological forms of the verbal morphology forms can vary across dialects.[4]

7.1 Word order in Javanese: SVO

Javanese has SVO (subject-verb-object) basic word order (see e.g. Robson 1992), similar to Indonesian but different from the majority of Austronesian languages which are verb-initial. This word order is shown in (3) and (4).

(3) a. mbak Titis durung ngethik PR   SVO
         Miss   Titis not.yet AV.type homework
         'Titis has not typed up her homework yet.' (7mar11_2.015)

     b. * mbak Titis durung PR   ngethik   *SOV
          Miss   Titis not.yet homework AV.type
          ('Titis did not yet type up her homework.') (7mar11_2.017)

(4) a. Pak Walid nyanyi lagu dangdut   SVO
         Mr. Walid AV.sing song *dangdut*[5]
         'Pak Walid is singing a dangdut song.' (27Feb11.011)

     b. * nyanyi Pak Walid lagu dangdut   *VSO
          AV.sing Mr. Walid song *dangdut*
          ('Pak Walid is singing a dangdut song.') (27Feb11.013)

7.2 Verbal morphology in Paciran Javanese

There are five main types of verbal morphology in Javanese, known in the Austronesian literature as 'voice morphology', which relates to which position an argument is in. These types are (i) actor voice, (ii) by-phrase passive, (iii) non-demoted agent passive, (iv) causative/benefactive applicative, and (v) the locative applicative. The first three types concern which argument is in the subject/topic position[6] or the external argument position, and the applicative types relates to an argument in a VP-internal position. I discuss each of these types in turn. These types are also further discussed in Chapter 2

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[4] For a detailed description of these properties in Standard Javanese, see Uhlenbeck (1975), Badib (1980), Suharno (1982) as well as grammars of Robson (1992, 2001), Horne (1961); for Tengger Javanese, see Conners (2008), for Central Javanese on the north coast, see Suwadji (1981). See Conners (2008), Chapter 3 for a comparison of verbal morphology forms between Tengger, Central, and East Javanese.
[5] A genre of Indonesian pop music.
[6] The external argument is refered to as 'subject/topic' position in Javanese, as it seems to have properties of both, a characteristic that is common across Austronesian languages. See Chapter 4 for further details, and Cole et al. (2001) for arguments that the external argument has topic properties in Javanese.

with respect to testing for the type of grammatical category in §3.3.2.

ACTOR VOICE marks that the actor is the subject/topic and is indicated by a homorganic nasal prefix on the verb, such as in (3)a above with *ngethik* 'to type' (cf. verb root *kethik*). Note that a small set of verbs in Javanese do not have this prefix in actor voice, which I further discuss in Chapter 2. Another example of actor voice is given in (5) with *mbayar* 'to pay' (cf. verbal root *bayar*)

ACTOR VOICE:
(5) Context: *Judge ngomong:* (The Judge says...)
     Gayus kudu   **mbayar** dendo
     Gayus DEONT.must AV.pay   fine
     'Gayus has to pay a fine.' (15april2011.056, 24april2011.035)

The BY-PHRASE PASSIVE in Javanese is similar to English passives in that the logical object or theme is in the syntactic subject/topic position and the agent appears as an adjunct, and is optionally present.[7] In Javanese, the by-phrase passive is indicated by the prefix *di(k)-* on the verb root (Horne 1961:108). The agent can be introduced by *karo* 'with' in Paciran Javanese (or *dene(ng)* in Standard Javanese (Horne 1961:108)). The preposition *karo* can be omitted as long as the agent is strictly adjacent to the verb, as in (6) from an elicitation session. In recordings, such as in (7), I find that the agent in the by-phrase passive is rarely overtly mentioned in natural conversation.

BY-PHRASE PASSIVE:
(6) Context offered: *Mungkin karena sego habis, aku lihat setiap hari Fina makan nasi*
     (Maybe because there is no more rice, and everyday I see that Fina eats rice.)
     sego-ne mesthi   **di-pangan**   (Fina)
     rice-DEF EPIST.must PASS-eat   Fina
     'The rice must have been eaten (by Fina).' (4mar11FT.011)

(7) dadi   dekne   sek **dik gaji**...
     become 3SG-NE still PASS salary...
     Translation offered: 'so she gets salary [from the boutique].'
     (Lit. So she is salaried [by the boutique].') (Feb19-11-BZkemantenan; 18:36-18:38)

In the second type of passive, which I will refer to as the 'NON-DEMOTED AGENT PASSIVE'[8], the logical object or theme is also in subject position like the by-phrase

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[7] Although, see passive data and a proposal in Conners (2008, Chapter 5) that the word order of arguments is not fixed in Tengger Javanese.
[8] It is also known as 'Passive Type II' (Cole et al. 2008) or 'subjectival passive' (Fortin 2011).

passive. The non-demoted agent passive is formed only with first or second person agents in Paciran Javanese which are indicated by pronoun clitics *tak* and *pok* respectively in this dialect, as shown in (8) with the verb root *ombe* (cf. *ngombe*) 'to drink'.[9]

NON-DEMOTED AGENT PASSIVE:
(8) a.   obat-e   wes   kudu   **tak**   ombe
       medecine-DEF PERF DEONT.must 1SG.CL drink
       'I already had to drink the medecine.' (16may2011.026)

    b.   obate   wes   kudu   **pok**   ombe
       medecine-DEF PERF DEONT.must 2SG.CL drink
       'You already had to drink the medecine.' (16may2011.027)

With the non-demoted agent passive, the pronoun clitics must occur strictly left adjacent to the verb, the syntactic subject/topic must be definite/specific; cf. ungrammaticality of (9)b, and the verb must be in its root form; cf. ungrammaticality of (9)c with an actor voice homorganic nasal prefix.

(9) a.   sepatu-ne lagek **tak**   **gawe**
       shoe-DEF   PROG   1SG.CL make
       'I am making the shoes.' (15nov11.013)

    b. * sepatu   lagek   tak   gawe
       shoe   PROG   1SG.CL make
       ('I am making shoes.') (15nov11.012)

    c. * sepatu-ne lagek   tak   **nggawe**
       shoe-DEF   PROG   1SG.CL AV.make
       ('I am making the shoes.') (15nov11.014)

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[9] Note that the same form as the first person pronominal passive form (*tak*) is also used in the 'propositive' form, which can be translated as "Let me.../I intend.../I will.../I am going to..." (Robson 1992:92-93). The propositive can be used with either active or passive verb forms, while the first person passive can only be used with the passive verb form (the verb root).

The final two types of verbal morphology are applicatives and concern VP-internal arguments. In Paciran Javanese, the 'CAUSATIVE/BENEFACTIVE' APPLICATIVE is marked by the suffix –*no*, such as (10) with *nuku'no* 'to buy something for someone' (cf. *tuku* 'to buy something'). The 'LOCATIVE' APPLICATIVE is marked by the suffix –*i*, such as with *ngirimi* 'to send something to someone/somewhere' (cf. *kirim* 'to send something').[10] These suffixes must always co-occur with the homorganic nasal prefix (Horne 1961:176, 208). Note that each of these applicatives allow for the indirect object to be introduced by a preposition, (10)a or (11)a, or in the double object construction, (10)b or (11)b.

(10) a.　aku　**nuku'-no**　　sego　(iku) kanggo　cah　iku
　　　　 1SG　AV.buy-APPL　rice　 DEM　for　　 child DEM
　　　　 'I bought rice for the child.'

　　 b.　aku　**nuku'-no**　　cah　iku　sego
　　　　 1SG　AV.buy-APPL　child DEM　rice
　　　　 'I bought the child some rice.' (2006-LK)

(11) a.　aku　**ngirim-i**　　 surat　 nang cah　iku
　　　　 1SG　AV.send-APPL　letter　 to　　child DEM
　　　　 'I sent a letter to the child.'

　　 b.　aku　**ngirim-i**　　cah　iku　surat
　　　　 1SG　AV.send-APPL child DEM　letter
　　　　 'I sent the child a letter.' (2006-LK)

Having introduced the basic word order of Javanese as SVO and the five main types of verbal morphology in Paciran Javanese, I now turn to describing the TAM markers in this dialect in §8.

8　Introduction to TAM markers in Paciran Javanese

In this section, I present a brief description and give examples of each of the sixteen TAM markers in Paciran Javanese that I will be discussing throughout this dissertation. These markers are summarized in Table 1.

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[10] These terms follow traditional grammars of Javanese (e.g. Horne 1961), although the semantic classes are not always clear. See, for example, Conners (2010) on valency classes in Banyumasan Javanese.

Table 1. Glosses of TAM markers in Paciran Javanese

	TAM marker	Gloss
1	*jekene*	'direct evidential'
2	*koyoke*	
3	*ketoke*	
4	*watake*	'indirect evidential'
5	*bonake*	
6	*paleng*	'maybe'
7	*mesthi*	'epistemic.must'
8	*mesthine*	'epistemic.should'
9	*kudu*	'deontic.must, bouletic, circumstantial'
10	*kudune*	'deontic.should'
11	*wes*	'PERF, already'
12	*lagek*	'PROG, just'
13	*ape*	'FUT'
14	*tau*	'EXP.PERF'
15	*oleh*	'allow'
16	*iso*	'can'

It will become clear in the following description of the set of TAM markers in Paciran Javanese that this language has many overt markers for aspect (e.g. *wes* 'PERF', *lagek* 'PROG') as well as for modality (e.g. *mesthi* 'EPIST.must', *oleh* 'allow', *iso* 'can'). However, it is not as clear what overt markers, if any, Javanese has for tense. It seems that in the dialect of Paciran Javanese, the only possible overt marker for tense is *ape* 'FUT', which could be argued to be a modal marker, as I briefly discuss below. Although it is not evident at this point whether there are overt tense markers Paciran Javanese, I maintain the reference to the set of TAM (tense-aspect-modal) markers as I take TAM to refer to a system of grammatical markers in a given language.

Before presenting the examples, I want to briefly remark on the English translations. The reader should note that the clausal structure of the translation does not necessarily reflect the structure of the Javanese sentence. For instance, English translations of evidential markers such as *koyoke, ketoke* may be translated with a biclausal clause as in 'It seems that...'; however, the Javanese sentence is monoclausal itself. Similarly, the modal *iso* can be translated either as 'can' or 'be able to' in English but the use of 'be able to' in the English translation does not mean that the corresponding Javanese sentence is a different structure than those translated with 'can'.

8.1 jekene, koyoke, ketoke 'direct evidential'

In the first two sections, I describe what appear to be two types of evidential markers in Paciran Javanese. Descriptively, evidential markers "...encode information about the source of the speaker's evidence for the assertion..." (Matthewson et al. 2007:2). Formally, there are at least two approaches in the study of evidentiality: (i) evidentials are modals (e.g. Matthewson et al. 2007 for St'át'imcets) or (ii) evidentials are not modals, and are for example speech act operators (e.g. Faller 2002 for some Quechua) which do not add content to the proposition expressed. In this dissertation, I preliminarily consider the evidential markers in Paciran Javanese as modals (see Chapter 5); however, further research is necessary to substantiate this claim.

In the following two sections on the evidential markers in Paciran Javanese, I pre-theoretically describe these markers. The markers *jekene, koyoke, ketoke* as shown in (12)-(14) appear to be direct evidential markers, where the speaker directly perceives the evidence either visually or auditorily, or by other means (Willett 1988:57). Note that these markers are compatible with inferences, such as in (14).

(12) pak Sun'an **jeke-ne**   ora   nyambot-gawe nok kantor deso
      Mr. Sun'an likely-NE NEG AV.work   at   office village
      'Pak Sun'an seems to not work at the village office.'(10.04.2011)

(13) Context offered (Titis): *sampean wes ketemu Jozina nok jalan isuk mou* (You had met Jozina on the road earlier in the morning...)
      koyok-e Jozina isek neng segoro
      seem-NE Jozina still at   ocean
      'It seems that Jozina is still at the ocean.' (4mar11.012)

(14) Consultant's comment (Indonesian): *"sudah tau Titis ambil tapi mungkin kasih orang lien"* (Translation: [You] already know that Titis took [some crab] but maybe she gave it to someone else.)
      ketok-e Titis mangan rajungan
      seem-NE Titis AV.eat   crab
      'It seems that Titis is eating crab.' (28Feb11.086)

Each of these markers is composed of a free root plus the suffix *–(n)e*. In Robson and Wibisono's (2002) Javanese-English dictionary which concerns the 'Standard' dialect as spoken in Yogyakarta, each of these roots are identified as the following: *ketok* 'to appear, show, seem', *koyok* 'as, like', *jegé* 'I think; (in questions: do you think?)' (from

the shortform of *gajeg*). The following examples show the root form of *ketok* in (15)-(16) and *koyok* in (17); they appear to be verbs.[11]

(15)   aku **ketok** awakmu
          1SG   see   2SG
          'I see you.' (24Feb11.013)

(16)   Context offered: *Jozi wong bule*. *Titis ngomong karo Fina: Jozi mesthi pinter boso Inggris. Fina jawab*: (Jozi is a foreigner. Titis says to Fina: 'Jozi must be good at speaking English.' Fina replies:)
        wes **ketok** ngono   kok! iki   wong bule
        PERF see   like.that PRT DEM person foreigner
        Lit: '[You] already see that! This is a foreigner.'
        'Obviously she is! She is a foreigner.' (4mar11_2.030)

(17)   aku **koyok** awakmu seneng mangan gedhang
          1SG   seem 2SG   like   AV.eat banana
          'I'm like you in that I like eating bananas.' (24Feb11.011)

Note that in the constructions above, it would be ungrammatical to have the form with the suffix –*(n)e*, shown with *koyoke* in (18), based on (17) above. This potential difference in grammatical category is discussed in Chapter 2.

(18) * aku **koyok-e**   awakmu   seneng mangan gedhang
         1SG   seem-NE 2SG   like   AV.eat   banana
         ('I'm like you in that I like eating bananas.') (24Feb11.012)

The counterparts of these TAM markers with the suffix –*(n)e* are not in the Robson and Wibisono (2002) dictionary based on Standard Javanese. In this dissertation, I will be concerned with the complex form with the suffix as found in the dialect spoken in Paciran, East Java.

8.2 *watake, bonake* 'indirect evidential'

The markers *watake, bonake* appear to be indirect evidentials in the sense of Willett (1988). That is, it can only be used if the evidence is deduced by 'thought', or through

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[11] It is not clear to me what the structure of (i) (both sentence and translation offered) would be. Presumably *ketok* is a verb here, but so is *nyerawang* as it has the active voice morphology:
    (i)   rokmu   **ketok**   nyerawang
             dress-your   see   AV-transparent
             'Your skirt looks transparent.' (4mar11_2.029)

auditory means, or otherwise. Importantly, it cannot be used when there is direct visual evidence as in (19)a, compared to a direct evidential marker such as *koyoke* in (19)b. IN other words, *watake, bonake* seem to be non-visual evidentials. With *bonake,* the consultant's comment is that it is for situations "in your mind only, or for assumptions".

(19)   Context: (Indonesian) *Lihat foto aja, terus foto itu gak jelas* (Translation: You only see the photo, and the photo isn't clear.)
    a. # **bonak-e** Jozi lemu
        seem-NE   Jozi fat
        'It seems that Jozi is fat.' (15.02.2011)

    b. **koyok-e** Jozi lemu
        seem-NE   Jozi fat
        ('It seems that Jozi is fat.) (15.02.2011)

An example where *bonake* is acceptable is one in which the evidence is not direct perceptual evidence, such as in (20). Further examples of the difference between what I suggest are direct vs. indirect evidentials in Paciran Javanese is discussed in Chapter 5 on *The modal system in Paciran Javanese.*

(20)   Context: *Awakmu nok njero omah. Awakmu gak iso ndelok metu. Awakmu krungu thok bledeg.* (You are inside the house. You cannot see outside. You only hear thunder.)
    bonak-e ape udan
    seem-NE FUT rain
    'It seems that it will rain.' (19Feb11.072)

These markers are also composed of a root plus the suffix *–(n)e*. In the Robson and Wibisono (2002) dictionary on Yogyakarta Javanese, the root *watak* is translated as 'character, disposition, nature', and *watake* as 'ordinarily, characteristically'. An example of the root *watak* is given in (21) and its complex form in (22).

(21)   cak Adi nduwe   **watak**   keras
    Mr. Adi AV.have   character hard
    'Adi has a bad temperament.' (4mar11_2.028)

(22)   he em... **watak-e**   be ra   kringi
    yes....   character-NE just NEG hear.K
    'Yes, it seems that [he] just didn't hear.'(Feb19-11-BZngelewat: 0:13)

In Paciran Javanese, *bonak* appears to be a bound root because it is ungrammatical without the suffix *–(n)e*, as in (23), and it seems not to be found elsewhere. However, it is not known if *bonak* is a free morpheme in other dialects or what the meaning of the root is. It is not found in Robson and Wibisono's (2002) dictionary.

(23) * bonak (24Feb11.014)

As mentioned above, in this dissertation I will concentrate only on the complex form of these TAM markers with the suffix *–(n)e*. There is much to explore as these evidential markers have not yet been documented or researched in Javanese.

8.3 *paleng* 'maybe'

The marker *paleng* appears to express possibility according to the evidence available to the speaker, as in (24). That is, it expresses epistemic type of modality and possibility modal force.

(24)   Waiq **paleng**   numpak kapal
        Waiq   maybe   ride   ship
        'Waiq might board a ship.' (2june11.241)

This marker is extensively described in Chapter 5 and the terms associated with modality (e.g. *type of modality* or *modal force*) are also further described in Chapter 5.

8.4   *mesthi* 'epistemic.must', *mesthine* 'epistemic.should'

The marker *mesthi* seems to express necessity according to the evidence available to the speaker. In other words, it appears to express epistemic type of modality and necessity modal force. Two examples with *mesthi* are given in (25) and (26).

(25)   kucing iki **mesthi**   wes   kawin kok mateng
        cat   DEM EPIST.must already marry PRT pregnant
        'The cat must have mated; it looks pregnant.' (17feb11NR.020)

(26)   Context: *Lampu makan nok omahe bu Zumaroh* (Translation: The light is on at
        Bu Zumaroh's house.)
        Bu Zumaroh **mesthi**   reng omah
        Mrs. Zumaroh EPIST.must at   house
         'Bu Zumaroh must be at home.' (15Feb11.075)

The marker *mesthine* has a different meaning than *mesthi*. With the addition of the suffix *–(n)e*, *mesthine* appears to have a weaker modal force and can be translated as 'should'.

(27) Jozi ape reng Kanada. Jozi **mesthi-ne**   numpak pesawat
      Jozi FUT at   Canada Jozi EPIST.must-NE ride   airplane
      'Jozi is going to go to Canada. She should be taking an airplane.' (2june11.127)

(28) Context: *Aku ape reng mbak Nunung. Aku njaluk correksi kalimat.* (I am going to
      go to Nunung's. I am asking her to help with correcting sentences.)
      mesthi-ne   aku ora suwi suwi nok omah-e   Nunung
      EPIST.must-NE 1SG NEG long long at   house-DEF Nunung
      'I shouldn't be long at Nunung's house.' (10Apr11.165)

Both of these markers are described in detail in Chapter 5 through a variety of field methods.

8.5 *kudu* 'deontic.must', *kudune* 'epistemic.should'

The marker *kudu* seems to be able to express different types of modality. While it is always used to express necessity force, *kudu* can express deontic modal flavour, which is based on rules and regulations, such as in (29), translated as *must*. It seems to also be able to express bouletic modal flavour, which is based on one's wishes or desires, as in (30), and can be translated as *want*.

(29) wong wong **kudu**   nganggo helm kabeh nek numpak sepeda montor
      person person DEONT.must AV.wear helmet all   when ride   bike   motor
      'Everyone must wear a helmet when they drive a motorcycle.' (17feb11NR.017)

(30) Lisa ora **kudu** mangan kepiteng soal-e   bosen
      Lisa NEG want   AV.eat crab   because-NE bored
      'Lisa doesn't want to eat crab because she's tired of it.' (10Apr11.074)

In addition to these two modal flavours, *kudu* also appears to be able to express circumstantial modal flavour, which is based on some facts about the world. In (31), *kudu* can be translated as 'have to' in English.

(31) aku **kudu**   pipis
      1SG DEONT.must   pee
      'I have to pee.' (10Apr11.023)

27

I show in Chapter 3 that *kudu* interpreted as 'want' has a different grammatical category than *kudu* interpreted as 'deontic.must, circumstantial.must', etc. Specifically, I propose that *kudu* 'want' is a verb, while *kudu* 'deontic.must, circumstantial.must' is an auxiliary and these differences in grammatical categories are also related to different syntactic positions. To reflect these differences, I gloss *kudu* interpreted as 'deontic.must, circumstantial.must' as **DEONT.must** and *kudu* interpreted as 'want' as **want**.

In terms of the semantics, these different types of modality that *kudu* appears to express are further described along with more examples in Chapter 5 on *The modal system in Paciran Javanese*.

Similar to the differences between *mesthi ~ mesthine*, with the addition of the suffix *–(n)e*, *kudune* has a different meaning than *kudu*. Specifically, *kudune* also has weaker modal force than pure necessity; it can be translated as 'ought to' or 'should'.

(32)   Context: Ibune ngomong karo bocah (The mother says to her child)
        sampean **kudu-ne**   ora   mbengok-mbengok
        2SG   DEONT.must-NE   NEG AV.shout-RED
        'You ought to not shout!' (10Apr11.067)

(33)   **kudu-ne**   Halima alon-alon mangan dudoh menir
        DEONT.must-NE Halima slowly   AV.eat   sauce *menir*
        'It ought to be that Halima eats *dudoh menir* slowly.' (8dec11T.102)

In Chapter 5, I provide additional examples to illustrate how the modal force is different between *kudu* with and without the suffix *-(n)e*.

8.6   *wes* 'already, perfective'

Examples of *wes* in Paciran Javanese are given in (34)-(35):

(34)   murid-e   **wes** ngerti boso   inggris
        student-DEF PERF know   language English
        'The student already knows English.' (14Feb11.001)

(35)   srikoyo   **wes** mateng
        srikaya.fruit PERF ripe
        'The srikoyo is already ripe.' (1mar11.004)

The aspectual marker *wes* appears to have the following two elements: (i) the event must be completed (Robson 1992:65), but it does not have to be finished and (ii) the focus

seems to be on the current relevance of a past situation, given translations such as 'by this time, by now, already' in Horne (1961:91).

That the event is completed but does not have to be finished is shown by the grammaticality of the follow-up phrase in (36) stating explicitly that the letter-writing event is not yet finished.

(36) aku **wes** nules   surat, tapi durung mari
      1SG PERF AV.write letter   but   not.yet AV.finish
      'I had written a letter, but I haven't finished.' (20may11.001)

The first point indicates that *wes* may be a perfective marker (i.e. completion), while the second point indicates *wes* may be a perfect marker (i.e. present relevance), based on definitions of aspect in Comrie (1976). While further research is necessary, for now I will adopt the definition of *wes* as perfective as suggested in Dahl (1985), Conners (2008), etc. Further, it is known that *wes* cannot co-occur with *lagek*, the progressive marker, which highlights the aspect of completion. I turn to the aspectual marker *lagek* in the next section. These co-occurrence restrictions are discussed in detail in Chapter 3 as well as further information on the aspectual characterization of *wes* in Javanese.

8.7 *lagek* 'progressive, just'

The aspectual marker *lagek* or *gek* can express progressive aspect or inceptive aspect (focusing on the beginning of the event). Two examples are given in (37)-(38):

(37) cak Khuluq **lagek** ngulang
      Mr. Khuluq PROG   AV.teach
      'Cak Khuluq is teaching.' (15Feb11.087)

(38) naliko pak Suwanan wes   mangan, bu   Zum   **lagek** budal
      when   Mr. Suwanan PERF   AV.eat   Mrs. Zumaroh PROG   leave
      'When Pak Suwanan had eaten, Bu Zum just left.' (20may11.053)

I discuss the nature of these two different aspectual meanings of *lagek* with respect to a possible difference in grammatical category in Chapter 2: I suggest *lagek* as a progressive marker is an auxiliary while *lagek* as an inceptive marker may be an adverb. Throughout this dissertation, however, I focus on *lagek* as a progressive marker. I gloss *lagek* as

'PROG'. In Chapter 3, I investigate the syntactic position of *lagek* with respect to other TAM markers and its co-occurrence restrictions.

8.8 *ape* 'future'

The marker *ape* or *pe* expresses future and can occur with weather predicates (e.g. *udan* 'rain') or animate external arguments, (39)-(40), suggesting that this marker does not have any selectional restrictions with respect to the external argument.

(39)   Context: *Sampean ndelok mendung ireng* (You see black clouds.)
       ape udan
       FUT   rain
       'It's going to rain.' (27Feb11.040)

(40)   pak Khoim **ape** ke-temu wong wedhok. Mesthi-ne   ayu
       Mr. Khoim FUT KE-meet person FEM   EPIST.must-NE beautiful
       'Khoim will meet a woman. She should be beautiful.' (2june11.138)

Another example with *ape* 'FUT' is given from a recorded conversation in (41).

(41)   **ape** ngelawat   reng bek Muntisa iku loh,
       FUT   AV.meet.family.of.deceased to   with Muntisa DEM PRT

       gek   **ape** lungo   aku
       PROG FUT go   1SG
       'I am going to pay respects to Muntisa; I am going to go now.'
       (ELAN_ Feb19-11-BZkemantenan.eaf; 22:21-22:25)

As there are no other clear candidates for a tense marker besides this one, the question arises whether *ape* is a modal or a tense marker. I speculate on this question in Chapter 5, and suggest *ape* is a modal. In other words, I suggest that Javanese is a tenseless language in the sense that there are no overt grammaticalized items that indicate tense. In Chapter 2, I discuss the grammatical category of *ape* and in Chapter 3, its relative syntactic position.

8.9 *tau* 'experiential perfective'

The marker *tau* is translated in dictionaries or grammars as 'ever, once' (Horne 1961) or 'ever, at any time' (Robson and Wibisono 2002:727), such as in (42).

(42)   aku **tau**   reng Bali wulan januari 2011
       1SG EXP.PERF at   Bali month January 2011
       'I once went to Bali in January 2011.' (10Apr11.114)

(43)   BG : kok mbes ciran   loh seng dik golek
             PRT then   Paciran PRT REL PASS search
             'Why does she research the Paciran dialect?'
             (Lit: 'Why then Paciran is the one being researched [by her]?')

       BZ: ... soal-e   Khuluk **tau**   nok kono... iki   wes iso wani
            ... because-NE Khuluk EXP.PERF at   there... DEM PERF can brave
            'because Khuluk once was over there [Canada]...she is already brave [to
            come here by herself]' (ELAN_ Feb19-11-BZkemantenan.eaf)

I suggest that this marker expresses the experiential perfective aspect, similar to the suffix –*guo* in Mandarin Chinese (e.g. Smith 1997, Xiao and McEnery 2004)[12]. Comrie (1976:58) defines this aspect as indicating that "...a given situation has held at least once during some time in the past leading up to the present". This situation can be held more than once, as shown in (44) where the letter-writing has been done (at least) three times.

(44)   Dewi **tau**   nules   surat-surat ping telu
       Dewi EXP.PERF AV.write letter-RED time three
       'Dewi once wrote letters three times.' (20may11.031)

In (45), the compatibility of the TAM marker *tau* only with a past-reference temporal marker *wingi* 'yesterday' and not with *sesok* 'tomorrow' or *sa'iki* 'now' indicates that *tau* must convey a situation already experienced prior to the present.

(45)   bu   Yuni wingi/*sesok/*sa'iki   **tau**   nyileh   buku iki
       Mrs. Yuni yesterday/*tomorrow/*now EXP.PERF AV.borrow book DEM
       'Yuni once borrowed that book yesterday.' (30mar11.078, 079, 080)

Finally, experiential aspect is argued to only occur with a repeatable situation (e.g. Smith 1997), such as in (44) above. This predicts that a situation such as being born (*lahir*) or dying (*meninggal*) which are non-repeatable should not be grammatical with *tau*. This prediction is borne out in (46):

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(46) a. # Mas Adi **tau**   meninggal
           Mr. Adi EXP.PERF AV.leave.this.world
           ('Mr. Adi once died.') (14july2012)

     b. # Tata **tau**   lahir
           Tata EXP.PERF born
           ('Tata was once born.') (14july2012)

From these results, it seems that *tau* in Paciran Javanese is an experiential aspectual marker. In Chapter 2, 3, and 4, I further explore its grammatical category, its syntactic position and how it interacts in different constructions such as yes-no questions and VP-topicalization.

8.10 *oleh* 'allow'

The marker *oleh* expresses permission, as shown in (47)-(48).

(47)   Jozi **oleh**   nganggo celono neng ngaji
        Jozi allow   AV.wear pants at   AV.read.Qur'an
        'Jozi is allowed to wear pants to the reading of Holy Qur'an.' (9mar11_2.004)

(48)   kulit-e iwak urang **oleh**   di-pangan
        skin-DEF fish shrimp allow   PASS-eat
        'Shrimp skin may be eaten.' (4mar11FT.023)

After exploring the syntax of this modal in Chapters 3 and 4, I investigate the exact interpretation of *oleh* in Chapter 5 through a number of fieldwork methods.

I only investigate this modal interpretation of *oleh* in Paciran Javanese. There are other interpretations of *oleh*: for example, *oleh* can also be interpreted as 'to get; to accept' (Robson and Wibisono 2002:520). In this case, it functions as a verb (as identified as well by the consultant "*oleh* is like a verb [here]").

(49)   Context: fan Kartini ngomong... ('One of Kartini's fans said...')
        wong   wedhok **kudu**   **oleh** ha'   podho mbek wong lanang
        person FEM   DEONT.must get rights same with   person MASC
        'Women must **receive** the same rights as men.' (23may11_2.013)

The marker *oleh* it can also mean 'from' in Paciran Javanese, as shown in (50):

(50) BZ: **oleh** endi?
      from which
      'Where is she from?'

    BG: **oleh** wong Jetak... anek'-e   yu   Pa Aripa
       from person Jetak child-POSS Mrs. Pa Aripa
       'She is from Jetak...Pa Aripa's daughter.'
       (Feb19-11_BZkemantenan: 0:14-0:17)

These different uses are interesting, especially *oleh* as 'from' in Paciran Javanese as it seems to be a dialectal difference compared to Standard Javanese. However, to reiterate, I will only be focusing on the modal interpretation of *oleh* in this dissertation.

8.11 *iso* 'can'

The marker *iso* expresses ability in Paciran Javanese, as exemplified in (51) and (52).

(51)   Cak Waiq **iso**   ngelangi
       Mr. Waiq can AV.swim
       'Cak Waiq can swim.' (15Feb11.054)

(52)   montor iki **iso** kamot   limang wong
       motor DEM can enough five   person
       'This car can be enough for five people.' (1mar11.025)

Similar to *oleh* 'allow', I investigate the syntax of the modal *iso* 'can' in Chapters 3 and 4 with particular attention to its behaviour in constructions such as auxiliary fronting in yes-no questions, subject-auxiliary answers to yes-no questions, and VP-topicalization. In Chapter 5, I concentrate on the semantics of this modal.

8.12 Inventory of TAM markers in Paciran Javanese

To conclude the introduction to the set of TAM markers I will be discussing in this dissertation, the following table, repeated from above, shows the range and wealth of these markers in Paciran Javanese. As mentioned above, most aspectual markers are only used when necessary in Javanese; otherwise the meaning is understood from context.[13]

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[13] This statement is based on my qualitative research. In order to define when it is 'necessary' to use aspectual markers, additional quantitative work must be undertaken.

Table 1. Glosses of TAM markers in Paciran Javanese

TAM marker	Gloss
jekene	'direct evidential'
koyoke	
ketoke	
watake	'indirect evidential'
bonake	
paleng	'maybe'
mesthi	'epistemic.must'
mesthine	'epistemic.should'
kudu	'deontic.must, bouletic, circumstantial'
kudune	'deontic.should'
wes	'PERF, already'
lagek	'PROG, just'
ape	'FUT'
tau	'EXP.PERF'
oleh	'deontic.may'
iso	'can'

9 Comparisons to other dialects in Javanese

Table 2 presents a word list of TAM markers across 'standard' Javanese (Horne 1961, Dahl 1985, Robson 1992, Robson and Wibisono 2002), Tengger Javanese (Conners 2008), Peranakan Javanese (Cole et al. 2008), Tegal Javanese (Suwadji 1981) and Paciran Javanese (fieldwork 2010-2011). Where there is a blank field, it is not known if a counterpart to that particular TAM marker exists in the other dialect. Where there is a dash (-), it is known that there does not exist a counterpart to that particular TAM marker.

Table 2. Word lists of TAM markers across four dialects in Javanese.

'Standard' Javanese (Horne 1961, Dahl 1985, Robson 1992, R&W 2002)	Tengger Javanese (Conners 2008)	Peranakan Javanese (Cole et al. 2008)	Tegal Javanese (Suwadji 1981)	Paciran Javanese (Vander Klok, fieldwork 2011)	'Core gloss'
				jekene	'direct evidence'
			katone, katoke	*ketoke*	
				koyoke	
				watake	'indirect evidence'
				bonake	
mesthine				*mesthine*	'epistemic.should'
kudune	*kudune*			*kudune*	'deontic.should'
-			*enggane, ndeyan (?)*	*paleng*	'maybe'
mesthi	*mesthi*		*mesthi*	*mesthi*	'epistemic.must'
kudu	*kudu*	*harus*	*kudu*	*kudu*	'deontic.must'
lagi	*gek*	*gek*	*lage, lagi*	*lagek, gek*	PROG
			maning	-	PROG
	kathik			-	PROG
-	-			*ewoh*	PROG, busy, difficult
wis	*wis*	*wis*	*wis, ewis*	*wis, uwis*	PERF
bakal	-			-	FUT
	kate			-	FUT
		meh		-	FUT
arep			*ape*	*ape*	FUT
tahu		*pernah*		*tau*	ever, once
entok			*enthok, olih*	*oleh*	deontic.may
iso	*(b)isa*	*isa*	*(b)isa*	*iso*	can
gelem		*gelem*	*gelem*	*gelem*	willing / want
arep				*kudu*	want
			pingin	*kepingin*	want

It is clear that while some TAM markers are similar across dialects, others have different forms. For example, the marker expressing ability, glossed as 'can', has the similar form of *iso, isa* across all five dialects represented in Table 2 above. This similarity is in contrast to the many forms of the future marker across dialects such as *bakal, kate, meh, ape* or *arep*; it is currently not known if these different phonological forms also differ semantically or syntactically from each other.

Finally, it is important to note that there remains much work to be done in identifying the full set of TAM markers in other dialects. Specifically, a TAM marker is not known or not reported in a certain dialect where there are blank cells. This is particularly evident for the putative evidential markers such as *ketoke, koyoke, jekene, watake, bonake* as identified in Paciran Javanese. One of the aims in this dissertation is to provide a comprehensive description of the TAM markers in Paciran Javanese, which I hope can be used as a model for further research on other dialects.

Chapter 2.
Category types of TAM markers in Paciran Javanese

1 Introduction

Despite some work towards understanding the behaviour of TAM markers in Javanese, such as on Peranakan Javanese by Cole et al. (2008), the category types of the whole spectrum of TAM markers is still unknown. It is important to know the grammatical category of these markers to better understand their role in grammar. In this chapter, I demonstrate that the TAM markers in Paciran Javanese are divided into two types: adverbs and auxiliaries, as shown in Table 1. Specifically, I first give evidence that the TAM markers *jekene, koyoke, ketoke* 'direct evidential'*, watake, bonake* 'indirect evidential'*, mesthine* 'EPIST.should'*, kudune* 'ought'*, mesthi* 'EPIST.must'*, paleng* 'maybe' are adverbs in §2 based on morphological and syntactic distribution facts. Secondly, I provide evidence in §3 that the TAM markers *kudu* 'DEONT.must'*, wes* 'PERF'*, lagek* 'PROG'*, ape* 'FUT'*, tau* 'EXP.PERF'*, oleh* 'allow'*, iso* 'can' are auxiliaries in Paciran Javanese. To show that certain TAM markers are auxiliaries, I follow some arguments while critiquing others that are put forth by Cole et al. (2008) for Peranakan Javanese and Lan (2010) for Kelantan Malay.

Table 1. Category types of TAM markers in Paciran Javanese

Category Type	TAM marker	Gloss
ADVERB	*jekene*	'direct evidential'
	koyoke	
	ketoke	
	watake	'indirect evidential'
	bonake	
	mesthine	'epistemic.should'
	kudune	'deontic.should'
	mesthi	'epistemic.must'
	paleng	'maybe'
AUXILIARY	*kudu*	'deontic.must, bouletic, circumstantial'
	wes	'PERF, already'
	lagek	'PROG, just'
	ape	'FUT'
	tau	'EXP.PERF'
	oleh	'deontic.may'
	iso	'can'

2   TAM markers as adverbs

Evidence that the TAM markers *jekene, koyoke, ketoke, watake, bonake, mesthine, kudune, mesthi, paleng* are adverbs drawn from (i) the morphology that most of them share, i.e. the suffix *-(n)e* and (ii) their syntactic distribution.

2.1   Morphological evidence

It is striking that a number of TAM markers all share the same suffix *-(n)e*: *jekene, koyoke, ketoke, watake, bonake, mesthine, kudune*. I will argue in §2.1.1 that this is the same suffix as on adverbs such as *sa'tenane* 'really, truly' or *biasane* 'usually', and by extension these TAM markers are also adverbs. In §2.1.2, I will suggest that this suffix is not related to the definite/possessive marker on nouns, which has the same form: *-(n)e*.

2.1.1   The suffix –(n)e and adverbial status

A number of markers noted to be adverbs in Robson (1992:85) also share the same suffix *-(n)e* as the above TAM markers. These adverbs include *pancene, sa'temene, (sa')benere, sa'tenane, sa'jatine, sa'jane* which all are translated similarly as a subset of

'really, truly, certainly, actually, in fact'.[14] Another example of an adverb is *biasane* 'usually' from the root *biasa* 'usual, regular' or *adate* 'usually' from the root *adat* 'culture'.[15] Both Horne (1961:29) and Robson (1992:82) identify *adate* as an adverb.[16] By extension, this morphology is a clue that the TAM markers with the suffix *-(n)e* are also adverbs in terms of their category type. An example of the root *pance* 'really' and its counterpart with the suffix *-(n)e* is given in (1) and (2). I have found this form to be the most frequent in my recordings of natural conversation and interviews of Paciran Javanese.

(1)   pan biasa-ne wong Weru biasa-ne dik tambah-tambah-i....dik
        whenusual-NE   people Weru usual-NE PASS add-RED-APPL   ...PASS

        tambah-i mbarek 'pagon-pagon pae...; .....seng boso.... tapi prasa-ku
        add-APPL with   'steady-steady different' REL language but feeling-my

        gak penting   tapi **pance** iku ciri khas-e   deso iku
        NEG important but really DEM sign original-DEF   village DEM
        'Usually people in Weru, usually they add ..... add... "*pagon-pagon pae*"...... it's the language.....but I think it's not important.... but it's certainly the characteristics of that village.' (May1_11_IJ_Kuna'ah: 3:55)

(2)   yo **pance-ne** gusti Allah seng   noto   yo
        yesreally-NE lord Allah REL   AV.arrange yes
        'Yes, it is true that the Lord God is the one who arranges [everything].' (Feb19-11-BZkemantenan: 16:04)

Other forms such as *sa'jatine* 'actually, really' are not present in my recordings database, but readily accepted in elicitation settings such as in (3).[17,18] An example with the adverb *sa'jane* 'actually' is given in (4).

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[14] The status of the prefix *sa'-* is not well-understood. Horne (1961:252) describes the basic meaning of *sa'-* as 'one', and as a prefix, having the "connotation of inclusiveness or breadth".

[15] One might argue that the affix that suggests that the grammatical category is adverbial is the prefix *sa'-,* and not the suffix *–ne.* However, for some forms such as *(sa')-bener-e,* the prefix is optional. Further, the form of *biasa-ne* 'usual-NE' does not have the prefix *sa'-*, showing that it is really the suffix *–ne* that suggests the adverbial category status.

[16] Horne (1961:29,78) and Robson (1992:82) mentions *adate*, but not *biasane*, suggesting that *biasa* is either a recent borrowing from Indonesian or a difference between Javanese dialects.

[17] It is interesting that the root of this adverb, *jati,* is 'teak'; the meaning of the adverb 'really' from 'teak' is not as transparent as the other root meanings, such as 'real, true', etc. as shown in Table 2 below.

[18] The adverb *sa'jatine* is not present in the Robson and Wibisono (2002) dictionary, and may be present in other dialects besides Paciran Javanese. The forms *sa'temene, sa'tenane, sa'jane, sa'benere,* and *pancene* are found in Robson and Wibisono (2002), and *sa'tenane, sa'jane, sa'benere, pancen* in Horne (1961)

(3) **sa'-jati-né**, cah   kuwi pinter tapi polah-é ora sinau, cah kuwi
    SA-teak-NE, child   the smart but because NEG study, child the

    ora   lulus
    NEG succeed
    'Actually, the child is smart but because he didn't study, the child didn't pass.'
    (2008-LK)

(4) Offered by consultant:
    Kana **sa'-jan-e** ape lungo reng Yogya   sa'-wulan pisan
    Kana SA-real-NE FUT go   at   Yogyakarta SA-month once
    'Kana actually is going to go to Yogya once per month.' (4may11tau.025)

A final example is given with *biasane* 'usually' in (5) (see also its use in (1) above),
which has a different meaning than the other adverbials discussed above.

(5) Context: *Terus, menurute sampeyan, wong-wong Paciran kabeh iso boso kromo
    toh gak?* (So, in your opinion, can all people in Paciran speak kromo?)

    rata-rata   yo iso... tapi yo ono   seng siji, loro yo gak iso...
    around-RED yes can...but yes there.is REL one, two yes NEG can...

    tapi **biasane** wong seng wes tuwo-tuwo mesthi   bae iso, iso kabeh
    but   usual-NE person REL PERF old-RED   EPIST.must just can, can all
    Translation offered: "Most of them are able to do it... but there are one or two
    cannot, but usually old people are able to speak kromo, all of them can speak
    kromo." (May1_11_IJ_Kuna'ah: 10:53-11:05)

The fact that these kinds of adverbs and certain TAM markers have in common the
suffix *-(n)e* suggests that the TAM markers are also adverbs. This morphological link
between adverbs and TAM markers is summarized in Table 2, which gives the translation
of the root plus its counterpart with the suffix *-(n)e* taken primarily from Robson and
Wibisono (2002) as well as Horne (1961). I also note in Table 2 where certain forms are
different in Paciran Javanese than Standard Javanese.

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showing that these adverbs are used in standard Javanese (spoken in Solo/Yogyakarta). While all these
forms are accepted in elicitation settings for Paciran Javanese, it is unknown how frequent they are in use
as none were found in my recordings database on Paciran Javanese.

Table 2. Morphological evidence that high TAM markers are adverbs

ROOT	ROBSON&WIBISONO (2002)	TAM MARKER	ROBSON&WIBISONO (2002)
ketok	to appear, show, seem	*ketoke*	-
koyok	as, like	*koyoke*	-
watak	character, disposition, nature	*watake*	ordinarily, characteristically
bonak	-	*bonake*	-
gajeg	I think	*gajegé, jegé* (Standard) *jeke, jekene* (Paciran)	I think
mesthi	inevitable, natural, predictable	*mesthine*	it should have been
kudu	to really have to (do s.t.)	*kudune*	ought to
ROOT		ADVERB	
tenan	true, real	*sa'tenane*	really, truly, actually; in actuality, in reality (Horne 1961)
temen	really, very, decidedly; true, honest; in earnest, serious	*sa'temene*	really, actually, in fact
jati	teak	*sa'jatine*	actually (fieldwork)
jan	real	*sa'jane*	truly (Horne 1961) really, actually (Robson 2002)
bener	right, true; indeed, really; straight; real	*sa'benere*	actually, really; in truth, in correctness (Horne 1961) actually, in fact (R&W 2002)
pancèn (Standard) *pance* (Paciran)	certainly, really, for a fact indeed, certainly (Horne 1961)	*pancèné*	it is true
biasa	usual (fieldwork)	*biasane*	usually (fieldwork)
adat	usual	*adate*	usually (Horne 1961)

The fact that the adverbs noted in Robson (1992) share the same morphology as the above TAM markers is taken to be strong evidence that such TAM markers are also adverbs. However, basic Javanese facts shows that nouns can also occur with the same suffix *-(n)e*. The immediate question that arises than is whether such TAM markers could be nouns as well. I argue that the above forms can only be adverbs in the following section based on a test with different types of negation.

2.1.2 The suffix -(n)e: adverbial vs. nominal status

One might question the status of *–(n)e* as not deriving an adverb as I have just suggested, but deriving a noun. In this sub-section, I show that, strictly in terms of the grammatical category status, the suffix *–(n)e* attached to TAM markers does not derive a noun.[19]

That is, it is known that the suffix *-(n)e* can be a definite marker, (6), or a possessive marker, (7) (Horne 1961:13-14; Robson 1992:34; Davies and Dresser 2005, Ishizuka 2008). This usage of *–(n)e* is widespread across dialects of Javanese. Ishizuka (2008) syntactically analyzes the definite/possessive uses of *-(n)e* as the manifestation of the D^0 head; I gloss this use of the *–(n)e* suffix as -DEF.

(6)   DEFINITE MARKER:
        kucing-é nyolong iwak
        cat-DEF   AV.steal fish
        'The cat stole (some) fish.' (Davies and Dresser 2005:61, ex.14a)

(7)   POSSESSIVE MARKER:
        murid-é   **Siti** maca   buku
        student-DEF Siti AV.read book
        'Siti's student read a book.' (Davies and Dresser 2005:61, ex.17a)

The question then for the above TAM markers is: Could these markers be analyzed as nouns (DPs); i.e. a kind of nominalized item? I argue that this is not the right analysis, drawing evidence from the two types of negation in Javanese. The negation *dudu* subcategorizes for nouns, while the negation *ora* subcategorizes for verbal or adjectival predicates (Horne 1961:25, Robson 1992).[20] See also §3.2 below for additional examples.[21]

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[19] This point does not preclude that there may be close parallels in terms of the syntax: *-(n)e* in the DP domain is argued to be the head of the highest maximal projection (Ishizuka 2008) and I argue in Chapter 3 that *-(n)e* heads the highest maximal projection in the IP domain. This close syntactic parallel deserves further research.

[20] Conners (2008:123) observes that Tengger Javanese is undergoing a change as *dudu* has looser distributional restrictions on what it can modify: *dudu* in Tengger Javanese can also be used as 'emphatic negation' and can modify verbs and adjectives in this case. However, *ora* can never modify a nominal in this dialect. As far as I am aware, Paciran Javanese behaves similar to Standard Javanese in the distribution of the two types of negation of *ora* and *dudu*. As well, the negation *gak* in Paciran Javanese seems to pattern with *ora* as modifying verbal and adjectival predicates.

[21] The negations *ora* could not be considered as a negative copula verb given its distribution with TAM markers; for example, *ora* can occur twice in one predicate with *oleh* 'allow', *iso* 'can', *tau* 'EXP.PERF', see Chapter 4. It is less clear whether *dudu* could be considered a negative copular verb; however, if it was, the distribution facts would not change this test.

(8)   aku **dudu**   muréd
           1SG NEG.NOM   student
           'I'm not a student.' (Horne 1961:5, 25)   [nominal predicate]

(9)   omah-ku **ora** gedhé
           house-my NEG big
           'My home is not large.' (Robson 1992:112)   [adjectival predicate]

(10)   aku **ora** mangan
           1SG NEG AV.eat
           'I'm not eating.' (Horne 1961:25)   [verbal predicate]

Since *dudu* only subcategorizes for nouns, we can test whether TAM markers also can be negated with *dudu*. If so, it would be strong evidence that TAM markers are nominalized items. If not, we can conclude that the TAM markers are verbal predicates, but we would still not know exactly what sort (i.e. auxiliaries or adverbs). I am not considering that they could be adjectival predicates because none of these markers can modify nouns. For instance, *ketoke* 'direct evidential' cannot modify the noun *pilem* 'film'.[22]

(11) *Jozi ndelok ketok-e pilem
      Jozi AV.see   seem-NE film
      ('Jozi watched an apparent film.') (2june11.103)

This test, illustrated with the modal *mesthi*, shows that this TAM marker is not a nominal: negation with *dudu* is not acceptable.

(12)   Context : *Wong wong ape ngaji, gawe klambi werno putih. Q: wong wong nek ape ngaji mesthi klambinan putih toh*? (There are people going to Holy Qur'an, wearing white clothes. You ask: The people that are going to Holy Qur'an, they must be wearing white clothes, right?)
        ora mesthi /   * dudu   mesthi,   gak selalu
        NEG EPIST.must /   NEG.NOM EPIST.must   NEG always
        'Not really, not always' (12.03.2011-N)

However, this test cannot be used with the TAM markers with the suffix –*(n)e* as none allow negation to syntactically scope above. As shown in the following examples in (13)-

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[22] In Javanese, 'film' as a borrowed word can be pronounced *pilem* or *filem* (cf. (62)), showing a progress-in-change with respect to the two sounds of [p], [f]. Javanese does not have the voiceless labiodental fricative [f] as phoneme; this is why older speakers use the phoneme [p] instead. However, younger speakers now use [f]. Another example is with the borrowed verb 'telephone': older speakers will use *telpon* while younger speakers use *telfon*.

(16) with *koyoke, jekene* 'direct evidential', *watake* 'indirect evidential', and *kudune* 'ought' respectively, negation can only occur syntactically below the TAM marker with *-(n)e*. This paradigm holds for all TAM markers with the suffix *–(n)e*.

(13) a. pak Busro **koyok-e gak/ora** rokok-an   cerutu
Mr. Busro seem-NE NEG   smoke-AN cigar
'Busro seems to not be smoking a cigar.' (15april2011.117, 118)

b. * pak Busro **gak koyok-e**   rokok-an   cerutu
Mr. Busro NEG seem-NE   smoke-AN cigar
('Busro does not seem to be smoking a cigar.') (15april2011.119)

(14) a. aku **jeke-ne   gak/ora** ke-temu hantu nok kubur-an
1SG likely-NE NEG   KE-meet ghost at   cemetery-AN
'It seems that I didn't meet a ghost at the cemetery.' (15april2011.134, 24april2011.068)

b. * aku **ora jeke-ne**   ke-temu hantu nok kubur-an
1SG NEG likely-NE KE-meet ghost at   cemetery-AN
('I didn't seem to have met a ghost in the cemetery.') (24april2011.069)

(15) a. Yeni **watak-e   ora/gak** mileh   rok sing abang
Yeni character-NE NEG   AV.borrow dress REL red
'Yeni seems not to choose the dress that is red.' (15april2011.122,123; 24april2011.060, 061)

b. * Yeni **gak watak-e**   mileh   rok sing abang
Yeni NEG character-NE AV.borrow dress REL red
('Yeni seems not to choose the dress that is red.') (24april2011.062)

(16) a. sing ruju   **kudu-ne   gak/ora** kawin dhisek
REL last.born DEONT.must-NE NEG   marry still
'The lastborn should not marry first.' (15april2011.109, 113)

b. * sing ruju   **gak/ora kudu-ne**   kawin dhisek
REL last.born NEG   DEONT.must-NE marry still
('The lastborn should not marry first.') (15april2011.110, 114)

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These results show that the negation test can only be used with TAM markers without the suffix *–(n)e*, as shown with *mesthi* 'EPIST.must' above. In other words, the negation facts with TAM markers with *–(n)e* render the test between nominal and verbal/adjectival negation inapplicable since both are ungrammatical.[23]

I now turn to further evidence that the TAM markers *jekene, koyoke, ketoke, watake, bonake, mesthine, kudune* as well as *mesthi, paleng* are adverbs. This evidence is based on their distribution in syntax which shows that these markers cannot be nouns.

2.2 Syntactic distribution evidence

In Table 1 above, I proposed that a number of TAM markers are adverbs. This full set is also shown in Table 3 below: *jekene, koyoke, ketoke, watake, bonake, mesthine, kudune, mesthi, paleng*. However, I have only provided evidence thus far that those that take the suffix *-(n)e* are adverbs. We have not yet seen any evidence that *mesthi* and *paleng* also belong to the class of adverbial TAM markers. In this section, I will show that based on their surface syntactic distribution, *mesthi* and *paleng* behave similarly to all the other TAM markers with *-(n)e*: they allow apparent freer syntactic distribution in that they can occur sentence-initially, between the subject and the verb and (for most) sentence-finally as indicated in Table 3.

Table 3. Syntactic Distribution of 'adverbial' TAM markers in Paciran Javanese

	TAM marker	Sentence Initial	In-between Subj & Vb	Sentence Final
ADVERB	*jekene* 'direct evidential'	✓	✓	✓
	koyoke 'direct evidential'	✓	✓	✓
	ketoke 'direct evidential'	✓	✓	✓
	watake 'indirect evidential'	✓	✓	✓
	bonake 'indirect evidential'	✓	✓	?✓
	mesthine 'epistemic.should'	✓	✓	?✗
	kudune 'deontic.should'	✓	✓	?✗
	mesthi 'epistemic must'	✓	✓	?✗
	paleng 'maybe'	✓	✓	✓

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[23] Although we cannot use the two types of negation test to test for the grammatical category of TAM markers with *–(n)e*, the fact that negation cannot scope above all these TAM markers may suggest that these markers are positive polarity items, as suggested in Ernst (2009) for Speaker-Oriented adverbs in English. Further research would be necessary to check their unavailability also in questions as well as the antecedent of conditionals. This seems like a fruitful avenue to pursue as it is known that all these markers cannot occur in yes-no questions with the particle *toh*.

In the following chapter on the syntactic relative order of TAM markers (Chapter 3), I propose that all TAM markers with the *–(n)e* suffix occur in one slot based on their co-occurrence restrictions. Under this proposal, these markers only have one position in the syntax and thus the freer syntactic distribution discussed here is only apparent and refers to the surface word order. I assume the different word order is derived via movement of other XPs around the maximal projection that houses TAM markers with *–(n)e*.

2.2.1 Syntactic distribution of **koyoke, ketoke**

Not only does freer surface syntactic distribution suggest that these markers are adverbs, their distribution is parallel with other adverbs, such as the temporal adverb *wingi* 'yesterday'.[24] The correlation as demonstrated in (17) with *koyoke* 'direct evidential' and (18) with *wingi* 'yesterday' strongly suggests that these TAM markers are adverbs.

(17) (**koyok-e**) dulur-ku   (**koyok-e**) dolan neng Paciran (**koyok-e**)
      seem-NE brother-my seem-NE visit to Paciran seem-NE
      'It's likely that my brother will visit Paciran.' (15Feb2011.080, 084, 085)

(18) (**wingi**)   pak Suwanan (**wingi**)   wes   mate-ni lampu (**wingi**)
      yesterday Mr. Suwanan yesterday already die-APPL light   yesterday
      'Yesterday Pak Suwanan has turned off the light.' (15.02.2011)

Adverbs such as *pancene* 'truly' and *sa'jatine* 'actually' also occur sentence-initially, shown above in (2) and (3) respectively. Another example with *pancene* is shown here.

(19) alhamdulillah cah.... **pance-ne** mbok-e   iki saba-ne   ndalok
      alhamdulillah PRT.... true-NE   mother-DEF DEM stay.place-NE at

      nyi Ra
      Mrs. Ra
      'Praise Allah, oh my goodness….it is true her mother always stayed in one place at Mrs. Ra's.' (Feb19-11-BZngelewat:9:14)

The examples below with *ketoke* 'direct evidential' illustrate that this marker can occur between the subject and the verb as well as sentence-initially and sentence-finally.

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[24] Note that I assume that the structural representation of *wingi* 'yesterday' is not necessarily parallel or a reflection of the structural representation of TAM markers such as *koyoke* or *mesthi* (and vice versa). The important point here is that both these elements have a freer syntactic distribution than, for example, a noun or a verb in Javanese.

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(20) a.   mbak Yeni **ketok-e** tau   lungo reng Suroboyo
            Miss   Yeni seem-NE EXP.PERF go   at   Surabaya
            'Yeni seems to have once gone to Surabaya.' (26april2011.027)

      b.   **ketok-e** mbak Haris   masak iwak pepesan
            seem-NE Miss   Haris   cook   fish *pepes*-AN
            'Haris seems to be cooking fish pepesan.' (26Feb11.026)

      c. ? mbak Haris   masak iwak pepesan   **ketok-e**
            Miss   Haris   cook   fish   *pepes*-AN seem-NE
            'Haris seems to be cooking fish pepesan.' (26Feb11.028)

(21)   (***ketok**) adik-ku   (***ketok**) mangan watu (***ketok**)
       see   sibling-my   see   AV.eat   stone see
       ('My younger sister seems to have eaten a stone.') (4mar11_2.020,021,022)

As shown in (21) above, without the suffix *-(n)e*, *ketok* 'see' cannot occur in the same positions. This highlights that this suffix licenses the apparent freer syntactic distribution as an adverb.

2.2.2   *Syntactic distribution of* jekene

The TAM marker *jekene* 'direct evidential' also may overtly occur in these positions: sentence-initially, between the subject and the verb and sentence-finally.

(22)   Context: *sesok isuk awakmu reng kemantenan. Awakmu pikir koncomu mbak Hamida reng kemantenan juga, tapi awakmu ora yakin soale wonge repot banget...* (Translation: Tomorrow morning you are going to a wedding. You think that your friend Hamida is going to the wedding too, but you are not sure because she is a very busy person…)
       jeke-ne   aku ke-temu   Hamida
       I.think-NE   1SG KE-meet   Hamida
       'It seems that I'll meet Hamida.' (24Feb11.010)

(23)   Context: *Anakmu seneng gambar. Awakmu ngomong karo koncomu*: (Your child likes to draw. You tell your friend…)
       anak-ku **jeke-ne**   ape dadi   pelukis
       child-my I.think-NE FUT become artist
       'My son might become a painter.'(24.02.2011)

(24)   Dani wes   cukup ngisi   toples-e   **jeke-ne**
       Dani PERF enough AV.fill   container-DEF I.think-NE
       'Dani has filled the container enough, it seems.' (2june11.214)

(25) BZ: he eh.. cakot.. ayan   ngono   igak yo?
            yes   addict epilepsy like.that NEG yes
            'yes, addicted....does he have epilesy or not?'

      BS: ORA!! yo   cakot **jeke-ne**,   iyo...
            NEG   yes   addict I.think-NE yes
            'No! He's likely addicted, yes.'

      BZ: eee… yo cakot ngoceh-ngoceh   ngono?
            oh…   yes addict AV.talk.a.lot-RED   like.that
            'Ooooh, yes, addicted to talking too much, like that?'
            (Feb19-11_BZkemantenan : 4:01-4:04)

For some speakers, the root can be found in the same environments as *jekene* (sentence-initially, in-between the subject and the verb, and sentence-finally), suggesting that *jeke* may be an adverb itself as well.[25]

(26) **jeke**   Dani   mangan sop alon-alon
      I.think Dani   AV.eat   soup slowly
      'Dani seems to eats soup slowly.' (2june11.200)

(27) Dani **jeke**   mangan sop alon-alon
      Dani I.think AV.eat   soup slowly
      'Dani seems to eats soup slowly.' (2june11.199)

(28) Dani mangan sop   alon-alon **jeke**
      Dani AV.eat soup   slowly   I.think
      'Dani seems to eats soup slowly.' (2june11.198)

However, for other speakers, the form of *jeke* is restricted to the sentence-final position as shown in (29):

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[25] Interestingly, Paciran Javanese seems to have reanalyzed the root form of *jekene*. According to Robson and Wibisono (2002), the root form of *jege* or *gajege* in Standard Javanese is *gajeg* (see Table 2 above), which are both translated as 'I think'. The form *jegene* is not in the dictionary. In Paciran Javanese only the form *jeke* is found, and there is no form of *gajeg* in use, suggesting that the root of *jekene* is *jeke,* and not *(ga)jeg* in this dialect. That is, while in Standard Javanese *jege* is comprised of the root *jeg* plus the suffix –*(n)e*, in Paciran Javanese, *jeke* is already the root, and the suffix –*(n)e* is added to this root to form *jeke-ne*.

(29) a. * **jeke** bu Zumaroh gawe botok
         I.think Mrs. Zumaroh make *botok*
         ('Bu Zumaroh seems to be making *botok*.') (4mar11_2.003)

     b. * bu Zumaroh **jeke** gawe botok
         Mrs. Zumaroh I.think make *botok*
         ('Bu Zumaroh seems to be making *botok*.') (4mar11_2.004)

     c. bu Zumaroh gawe botok **jeke**
        Mrs. Zumaroh make *botok* I.think
        'Bu Zumaroh seems to be making *botok*.' (4mar11_2.005)

Despite this inter-speaker variation, that *jeke* can occur sentence-finally may still be indicative that it is an adverb. However, further investigations must be made to better understand the distribution and categorial status of *jeke* in Paciran Javanese.

2.2.3 *Syntactic distribution of* watake, bonake

The following examples show the freer surface distribution of the 'indirect evidential' markers *watake* and *bonake*. Examples are first given for *watake* in (30)-(32), which can occur sentence-initially, between the subject and the verb, and sentence-finally.

(30) **watak-e** Ria nyeneng-i Patrus
     character-NE Ria AV.like-APPL Patrus
     'It's likely Ria is in love with Patrus" (26april11.047)

(31) Context offered: "When you speak to some one and ask what that girl is doing now, and because you didn't see and your friend also didn't see [what the girl is doing]"
     dewe'-e **watak-e** turu
     self-DEF character-NE sleep
     'She seems to be sleeping.' (1mar11.044)

(32) beroh...sampek lahan kiro-kiro se-tengah hektar **wata'-e**,
     around... until land-AN approximately-RED one-half hectar character-NE

     beroh... roh ra tau tak gawe belas
     around... around NEG EXP.PERF 1SG.CL make at.all
     'around half hectar.... I never use it.' (Feb19-11_BZkemantenan : 6:31)

The marker *bonake* 'indirect evidential' also can occur sentence-initially and between the subject and the verb, but there is inter-speaker variability as to whether it can occur sentence-finally. An example set where *bonake* is completely unacceptable in sentence-

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final position is given in (33) and then a set where this marker is completely acceptable is given in (34). (Crucially, these sets are from different speakers.)

(33) a. **bonak-e** Risma seneng gelang iki
      seem-NE Risma like bracelet DEM
      'It seems that Risma likes this bracelet.' (26Feb11.044)

    b. Risma **bonak-e** seneng gelang iki
      Risma seem-NE like bracelet DEM
      'It seems that Risma likes this bracelet.' (26Feb11.045)

    c. * Risma seneng gelang iki **bonak-e**
      Risma like bracelet DEM seem-NE
      ('It seems that Risma likes this bracelet.') (26Feb11.046)

(34) Context: *Jozina ngomong neng Bu Zum: Aku ngulang kala-kala dino sabtu sore. Bu Zum ngomong neng Pak Suwanan: Jozina ngulang kala-kala dino sabtu sore. Terus, sabtu sore, mbak Mida nemo'no mbak Jozi. Mida takok Pak Suwanan. Pak Suwanan*: (Context: Jozina told Mrs. Zum: "I sometimes teach Saturday afternoons." Mrs. Zum told Mr. Suwanan: "Jozina sometimes teaches Saturday afternoons." Then, on Saturday afternoon, Miss Mida is looking for Jozi. Mida asks Mr. Suwanan. Mr Suwanan says:)

    a. **bonak-e** mbak Jozi ngulang
      seem-NE Miss Jozi AV.teach
      'It seems that Jozi is teaching.' (4mar11.039)

    b. mbak Jozi ngulang **bonak-e**
      Miss Jozi AV.teach seem-NE
      'It seems that Jozi is teaching.' (4mar11.044)

In sum, while the indirect evidential markers *watake* and *bonake* behave differently with respect to whether they can occur in the sentence-final position, both can still occur sentence-initially. This is evidence that they have a freer surface syntactic distribution than auxiliaries, which can only occur between the subject and the verb. I now turn to the modal markers *mesthine* and *kudune*.

2.2.4 Syntactic distribution of **mesthine, kudune**

Like all the other markers above the modal markers *mesthine* 'EPIST.should'*, kudune* 'ought' can occur sentence-initially and between the subject and the verb. These two positions with the marker *mesthine* are shown in examples (35) and (36).

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(35) **mesthi-ne**   udan-e wes terang soal-e   wes gak mendung
     EPIST.must-NE rain-DEF PERF clear   because-NE PERF NEG cloud
     'It should be that the rain has stopped because it's no longer cloudy.'
     (4may11NTZ.059)

(36) Context: Talking about how one might feel if you didn't know *kromo ...*
     dadi kan wong seng di-jak   ngomong mou   **mesthi-ne**   kan
     so   PRT people REL PASS-ask AV.speak aforemtn EPIST.must-NE PRT

     wes ngerti
     PERF understand
     'So the people who were asked to speak [kromo] should already understand.'
     (Apr30_11_IJ_Laila2: 1:26-1:31)

These positions are also grammatical with *kudune* 'ought', as shown in (37) in sentence-initial position and between the subject and the verb in (38) from elicitation. In (39), an example taken from a recorded interview, it is not clear which position *kudune* is in, as the subject is non-overt. However, this example does show that *kudune* can occur at the left periphery of the clause in surface structure.

(37) **kudu-ne**   Halima mangan sop alon-alon
     DEONT.must-NE Halima AV.eat   soup slowly
     'Halima should eat soup slowly.' (2june11.167)

(38) Halima **kudu-ne**   mangan sop alon-alon
     Halima DEONT.must-NE AV.eat   soup slowly
     'Halima should eat soup slowly.' (2june11.166)

(39) basa   indonesia   iso lancer... mergo-ne   wong indonesia
     language-DEF Indonesia   can fluent... because-NE person Indonesia

     Miss. **kudu-ne**   iso   basa   indonesia... hehehe
     Miss DEONT.must-NE can language Indonesia... hahaha
     'Indonesian, [I] can [speak it] fluently...because [I am] Indonesian, Miss. [I] should be able to speak Indonesian....hahaha.'
     (May1_11_IJ_Nasrul: 3:36-3:45)

Unlike evidentials *koyoke, ketoke, jekene, watake* however, the markers *mesthine, kudune* are degraded or unacceptable in sentence-final position. For instance in (40)-(41), the consultant comments that it is *jarang dik pake* 'seldom used'. Instead, the consultant perceives placement between the subject and the verb as being used *sering* 'often' as in

(38) above, and sentence-initially in (37) as *paling sering* 'most often'. For others, sentence-final position of *mesthine, kudune* is not accepted, as in (42).

(40) ??Jozi mangan sop alon-alon **mesthi-ne**
Jozi AV.eat soup slowly EPIST.must-NE
'Jozi should be eating soup slowly.' (2june11.130)

(41) ??Halima mangan sop alon-alon **kudu-ne**
Halima AV.eat soup slowly DEONT.must-NE
'Halima should eat soup slowly.' (2june11.165)

(42) *mbak Jozi nganggo kerudung nok Aliyah **kudu-ne**
Miss Jozi AV.wear veil at Aliyah DEONT.must-NE
('Jozi should wear a head-scarf at Aliyah.') (15Feb11.035)

The pattern found with *mesthine* 'EPIST.should', *kudune* 'ought' is not unlike *bonake* 'indirect evidential' in that these markers can occur sentence-initially and between the subject and the verb, but complications arise with occurring in the sentence-final position. In sentence-final position, however, a distinction can be made. The modal markers are always degraded or outright unaccepted whereas with *bonake* I found inter-speaker variability – some found that position to be entirely acceptable while others found it to be completely unacceptable. These judgments are reflected in Table 4, repeated in §2.2.6 below.

2.2.5 Syntactic distribution of **mesthi, paleng**

Two TAM markers from the group outlined in Table 1 above, namely *mesthi* 'EPIST.must' and *paleng* 'maybe', also allow for a wider surface distribution. Although these forms do not have the suffix -*(n)e*, which was considered evidence for being an adverb, I argue that they are also adverbs, and not auxiliaries, because of their freer surface distribution. Similar to Robson (1992:81), I assume that a "primary consideration is word order" in distinguishing adverbs from auxiliaries, which "come immediately before the verb and cannot be separated from it". The marker *mesthi* 'EPIST.must' can be separated from the verb and can occur sentence-initially, as in (43). However, like *mesthine* 'EPIST.should', *kudune* 'ought', the modal *mesthi* does not seem to be able to occur sentence-finally, as shown in an example from elicitation in (45).

(43)   Context: *Lampu makan nok omahe bu Zumaroh* (Translation: The light is on at
        Bu Zumaroh's house.)
        mesthi   bu   Zumaroh   reng   omah
        EPIST.must Mrs. Zumaroh   at   house
        'Bu Zumaroh must be at home.' (15Feb11.074)

(44)   Context: *Lampu makan nok omahe bu Zumaroh* (Translation: The light is on at
        Bu Zumaroh's house.)
        bu   Zumaroh   **mesthi**   reng   omah
        Mrs. Zumaroh   EPIST.must   at   house
        'Bu Zumaroh must be at home.' (15Feb11.075)

(45)   Context: *Lampu makan nok omahe bu Zumaroh* (Translation: The light is on at
        Bu Zumaroh's house.)
      * bu   Zumaroh   reng   omah   **mesthi**
        Mrs. Zumaroh   at   house   EPIST.must
        ('Bu Zumaroh must be at home.') (15Feb11.076)

However, recorded speech from an interview shows *mesthi* 'EPIST.must' as sentence-final
is fine, as shown in (46). It could be that there is inter-speaker variation concerning the
sentence-final position with this adverb; I leave this issue aside for now.

(46)   Context: Talking about differences of the dialect of Paciran within the village
        itself: "...the south block, close to the hill, the southern mosque; it is more coarse
        there..."
        masih   sopan   wong   kene   katimbange   wong   kono...
        still   polite   people   here   KA-compare-NE   people   there

        pance-ne   per-gaul-an   **mesthi**
        actual-NE   association-AN   EPIST.must
        'People here are still more polite than people there... It's true that there must be an
        association.'(Apr30_11_IJ_Laila:6:17-6:25)

The modal marker *paleng* 'maybe' can occur sentence-initially, between the subject and
the verb, and sentence-finally. There seems to be no restrictions or inter-speaker
variability on occurring sentence-finally with *paleng* 'maybe'.

(47)   **paleng** Salsa   oleh   nyileh   sepeda-ne cak   Adi
        maybe Salsa   allow   AV.borrow bike-DEF   Mr.   Adi
        'Maybe Salsa can borrow Adi's motorbike.' (28Feb11.023)

(48)   Waiq   **paleng**   numpak   kapal
        Waiq   maybe   ride   ship
        'Waiq might board a ship.' (2june11.241)

(49) cak Khuluq ketemu cak Waiq **paleng**
     Mr. Khuluq meet   Mr. Waiq maybe
     'maybe Mr. Khuluq is meeting Mr. Waiq.' (7mar11_2.089)

2.2.6 *Summary of syntactic distribution data*

Table 3, repeated from above, summarizes the surface syntactic distribution of the above TAM markers in Paciran Javanese: all TAM markers in this group can occur sentence-initially and between the subject and the verb, and all except for the modals *mesthine* 'EPIST.should', *kudune* 'ought' (and the markers *bonake* 'dir.evidential', *mesthi* 'EPIST.must' for some speakers) can occur sentence-finally as well. It is curious that the modal *paleng* 'maybe' is accepted in sentence-final position while other adverbial modals (*mesthine* 'EPIST.should', *kudune* 'ought', *?mesthi* 'EPIST.must') are not accepted, but the reasons behind this restriction is put aside as I am focusing here on the distributional evidence that these markers are adverbs.

Table 3. Surface syntactic distribution of 'adverbial' TAM markers in Paciran Javanese

	TAM marker	**Sentence Initial**	**In-between Subj & Vb**	**Sentence Final**
ADVERBS	*jekene* 'direct evidential'	✓	✓	✓
	koyoke 'direct evidential'	✓	✓	✓
	ketoke 'direct evidential'	✓	✓	✓
	watake 'indirect evidential'	✓	✓	✓
	bonake 'indirect evidential'	✓	✓	?✓
	mesthine 'epistemic.should'	✓	✓	?✗
	kudune 'deontic.should'	✓	✓	?✗
	mesthi 'epistemic must'	✓	✓	?✗
	paleng 'maybe'	✓	✓	✓

In sum, given that many of these TAM markers share the same suffix as other adverbs such as *pancene* 'truly, really' and that they also can occur in the same syntactic positions as other adverbs, I conclude that the markers in Table 3 are adverbs. I now turn to uncovering the category type of the second main group of TAM markers. Based on their surface syntactic distribution, and a number of tests for other category types, I will argue that these markers are auxiliaries.

3 TAM markers as auxiliaries

I argue that the group of TAM markers *kudu, wes, lagek, ape, tau, oleh, iso* in Paciran Javanese are categorized as auxiliaries (Table 4).

Table 4. Auxiliary TAM markers in Paciran Javanese

Category Type	TAM marker	Gloss
AUXILIARY	*kudu*	'deontic.must'
	wes	'PERF, already'
	lagek	'PROG, just'
	ape	'FUT'
	tau	'EXP.PERF'
	oleh	'deontic.may'
	iso	'can'

In this section, I demonstrate that these TAM markers are not adverbs, nouns, verbs, or adjectives and conclude that their behaviour is most auxiliary-like based on their syntactic distribution. Specifically, I first present data in §3.1 that these markers can only occur between the subject and the verb; their restricted syntactic distribution suggests that they are auxiliaries and not adverbs. In §3.2, I show using a test based on two types of negation in Javanese that these TAM markers are not nouns, but verbal predicates. Section 3.3 focuses on how the TAM markers in Table 4 are distinct from verbs. For example, a subset of these markers can front in yes-no questions while main verbs cannot. I also discuss a verbal morphology test put forward by Cole et al. (2008) in this sub-section whereby not allowing inflectional or derivational morphology is a clue that these TAM markers are not verbs. However, I point out a number of disadvantages of this verbal morphology test. These tests are summarized in Table 5 below for each TAM marker in Table 4. Together, these tests suggest that *kudu, wes, lagek, ape, tau, iso, oleh* are auxiliaries in Paciran Javanese.

Table 5. Summary of tests for TAM markers as auxiliaries in Paciran Javanese

	§3.1	§3.2	§3.3		
TAM MARKER	Word order: Must occur between Subj & VP	Takes verbal negation *ora*	Fronts in yes-no questions	(Takes inflectional morphology)	(Takes derivational morphology)
kudu 'DEONT.must'	✓	✓	✗	✗	??
wes 'PERF'	✓	✓	✗	✗	✗
lagek 'PROG'	✓	✓	✗	✗	✗
ape 'FUT'	✓	✓	✗	✗	✗
tau 'EXP.PERF'	✓	✓	✓	✗	✗
oleh 'allow'	✓	✓	✓	✗	✓
iso 'can'	✓	✓	✓	✗	✗

3.1 Evidence for auxiliary status: word order

In this section, I discuss the word order properties of the TAM markers *kudu, wes, lagek, ape, tau, oleh, iso*. I demonstrate that these markers are syntactically restricted in their distribution: they must precede the VP and they cannot appear sentence-initially or sentence-finally. I argue that the word order properties provide evidence that (i) these TAM markers are auxiliaries and (ii) they are distinct from adverbs.

Concerning the first point, I consider that one of the defining features of auxiliaries in Javanese to be their word order in that "...they immediately precede the verb..." following Robson (1992:65-66). In Standard Javanese, Robson (1992) includes *wis* 'already, completion', *lagi* 'to be ...ing', *arep* 'will, intention' among the group of markers that are categorized as auxiliaries. In Paciran Javanese, I show below that the TAM markers *kudu, wes, lagek, ape, tau, oleh, iso* must precede the verb. Specifically, I show that they can only occur between the subject and the VP, suggesting that this group of TAM markers are also auxiliaries. This conclusion is not surprising, given the close phonological similarity across dialects such as with *wes* 'PERF', *lagek* 'PROG' and *ape* 'FUT' (also noted in Chapter 1).

The second point of this section is to demonstrate that the TAM markers in this group do not display the same syntactic distribution as adverbs. I argue that because of their lack of free distribution like other adverbs, they cannot be of this category type. The syntactic distribution of a temporal adverb such as *wingi* 'yesterday' is contrasted with

the distribution of the TAM markers *iso* 'can', *wes* 'PERF' in (50), (51). These markers can only occur between the subject and the verb, as noted above. They cannot occur sentence-initially or sentence-finally like the temporal adverb *wingi* 'yesterday'.

(50) a. (**wingi**) Cak Waiq (**wingi**) iso ngelangi (**wingi**)
yesterday Mr. Waiq yesterday can AV.swim yesterday
'Yesterday Cak Waiq could swim.' (15.02.2011)

b. (***iso**) Cak Waiq **iso** ngelangi (***iso**)
can Mr. Waiq can AV.swim can
('Cak Waiq can swim.') (15.02.2011)

(51) a. (**wingi**) Pak Suwanan(**wingi**) wes maten-i lampu (**wingi**)
yesterday Pak Suwanan yesterday PERF AV.die-APPL light yesterday
'Yesterday Pak Suwanan has turned off the light.' (15.02.2011)

b. (***wes**) Pak Suwanan **wes** maten-i lampu (***wes**).
PERF Pak Suwanan PERF AV.die-APPL light PERF
('Pak Suwanan has turned off the light.') (15.02.2011)

Similarly, the TAM markers *ape* 'FUT', *wes pe* 'PERF FUT', *oleh* 'deontic.may', *kudu* 'deontic.must', *tau* 'EXP.PERF' are only acceptable between the subject and the verb.

(52) (***ape**) Bu Maula **ape** mbungkus sego pecel (***ape**)
FUT Mrs. Maula FUT AV.package rice pecel FUT
'Bu Maula will package up rice 'pecel'.' (15Feb11.013, 014, 015)

(53) (***wes pe**) Cak Kholiq **wes pe** sarapan (***wes pe**)
PERF FUT Mr. Kholiq PERF FUT eat.breakfast PERF FUT
'Cak Kholiq will eat breakfast in a moment.' (15Feb11.061, 062, 064)

(54) (***oleh**)mbak Jozi **oleh** nganggo celono nok maulud-an (***oleh**)
allowMiss Jozi allow AV.wear pants at islam.celebration-AN allow
'Jozi may wear pants to the Islamic celebration.' (15Feb11.045, 049, 051)

(55) (***kudu**) mbak Jozi **kudu** nganggo kerudung nok Aliyah
DEONT.must Miss Jozi DEONT.must AV.wear veil at Aliyah

(***kudu**)
DEONT. must
('Jozi must wear a head-scarf at Aliyah.') (15Feb11.032, 033)

(56) * **tau**   Joko   mangan rajungan
        EXP.PERF bachelor AV.eat   crab
        ('Joko once ate crab.') (18june2011.022)

Therefore, the above data on *kudu, wes, ape, tau, oleh, iso* provide evidence that the grammatical category of this group of TAM markers appears to be the auxiliary category and not adverbial.

The aspectual marker *lagek*, however, can either occur between the subject and the verb or sentence-finally, but not sentence-initially. When this marker is positioned between the subject and the verb, *lagek* can either be construed as a progressive marker or an inceptive marker as suggested by the two different translations in (57)b. When *lagek* is sentence-final, it is the inceptive aspect that seems to be more prominent.[26] The consultant comments that when it is at the end of the sentence, it only means *baru saja, beberapa menit yang lalu* 'just new, a few minutes ago'. No other TAM marker has this kind of syntactic distribution.

(57) a. * **lagek** cak Khuluq ngulang
            PROG   Mr. Khuluq AV.teach
            ('Cak Khuluq is teaching.') (15Feb11.089)

      b.   cak Khuluq **lagek** ngulang
            Mr. Khuluq PROG   AV.teach
            'Cak Khuluq is teaching.' OR 'Cak Khuluq just started teaching.'
            (15Feb11.087)

      c.   cak Khuluq ngulang **lagek**
            Mr. Khuluq AV.teach PROG
            'Cak Khuluq just started teaching a few moments ago.' (15Feb11.090)

Since there is a distinction in meaning, I tentatively suggest that there are two *lagek* markers; an adverbial *lagek* 'inceptive aspect' and an auxiliary *lagek* 'progressive aspect'. That *lagek* 'inceptive aspect' could be an adverb seems to be on the right track. Manner adverbs, such as *alon-alon* 'slowly' have a parallel distribution: they can occur between the subject and the verb and sentence-finally, but not sentence-initially, as in

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[26] What I mean by *prominent* is that the inceptive aspectual reading is what speakers point out more often. However, it does not mean that the progressive aspect is not present.

(58).[27] This is different from high adverbs such as *koyoke* 'direct evidential', which can occur sentence-initially, between the subject and the verb as well as sentence-finally, as shown above.

(58) a. * **alon-alon** Kana mangan bubur-e
         slowly-RED Kana AV.eat rice.pudding-DEF
         ('Kana is slowly eating rice porridge.') (20may11.039)

     b.   Kana **alon-alon** mangan bubur-e
         Kana slowly-RED AV.eat rice.pudding-DEF
         'Kana is slowly eating rice porridge.' (20may11.038)

     c.   Kana lagek mangan bubur   **alon-alon**
         Kana PROG AV.eat rice.pudding slowly-RED
         'Kana is eating rice porridge slowly.' (20may11.043)

What I would like to underline is that the aspectual marker *lagek*, just like the manner adverb *alon-alon* 'slowly' can occur sentence-finally, suggesting that *lagek* in this position is an adverb.

In sum, what we can conclude from the data on the syntactic distribution of *kudu, wes, ape, wes ape, tau, oleh, iso* is that they are unlike adverbs: they cannot occur in sentence-initial or sentence-final position. Instead, they appear to be auxiliaries based on their word order properties. I have suggested that the aspectual marker *lagek* has two forms: one as an adverb, which is permitted to be in sentence-final position similar to the distribution of manner adverbs, and one as an auxiliary, which is not permitted to be in other positions in the syntax besides between the subject and the verb. Further evidence is necessary to better understand the interpretation differences between the progressive and the inceptive aspectual meanings of *lagek*, which I briefly discuss in Chapter 3.

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[27] While *lagek* has a parallel distribution to manner adverbs, this is not to say that they occupy the same slot (which would be very surprising since they have different roles). Between the subject and the verb, *lagek* can occur either to the left or the right of the manner adverb *alon-alon* 'slowly'. It is unclear if there are any meaning differences related to either order.
 (i) a.   Sri   lagek   alon-alon   melayu
            Sri   PROG   slowly-RED   run
            'Sri is walking slowly.' (18june2011.077)
      b.   Sri   alon-alon   lagek   melayu
            Sri   slowly-RED   PROG   run
            'Sri is walking slowly.' (18june2011.079)

3.2 These markers are distinct from nouns

Additional clues that the TAM markers *kudu, wes, lagek, ape, tau, oleh, iso* are part of the grammatical category of adverbs comes from evidence showing that these markers are not of a different category. In this section, I show that these TAM markers in Paciran Javanese are distinct from nouns.

A valid question is whether these TAM markers are nominal predicates in Paciran Javanese. It has been noted by Lan (2010) that in Kelantan Malay, for example, one TAM marker is a nominal auxiliary while all others are auxiliary verbs. Lan (2010) presents evidence for this distinction based on a test with two types of negation in Kelantan Malay. Specifically, in this dialect of Malay, *tok* is a form of negation restricted to verbal and adjectival predicates and *buké* is restricted to nominal items. Lan (2010) shows that the progressive marker *tengoh* can only take the nominal negation *buké*. Attempts to combine this marker with the verbal negation *tok* results in ungrammaticality, as shown in (59).

(59) Dio **buké** / **tok* **tengoh**beli buku   KELANTAN MALAY
2SG NEG NEG PROG buy book
'She is buying the book.' (Lan 2010:3, ex.7)

The same test can also be used in Javanese in order to distinguish whether the TAM markers presented in Table 4 are nominal or verbal predicates: there are also two types of negation in Javanese which make the same distinction as in Kelantan Malay. As shown above in §2.1.2, *ora* is a form of negation restricted to verbal and adjectival predicates, and *dudu* is a form of negation restricted to nominal items. Further examples are given here in (60)-(63). In Paciran Javanese, *(i)gak* is another form of negation that is restricted to verbal and adjectival predicates like *ora* and is frequently used. As far as I understand, *ora* and *gak* are completely interchangeable in Paciran Javanese.[28]

(60) omah-ku **ora** gedhé
house-my NEG big
'My home is not large.' (Robson 1992:112)   [adjectival predicate]

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[28] In terms of dialectal differences, the form *gak* is not prevalently used in Standard Javanese and is not present in Horne (1961), Robson (1992), but is in Robson and Wibisono (2002) in which they note it is a regional variant of *ora*.

(61)   Context: Sampean weroh koncomu Risa nduwe acara sing akeh (You know that
         your friend Risa has a lot of work to do.)
         paling Risa **ora** dolan nok omah-ku
         maybe Risa NEG visit   at   house-my
         'Maybe Risa won't visit my house.' (10Apr11.032)   [verbal predicate]

(62)   suara angin, suara ombek-e kan gedhi to Miss... dadi omong-e iku
         voice wind, voice wave-DEF PRT big   PRT Miss... so   speak-DEF DEM

         mbengok-mbengok.... nek **gak** mbengok-bengok, **ora** kringi
         AV.shout-shout   if   NEG shout-shout   NEG   hear
         'The sound of the wind and the waves are loud, Miss. So this speech is [like]
         shouting. If [you] don't shout, [you] don't hear.' (May1_11_IJ_Haris2: 0:02-0:10)
                                                              [verbal predicate]
(63)   barange   **dudu**   barang colong-an
         good-DEF NEG.NOM good   steal-AN
         'Those goods are not stolen goods.' (Robson 1992:110)   [nominal predicate]

If any TAM markers are nominal in Paciran Javanese, then we would expect those
markers to only be compatible with negation of the form *dudu*. I have replicated Lan's
(2010) test in Paciran Javanese and none of the TAM markers in Table 4 above are
compatible with *dudu* negation. Instead, they are only compatible with *ora* or *gak*,
illustrated with *iso* 'can' and *oleh* 'allow' in (64) and (65).

(64)   mbak Supri **ora** / * dudu   **iso** ngelangi
         Miss Supri NEG /   NEG.NOM can   AV.swim
         'Supri cannot swim.' (7.10.2010-LK)

(65)   deweke **ora**   /*dudu   **oleh** parker kene
         3SG   NEG /   NEG.NOM may   park   here
         'He cannot park here.' (7.10.2010-LK)

From the test based on two types of negation, we can conclude that they are not nominals.
However, it is still unknown as to which category type these TAM markers have. Since
these TAM markers occur with *ora, gak* they could be any verbal predicate, such as an
adverb, verb, or auxiliary. I have shown above that these markers do not appear to be
adverbs based on their lack of apparent free distribution in syntax. Further, I am not
considering that they could be adjectival predicates because just like the adverbial TAM

markers, this group of TAM markers do not modify nouns. For example, the noun *filem* 'film' cannot be modified by *wes* 'PERF'.

(66) * Mida ndelok wes filem
     Mida AV.see PERF film
     ('Mida watched a former film.') (2june11.240)

Concerning the type of verbal predicate they could be, I will show in the following section that this group of TAM markers is distinguished from verbs as well, concluding that they must be auxiliaries.

3.3   These markers are distinct from verbs

So far for the group of TAM markers *wes, kudu, lagek, ape, tau, iso, oleh* in Paciran Javanese, I have given evidence that they are not nouns or adverbs. Further, word order properties suggest that they may be auxiliaries. However, we might still wonder if these markers could be verbs. I argue that these markers are distinguished from verbs as well and conclude that they are categorized as auxiliaries.

3.3.1   Evidence from fronting in yes-no questions

One test that distinguishes these markers from verbs is their behaviour in yes-no questions. That is, a subset of these markers may front in yes-no questions, while main verbs cannot. Out of the set *kudu, wes, ape, wes ape, tau, oleh, iso,* the markers *tau* 'EXP.PERF', *oleh* 'deontic.may', *iso* 'can' can front. The yes-no question fronting construction is shown in (67)-(69).

(67) a.   wingi   Nunung **tau**   mangan sego kuning
        yesterday Nunung EXP.PERF AV.eat   rice   yellow
        'Yesterday Nunung had eaten saffron rice.' (10Apr11.119)

    b.   **tau**   awakmu mangan rajungan?
        EXP.PERF 2SG   AV.eat   crab
        'Have you ever eaten crab?' (18june2011.019)

(68) a. Cak Kholiq   **iso** gotong sepeda montor
         Mr. Kholiq   can   lift   bike   motor
         'Cak Kholiq can lift the motorcycle.' (14.02.2011, 28.02.2011)

     b. **iso** Cak Kholiq gotong sepeda montor?
         can Mr. Kholiq lift   bike   motor
         'Can Kholiq lift the motorcycle?' (14.02.2011, 28.02.2011)

(69) a. …awakmu **oleh** dolan-an
         …2SG   may play-AN
         'You are allowed to go play' (May26_11_S1_Nung, 4:46)

     b. **oleh** aku cicipi iwak panggang?
         may 1SG try   fish grilled
         'May I try the grilled fish?' (14.02.2011)

That some auxiliaries can front in yes-no questions is contrasted with verbs, (70)-(72).[29]

It is ungrammatical to front verbs to form a yes-no question, as shown with intransitive

verbs in (70), the transitive verb *ngomong* 'to speak' in (71), and applicatives with either

the –*i* suffix or –*no* suffix in (72) in Paciran Javanese.

(70) a. Putri **tibo**.   c. Putri **guyu**
         Putri fall   Putri smile
         'Putri fell.' (27Feb11.028)   'Putri is smiling.' (27Feb11.031)

     b. * **tibo** Putri?   d. * **guyu** Putri?
         fall Putri   smile Putri
         ('Did Putri fall?') (27Feb11.029)   ('Is Putri smiling?') (27Feb11.032)

(71) a. Pak Khoim   **ngomong** boso   Inggris
         Mr. Khoim   AV.speak language English
         'Pak Khoim speaks English.' (27.02.2011)

     b. * **ngomong** Pak Khoim boso   Inggris?
         AV.speak Mr. Khoim language English
         ('Does Khoim speak English?') (27.02.2011)

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(72) a.   murid-e   **mecah-no**   jendelo
          student-DEF AV.break-APPL   window
          'The student broke a window.' (27Feb11.022)

    b. * **mecah-no**   murid-e   jendelo?
          AV.break-APPL   student-DEF window
          ('Did the student break a window?') (27Feb11.023)

    c.   mbakRisma **mate-ni**   pitik
          Miss Risma AV.die-APPL chicken
          'Risma killed a chicken.' (27Feb11.025)

    d. * **mate-ni**   mbakRisma pitik?
          AV.die-APPL Miss Risma chicken
          ('Did Risma kill a chicken?') (27Feb11.026)

Since verbs cannot front in yes-no questions while TAM markers *tau* 'EXP.PERF', *oleh* 'allow' and *iso* 'can', we can conclude that these TAM markers are not verbs. What about *kudu* 'DEONT.must', *wes* 'PERF', *lagek* 'PROG', *ape* 'FUT'? These markers cannot undergo subject-auxiliary inversion, as shown in (73)-(76).

(73) * **wes**   murid-e   ngerti   boso   Inggris?
      already   student-DEF AV.know language English
      ('Does the student already understand English?') (14Feb11.002)

(74) * **ape** mbak Nunung masak nastar?
      FUT Miss Nunung cook   cookies
      ('Will mbak Nunung bake cookies?') (14.02.2011)

(75)   Context: Gayus takok adjudikator (Gayus asks the adjudicator:)
    * **kudu**   aku mbayar dendo?
      DEONT.must 1SG AV.pay fine
      ('Do I have to pay the fine?') (14Feb11.060)

(76)   Context: *Aku kepingin weroh nek awakmu ketemu misananku wes suwi toh gak.* (I want to know if you met my cousin since a long time or not.)
    * **Lagek** awakmu ketemu misanan-ku?
      PROG 2SG   meet   cousin-my
      ('Did you just meet my cousin?') (15Feb12)

One immediate conclusion would be that since they behave similar to verbs in this respect, then *kudu* 'DEONT.must', *wes* 'PERF', *lagek* 'PROG', *ape* 'FUT' are also verbs.

Before jumping to this conclusion, I explore other possible ways to distinguish these TAM markers from verbs.

3.3.2 *Exploring morphological evidence*

Cole et al. (2008) propose a test to distinguish auxiliaries and verbs based on morphological properties; specifically, whether or not these markers can take verbal morphology. They claim that since the TAM markers that they investigated in Peranakan Javanese do not take verbal morphology, it suggests that they are not verbs. They recognize that this morphological evidence is only suggestive that they are not verbs, because not all transitive verbs in Peranakan Javanese take the homorganic nasal prefix, the passive prefix *di-*, or accept the causative/applicative suffix (Cole et al. 2008:8). While this test which I will call the 'verbal morphology test' seems promising in its conception, I would like to point out additional drawbacks which show that morphological evidence cannot distinguish the category type of TAM markers from verbs. As a result, the verbal morphology test is inconclusive and cannot be used to understand the category type in Javanese. First, I go through the basic outline of the verbal morphology test as it was applied in Cole et al. (2008) showing that Paciran Javanese is in some ways distinct from the dialect of Peranakan Javanese and then I go over its drawbacks.

As I have outlined in Chapter 1, §7 above, verbal morphology in Javanese relates to 'voice' and determines which arguments are in the subject/topic position similar to many Austronesian languages. Voice morphology in some languages such as Tagalog only refer to what ends up in subject/topic position. Javanese differs from Tagalog-type languages in that it also has morphology relating to VP-internal arguments (an oblique becoming a direct/indirect argument). Chung (1976), Cole and Hermon (2005) have shown this is the case in Indonesian. In general, the Javanese transitive verb root takes a homorganic nasal prefix in Actor Voice (where the Actor is the subject/topic), and the prefix *di-* for the by-phrase passive (Type I) (where the Theme is the subject/topic) (Horne 1961:103). The nasal prefix and passive prefix *di-* are *inflectional* morphology (Cole et al. 2008). With respect to *derivational* morphology, the root can also generally accept the 'causative/benefactive' applicative suffix *–no (*or *–aké* in Standard Javanese,

or *–ke* in Peranakan Javanese) or the 'locative' applicative *–i*. These derivational suffixes are always in conjunction with the homorganic nasal prefix (Horne 1961:208, 176). The homorganic nasal for Actor Voice, passive *di(k)-*, and locative applicative *–i* are illustrated in (77)-(79) with the verb root *pangan* 'to eat' in Paciran Javanese.

(77)   ACTOR VOICE
       menurut-e   aku Yeni mesthine   oleh   **mangan**   pedes
       opinion-DEF   1SG Yeni EPIST.must-NE allow AV.eat   spicy
       'According to me, Yeni should be allowed to eat spicy food.' (4may11oleh.007)

(78)   BY-PHRASE PASSIVE
       apel-e   paleng **di-pangan** pak Suwanan
       apple-DEF   maybe   PASS-eat   Mr. Suwanan
       'The apple was maybe eaten by pak Suwanan.' (7mar11_2.093)

(79)   APPLICATIVE
       yu   Hesti sa'-iki lagek **mangan-i**   wedhus
       sister Hesti SA-that PROG   AV.eat-APPL   goat
       'Hesti now is feeding the goats.' (4may11NTN.075)

In implementing the verbal morphology test, Cole et al. (2008) look at whether or not the Peranakan Javanese markers *isa* 'can', *gelem* 'want', *pernah* 'PERF' can take any of these affixes.

3.3.2.1 Verbal morphology test: derivational morphology

Here, I will first present their results for inflectional morphology and discuss the implications of this test and then I will turn to the results for derivational morphology. Cole et al. (2008) suggest that since the markers *isa* 'can', *gelem* 'want', *pernah* 'PERF' in Peranakan Javanese seem to be able to have a direct object, they could behave like transitive verbs in Javanese in taking the inflectional morphology: the nasal prefix or passive *di-* prefix. The examples Cole et al. (2008) give for these TAM markers taking a direct object are as follows[30]:

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[30] I do not consider Cole et al.'s example with *pernah* 'PERF' which is suggested to take a direct object *sugeh* 'rich' (Cole et al. 2008:7, ex.(16)). This is not a DP argument, but an adjectival predicate (Horne 1961:221), and therefore does not have the same structure as a transitive verb. It is therefore unsurprising that it cannot passivize with *sugeh* 'rich' (Cole et al. 2008:7, ex.(17)) because it cannot be an argument of the verb.

(80) a.   dheen gelem [kopi]   PERANAKAN JAVANESE
            3SG   want   coffee
            'He wants coffee.' (Cole et al. 2008:6, (14))

     b.   mben peserta   isa   [Inggris]
          every contestant can English
          'Every contestant can handle English.' (Cole et al. 2008:6, (12))

Cole et al. (2008: fn 8) note that they do not examine whether the noun phrases following the TAM markers in (80) are truly direct objects. They argue that their main point is to show that *gelem* 'want', *isa* 'can', *pernah* 'PERF' do not take the nasal prefix[31] or the passive *di-* prefix "...even though [these] sentences might appear to have the same structure as sentences with active transitive verbs" (Cole et al. 2008: fn 8), shown here in (81)-(83).[32]

(81) a.   aku *nggelem/gelem kopi   PERANAKAN JAVANESE
            1SG   N-want /want   coffee
            'I want coffee.' (Cole et al. 2008:5, (8))

    b. * kopi   di-gelem   dheen
        coffee PASS-want 3SG
        ('Coffee is wanted by him.') (Cole et al. 2008:6, (15))

(82) a.   aku *ngisa/isa ngomong Inggris
            1SG   N-can/canspeak   English
            'I can speak English.'(Cole et al. 2008:5, (7))

    b. * Inggris di-isa   mben peserta
        English PASS-can every contestant
        ('English is handled by every contestant.') (Cole et al. 2008:6, (13))

(83)   aku *mernah/pernah mangan sega
       1SG N-PERF/PERF   eat   rice
       'I have eaten rice before.' (Cole et al. 2008:5, (9))

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[31] Note that in Cole et al. (2008), they use the gloss N- for the nasal prefix in Javanese, while I use AV. (mnenomic for 'Actor Voice')

[32] Cole et al. (2008) note that it is possible to passivize *gelem* with the form *digelemi* in Pribumi Javanese, but not in Peranakan Javanese. However, this form is derived via derivational morphology (applicative suffix *–i*), and not inflectional morphology. How derivational morphology interacts with the test of 'verbal morphology' by Cole et al. (2008) is discussed below.

Cole et al. (2008) mention that the morphological evidence is suggestive that these TAM markers are not verbs, but note also that this test is not conclusive because not all verbs in Javanese have verbal morphology. In effect, there seem to be three classes of verbs that do not have verbal morphology based on a list given in Robson (1992:49) for Standard Javanese: (i) unaccusative verbs, (ii) reflexive verbs, and (iii) verbs that take a CP complement, illustrated in Table 6.[33] (Note that *gelem* is in this list, but it is not translated as 'want' as it is in Peranakan Javanese.)

Table 6. Intransitive verbs that do not have verbal morphology
(based on Robson 1992:49)

UNACCUSATIVES	REFLEXIVES	CP COMPLEMENT
ono 'there is'	*adus* 'to bathe'	*celathu* 'to say'
dadi 'to be, to become'	*tangi* 'to get up, stand up'	*takon* 'to ask, enquire'
lunga 'to go'		(*gelem* 'to be agreeable to')
teka 'to come'		(*weruh* 'to know, perceive')
tiba 'to fall'		
lair 'to be born'		

In general, transitive verbs in Javanese have the homorganic nasal prefix, but there are a few exceptions, which Robson (1992:56) points out, replicated in (84) here.[34] In Paciran Javanese, however, one of these verbs must take the nasal prefix: *nduwe* 'to have'.

(84)   Transitive verbs that do not have nasalization in Standard Javanese:
    gawe 'to make, cause'
    duwe 'to have, possess'
    tuku 'to buy'
    éntuk, olèh 'to get' (Robson 1992:56)

Therefore, because not all verbs have verbal morphology, we cannot conclude that an item is not a verb if it does not take verbal morphology. The marker could be part of the intransitive or transitive verbs in Javanese that do not have this morphology.[35]

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[33] Further research is necessary to understand whether *gelem* 'willing' and *weruh* 'to know' always takes a CP complement or not. See also Conners (2008), Chapter 3, for a list of verbs that do not have verbal morphology in Tengger Javanese, many of which overlap in Table 6.

[34] Note that *oleh* can also mean 'to get' in Standard Javanese. This is also the case in the dialect of Paciran Javanese. I assume that in both cases that these are homophonous, and there are two lexical entries in Javanese, one is an auxiliary TAM marker 'may' and one is a main verb 'to get'. This is discussed further below.

[35] Thanks to Timothy MacKinnon for reminding me of this point, which was also mentioned in Cole et al. (2008).

In what follows, I apply this test to the dialect of Javanese spoken in Paciran. Similarly for Paciran Javanese, TAM markers cannot take the inflectional morphology. I will conclude below that just like for Peranakan Javanese, the verbal morphology test is inconclusive towards understanding the category type of these TAM markers. For example, *wes* 'PERF' cannot take the homorganic nasal prefix like the verb *ng-ece* 'to make fun of', shown in (85).

(85) a. */?? Mas Umar **ng**-wis   **ng**-ece   bule   iku
            Mr. Umar AV.PERF   AV.make.fun.of albino DEM

     b.   Mas Umar **wis**   **ng**-ece   bule   iku
               Mr. Umar PERF   AV.make.fun.of albino DEM
               'Mas Umar had made fun of that *bule* (white foreigner).' (7.10.2010-LK)

Paciran Javanese TAM markers alone also cannot occur with the passive prefix *di-*, as exemplified with *wes* 'PERF' in (86)b. Further, the passive prefix cannot occur on both the TAM marker and the verb as if it were a verbal complex, like in (86)c. Instead, the prefix can only occur on the main verb, (86)d.

(86) a.   aku **wis** masak sego
         1SG PERF cook   rice
         'I have cooked the rice'

    b. * sego kuwi **di-wis**   masak karo aku
         rice the   PASS-PERF cook   by   me

    c. * sego kuwi **di-wis**   **di-masak**   karo aku
         rice the   PASS-PERF PASS-cook   by   me

    d.   sego kuwi **wis**   **di**-masak karo aku
         rice the   PERF   PASS-cook by   me
         'The rice has been cooked by me.' (7.10.2010-LK)

The facts on the distribution of the passive prefix *di-* are unsurprising, as I will shown below that markers such as *wes* 'PERF' do not seem to take a direct object as a complement, and the passive prefix *di-* presupposes that there is one.

I show in (87)-(89) that the TAM markers *kudu* 'DEONT.must' and *iso* 'can' also do not take inflectional morphology (homorganic nasal prefix or the passive prefix).

(87) murid **kudu/*ng**-gudu   sinau boso   arab
      student DEONT.must/N-DEONT.must   study language arab
      'The student must study Arabic.' (7.10.2010-LK)

(88) a. murid **kudu**   sinau boso   arab
         student DEONT.must study language arab
         'The student must study Arabic.' (7.10.2010-LK)

   b. * boso   arab **di**-kudu   (**di**)-sinau-ni   murid
        language arab PASS-DEONT.must PASS-study-APPL   student

   c. boso   arab **kudu**   **di**-sinau-ni   murid
       language arab DEONT.must PASS-study-APPL   student
       'Arabic must be studied by the student.' (7.10.2010-LK)

(89) a. * wong wadon **di**-iso   (**di**-)demok   karo wong lanang
         person female PASS-can   PASS-touch.by.hand with person male
         ('A woman can be touched by a man.') (7.10.2010-LK)

   b. wong wadon ora iso **di**-demok   karo wong lanang
       person female NEG can PASS-touch.by.hand with person male
       'A woman cannot be touched by a man.' (7.10.2010-LK)

The verbal morphology tests show that none of the TAM markers can take inflectional morphology in Paciran Javanese. However, the options of what we can conclude from this test are too broad for this dialect of Javanese as well: these markers could be verbs that do not take verbal morphology or they are simply not verbs and of a different type of grammatical category.[36]

3.3.2.2 Confounds of the verbal morphology test: the assumption of a direct object

While Cole et al. (2008) mention the above point that not all verbs have verbal morphology, there are further confounds of the verbal morphology test which make the results difficult to assess. For instance, in terms of the passive morphology, the inability to take the passive prefix does not conclusively show that these TAM markers cannot be

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[36] Furthermore, I have noticed that the nasal prefix is generally not optional in Paciran Javanese, as it is noted to be in Peranakan Javanese. Therefore, if the TAM marker is a transitive verb that takes the homorganic nasal prefix, then it should be ungrammatical to *not* have the nasal prefix inflectional morphology. It is not known if the optionality of the nasal prefix is dependent on the dialect. Considering behaviour within the dialect, it is also not clear if this optionality is dependent on the type of the verb, its frequency, or if it is related to Bahasa Indonesia.

verbs. The ungrammaticality could simply show that these markers do not take a direct object (they could be intransitive verbs). For instance, with the marker *isa*, Cole et al. (2008) give an example with a language, *inggris* 'English', as an apparent direct object. These authors suggest because that this marker takes a non-verbal complement, it could be that *isa* is the main verb itself. Alternatively it could be that *isa* is an auxiliary and it merges with a silent main verb which is not pronounced. This option is not explored in Cole et al. (2008). van Riemsdijk (2002) explores this proposal for modal verbs in Germanic OV languages that take a directional PP complement, such as in Dutch in (90). van Riemsdijk argues that for these cases, modals merge with a phonetically empty light verb [e]_{GO}.[37]

(90)   die   doos **kan** naar de zolder   DUTCH
          that   box   can   to   the attic
          'That box can be put in the attic.' (van Riemsdijk 2002:144, (1c))

In Javanese, a similar construction seems to be available at least with the directional PP *reng*, *neng*, etc. This construction can be used on its own, as in (91)a, and it is possible for the verb *lungo* 'go' to be overt, as in (91)b. Any TAM marker can occur in this construction in Paciran Javanese, shown here with *tau* 'EXP.PERF', *iso* 'can' in (92)a, (93). With the TAM marker, the verb *lungo* 'go' can be overt as well as in (92)b, parallel to when this construction is used without a TAM marker. As far as I understand, there is no meaning difference whether or not the verb *lungo* 'go' is pronounced. I suggest that when *lungo* is unpronounced, there is a silent verb counterpart, similar to van Riemsdijk's (2002) proposal for Germanic languages. In other words, I suggest that in constructions where a TAM marker is linearly adjacent with a directional PP in Javanese, the PP is not a complement of the TAM marker, but of a silent verb *lungo* 'go'.

(91) a.   naliko aku *reng Bali* aku tau   ndelok gamelan
          when 1SG at   Bali 1SG EXP.PERF AV.see gamelan
          'When I went to Bali, I once saw gamelan.' (10Apr11.115)

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[37] One can also say *ich kann Deutsch* 'I can German' in German which means the same as *ich kann Deutsch sprechen* 'I can speak German' with an overt verb (p.c. Maire Noonan, Bernhard Schwarz), exactly parallel to Javanese *aku isa inggris* 'I can English'.

b. bapak-mu *lungo neng kantor*?
father-your go at office
'Is your father going to the office?' (28Feb11.095)

(92) a. Jozi **tau** *reng Jakarta*
Jozi EXP.PERF at Jakarta
'Jozi once went to Jakarta.' (7mar11_2.105)

b. Jozi **tau** *lungo reng Jakarta*
Jozi EXP.PERF go at Jakarta
'Jozi once went to Jakarta.' (7mar11_2.108)

(93) Context offered: *mbak Haris nelpon, njaluk iso reng Bluri* (Haris called and asked if [you] can go to Bluri)
aku lagek gak **iso** *reng Bluri* soal-e repot
1SG PROG NEG can at Bluri because-NE busy
'I can't be going to Bluri because I'm busy.' (15april2011.044)

If the construction with directional PPs is on the right track in Javanese in the sense that TAM markers are not verbs because there is in fact a silent verb, we might expect that similar constructions are also available. This is in effect what I would like to suggest for (80)b above with *isa* 'can' in Peranakan Javanese. In this case, the meaning that the agent can speak English is transparent and directly available from this object. However, in Paciran Javanese, if you place a DP of a different semantic class (e.g. *guru* 'teacher') as a possible direct object, this results in ungrammaticality, shown in (94). I would predict this to also hold in Peranakan Javanese, suggesting that in cases like with *inggris* 'English' as a potential DP direct argument, there is actually a silent verb 'speak' that is not pronounced which licenses the DP, and not the TAM marker. I would suggest that the ability for the modal *isa* 'can' to take a non-verbal complement is be restricted a small subset that all can take the same silent verb, such as *speak* in this case.

(94) * mbak Nunung **iso** guru
Miss Nunung can teacher
('Nunung can be a teacher.' or 'Nunung can handle being a teacher.')
(15Feb11NR.012)

Other TAM markers such as *oleh* 'allow', *ape* 'FUT', *wes* 'PERF' are not well-formed with a potential DP complement like *guru* 'teacher'. Instead, a verb such as *dadi* 'to become' must be overt.

(95) a. * mbak Salsa **oleh** mahasiswa
       Miss   Salsa   allow univ.student (15Feb11NR.028)

   b.   mbak Salsa **oleh** *dadi*   mahasiswa
         Miss   Salsa   allow become univ.student
         'Salsa is allowed to be a university student.' (15Feb11NR.027)

(96) a. * cak Waiq **ape** guru
       Mr. Waiq FUT   teacher (15Feb11NR.017)

   b.   cak Waiq **ape** *dadi*   guru
         Mr. Waiq FUT   become teacher
         'Cak Waiq will be a teacher.' (15Feb11NR.018)

(97) a. * mbak Titis **wes** guru
       Miss   Titis PERF teacher (15Feb11NR.001)

   b.   mbak Titis **wes** *dadi*   guru
         Miss   Titis PERF become teacher
         'Titis is already a teacher.' (15Feb11NR.002)

This suggests that the type of verb that can be unpronounced is limited to only a few cases, such as with directional PPs, the light verb *lungo* 'go' can be unpronounced, and with 'language' DPs, the verb *ngomong* 'speak' is possibly unpronounced. This possibility does not extend to *dadi* 'to become'. It also does not seem to be possible to have an unpronounced 'have' verb in Javanese, as what (98) attempts.

(98) * konco-ku **wes** gelang
       friend-my PERF bracelet
       ('My friend had / already has a bracelet.') (Vander Klok 2008:2, ex.1b)

Another case that Cole et al. (2008) suggest as taking a possible direct object is with *gelem*, which they translate as 'want'. It seems that *gelem* in Peranakan Javanese has a different status than with other dialects. Conners (2008:94) translates *gelem* in Tengger Javanese as 'will, want'. In Horne (1961), *gelem* is translated as 'would like to, be willing to', or 'to be agreeable to' in Robson (1992), which would all represent Standard Javanese. In Paciran Javanese, consultants translate *gelem* as 'to agree, to be willing to', similar to the translation given for Standard Javanese. Importantly, though, in Paciran Javanese, *gelem* does not mean 'want', whereas it appears to in Peranakan Javanese. For

example, in a context in which you do not want your boyfriend to buy you a shirt because you think it's ugly, you can say *aku gelem*. If *gelem* meant 'want' in Paciran Javanese, it would be expected that *gelem* would be infelicitous in this context because a contradiction would arise.

(99) Context offered: *Francis nukokno Jozi klambi, tapi Jozi gak seneng. Francis suuuuweneng. Jozi ngomong ngono tapi nek asline gak kepingin.... soale gak polite ngomonge gak kepingin; ojo nggawe Francis disappointed*! (Francis is buying Jozi a shirt, but Jozi doesn't like it. Francis is soooo happy. Jozi says this [*aku gelem*] but really she doesn't want the shirt... [But] because it's not polite to say that you don't want it; [you] don't make Francis disappointed!)
yo   aku   gelem
yes   1SG   willing
'Yes, I agree. // Yes, I accept.' (15dec11T.065)

Another point in which *gelem* is different in Paciran Javanese compared to Peranakan Javanese is its apparent ability to take a direct object. In Paciran Javanese, *gelem* cannot be followed by a DP; instead, a VP must follow, as shown in examples (100)-(101) modelled after ones in Conners (2008). This shows that *gelem* does not subcategorize for a DP internal argument in Paciran Javanese, while it appears to in Peranakan Javanese.

(100) a.   ayo   mangan! * aku **gelem** sego
           come.on.let's   AV.eat   1SG   willing rice
           ('Let's eat! I want rice.') (2june11.002)

      b.   ayo   mangan!   aku **gelem** mangan sego
           come.on.let's AV.eat   1SG   willing AV.eat   rice
           'Let's eat! I want to eat rice.' (2june11.003)

(101) a. * pak Petinggi   **gelem** peratur-an anyar
            Mr.   chief   willing rule-AN   new
            ('Village Chief wants a new rule.') (2june11.005)

      b.   pak Petinggi **gelem** gawe   peratur-an anyar
           Mr.   chief   willing make   rule-AN   new
           'Village Chief wants to make a new rule.' (2june11.006)

In Peranakan Javanese, *gelem* can be followed by the DP *kopi* 'coffee', as shown in (80)a above, which seems to me to be the most promising candidate to be a transitive verb taking a direct object (compared the examples offered by Cole et al. (2008) for *isa* 'can',

pernah 'PERF'). In fact, Cole et al. (2008:19, footnote 24) also note that *gelem* cannot undergo subject-auxiliary inversion in such cases, but can when it subcategorizes for a VP. They suggest that *gelem* 'want' can subcategorize for a DP or a CP (in which case it is a main verb) or a VP (in which case it is an auxiliary).[38] However, as shown with the data from verbal morphology, *gelem* 'want' cannot take the passive prefix *di-* in Peranakan Javanese in (81) above. What we can establish from this test is that it is not a transitive verb that takes a DP complement, but it remains unknown if it could be an intransitive verb (e.g. Robson 1992), a transitive verb that does not take verbal morphology, or it is not a verb. The possibilities that the verbal morphology test leaves open are too broad to be conclusive for Javanese.

3.3.2.3 Verbal morphology test: derivational morphology

So far, I have focused on the inflectional morphology; namely the homorganic nasal prefix and the passive prefix *di-*. Cole et al. (2008) also extend this test to derivational morphology (the causative/applicative suffixes *–no/-ke/-ake* and *–i*). The line of argumentation is similar: if this derivational morphology which occurs quite productively on verbs can occur with the TAM markers, then this would be suggestive that those markers are verbs. If not, they may not be verbs. For example, some Javanese verbs don't have actor voice or passive morphology, but can take causative morphology (which obligatorily also has homorganic nasal), which can change the argument structure or specific meaning of the verb.[39] Robson (1992) gives the following examples of such verbs:

(102)   Applicative morphology: VERB → VERB (Robson 1992:57-59)
        lunga 'to go (away)'   *nglungani* 'to avoid, steer clear of'
        nemu 'to find'   *nemoni* 'to go and see (one person)'
        golèk 'to look for'   *nggolèki* 'to seek out (one thing)'
        nangis 'to cry'   *nangisi* 'to cry over, to take one's troubles to'
        turu 'to sleep'   *nuroni* 'to sleep on'

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[38] This apparent dual nature is also proposed for *pernah* in Peranakan Javanese (Cole et al. 2008).

[39] Cole et al. (2008) do note that this argument is also suggestive because "many lexical verbs do not permit these suffixes" (footnote 11, page 8). They show that the markers *isa, pernah, gelem* all do not take these suffixes, but note that *digelemi* is accepted in another dialect, Pribumi Javanese (footnote 9, page 6).

3.3.2.4 Confounds of the verbal morphology test: the assumption of a verbal root

A key assumption that Cole et al. (2008) make for the verbal morphology test is that the root is verbal. However, the causative/applicative suffixes in Javanese are not only productive with verbal roots, they also can derive verbs from nominal and adjectival roots. Therefore, if these markers were able to take derivational verbal morphology, we would not be able to conclude that the root is a verb. Importantly, this additional data shows that extending this test to derivational morphology cannot be maintained. For instance, verbs can be derived from nouns with nasalization plus the 'locative' applicative suffix –*i*. These examples are also taken from Robson (1992).

(103)   Nasalization + Locative –*i* : NOUN → VERB (Robson 1992:58-59)

a.	*tamba* 'medecine'	*nambani* 'to treat with medecine'
	susu 'breast, milk'	*nusoni* 'to suckle'
	isi 'contents'	*ngisèni* 'to provide with contents'
	pager 'fence'	*mageri* 'to fence in'
	dupa 'incense'	*ndupani* 'to smoke with incense'
	lenga 'oil'	*ngelengani* 'to rub with oil'
	(we)warah 'instruction'	*marahi* 'to instruct'
	welas 'pity'	*melasi* 'to take pity on'
	(te)tulung 'help'	*nulungi* 'to help'
b.	*ratu* 'a king'	*ngratoni* 'to be king over'
	lurah 'a village head'	*nglurahi* 'to be head of'
	réwang 'a friend, helper'	*ngréwangi* 'to help, stand by'
	telu 'three'	*neloni* 'to make up the third, form three'

Not only can verbs be derived from nouns, they can also be derived from adjectives in Javanese. The following examples from Robson (1992) are derived with nasalization plus the 'locative' applicative suffix –*i* as above, but from an adjectival root.

(104) Nasalization + Locative *–i* : ADJECTIVE → VERB (Robson 1992:59)
    a.   *kebak* 'full'   *ngebaki* 'to fill up'
            udhar 'loose, undone'   *ngudhari* 'to loosen, untie'
            wareg 'satisfied'   *maregi* 'to satisfy, fill'
            resik 'clean'   *ngresiki* 'to clean'
            mati 'dead'   *matèni* 'to kill'
    b.   *wedi* 'frightened'   *medèni* 'to frighten, frightening'
            isin 'ashamed'   *ngisin-isini* 'embarassing, humiliating'
            kuwatir 'anxious'   *nguwatiri* 'worrying'

In addition to the applicative suffixes *–i* and *–no/-ake/-ke* as derivational morphology, it seems that the homorganic nasal prefix can also be used derivationally. The following examples illustrate some cases of intransitive verbs derived from nouns by adding the Actor Voice prefix (homorganic nasal) taken from Robson (1992).

(105) Nasalization: NOUN → INTRANSITIVE VERB (Robson 1992:54)
    a.   *tengen* 'the right'   *nengen* 'to move to the right'
            kiwa 'the left'   *ngiwa* 'to move to the left'
            pinggir 'the side'   *minggir* 'to move to the side'
    b.   *cantrik* 'the pupil of a sage'   *nyantrik* 'to become a pupil of sage'
            dhalang 'shadow-theatre performer' *ndhalang* 'to act as a shadow-theatre performer'
    c.   *becak* 'pedicab'   *mbecak* 'to ride in a pedicab'
            andhong 'k.o. horse-drawn carriage' *ngandhong* 'to ride in a k.o. horse drawn carriage'

Therefore, we cannot conclude that because a root can take derivational verbal morphology, it is a verb. In other words, the role of derivational verbal morphology in Javanese seems to define its category as verb (it is a category-defining head in the sense of Halle and Marantz 1993, 1994), but it does not seem to have any restrictions on the type of root it attaches to.

    Cole et al. (2008) note that *isa* 'can'*, pernah* 'PERF'*, gelem* 'want' do not take derivational verbal morphology in Peranakan Javanese. In Paciran Javanese, only one TAM marker can take derivational morphology; namely *oleh* 'allow'. However, we cannot automatically assume that it is therefore a verb. It can take the locative applicative suffix *-i*, resulting in a meaning like 'allow someone to do something', as shown in (106)-(107).

(106)   ...trus ibuk-ne   **ngoleh-i**   Mary   methu
         ...then mother-DEF AV-allow-APPL Mary   go.out
         'So her mother allowed Mary to go out.' (May31_11_S1_Titis)

(107)   Mary jawab " aku   mou   **dik oleh-i**   karo ibuk-ku"
         Mary answer   1SG   aforementioned PASS allow-APPL with mother-my
         'Mary answered, "I was allowed by my mother [to go out]."'
         (June15_11_S1_Ulum)

It does not seem, however, that the root of *ngolehi* is derived from the verb *oleh* 'to get, to receive' given its interpretation. Instead, I suggest that it is derived from the auxiliary *oleh* 'allow'. An example of *oleh* as 'to get, to receive' in Paciran Javanese, similar to Standard Javanese, is given in (108). In this case, I suggest that *oleh* is a verb, and not an auxiliary as mentioned in Chapter 1.

(108)   mbes... iku ndolok teko   butik   iku **oleh** hadiah
         then... DEM at   come.from boutique DEM to.get gift
         'and then she [my child] received a gift from her boutique...'
         (Feb19-11_BZkemantenan: 17:24-17:26)

Oleh can also take the causative/benefactive applicative suffix *–no*. In this case, however, I suggest the root is not derived from the auxiliary modal *oleh* 'may', but instead from the verb *oleh* 'to get, to receive' given its interpretation as *ngolehno* means 'to give a gift to someone'.[40]

(109)   aku **ng-oleh-no** adik-ku   jeruk sa'-wise   teko   Tuban
         1SG AV.oleh-APPL young.sibling-my orange SA-PERF-NE come.from   Tuban
         'I gave my younger brother an orange after I came back from Tuban.'
         (15Feb2012)

With other TAM markers, there is a form *ngudo'no,* suggesting that the auxiliary *kudu* takes derivational morphology, but this is not the case. With the applicative morphology *–no* on *kudu*, it does not result in a meaning 'to have/require someone to do something' as in Standard Javanese (Robson and Wibisono 2002). Instead in Paciran Javanese, it means 'to show something to someone'.[41]

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[40] Additional morphology tidbit: when reduplicated, *oleh-oleh* means 'gift'.
[41] There is also a form *ngudu'no* 'give coconut rice to someone' from the root *uduk* 'coconut rice'.

(110) Jozi ngudo'-no   pelangi nek murid-murid-e
Jozi AV.show-APPL rainbow at   student-RED-DEF
'Jozi showed the rainbow to the students.' (15Feb2012)

The TAM marker *kudu* 'DEONT.must' can co-occur with the form *ngudo'no*, suggesting that it is not part of its meaning. There is no form *ngudo'i* in Paciran Javanese.

(111) aku kudu   ngudo'-no   klambi-ku sing anyar nek konco-konco-ku
1SG DEONT.must AV.show-APPL clothes-myREL new   at   friend-RED-my
'I have to show my new clothes to my friends.'

Concerning the category-type of *kudu*, the results from the derivational verbal morphology test (*ngudo'no*) are inconclusive because the derived meaning 'to show something to someone' is not related to the root meaning 'deontic.must'.

All other TAM markers in Paciran Javanese do not take derivational morphology.[42] These results are summarized in Table 7.

Table 7. Derivational morphology with TAM markers in Paciran Javanese (15Feb2012)

TAM MARKER	FORM WITH *–i*	FORM WITH *–no*
mesthi 'EPIST.must'	**mestheki*	**mesthekno*
kudu 'DEONT.must'	**ngudo'i*	*ngudo'no* 'to show sth to s.o.'
lagek 'PROG'	**nglageki*	**nglagekno*
wes 'PERF'	**ngwesi*	**ngwesno*
tau 'EXP.PERF'	**nau'i, *nauni*	**nau'no*
ape 'FUT'	**ngape'i*	**ngapekno*
iso 'can'	**ngiso'i*	**ngiso'no*
oleh 'allow'	*ngolehi* 'to allow s.o. to do sth'	*ngolehno* 'to give a gift to s.o.'

For markers that do not occur with derivational morphology in Paciran Javanese, it is suggestive at best that these markers are not verbs, since there exist verbs that do not take this morphology and they could be part of this subset. For the marker that can take derivational morphology; namely, *oleh* 'allow'*,* could it be the case that *oleh* is a verb? Since derivational morphology in Javanese is a category-defining head which does not have selectional restrictions, *oleh* 'allow' could be a verb, noun, auxiliary or adjective. I have shown above that *oleh* 'allow' is not a noun; it does not take nominal negation *dudu*.

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[42] As is apparent by now, these forms may differ in different dialects. For example, the form *mesthekno* 'to make sure' is used in Standard Javanese (Robson and Wibisono 2002), but not in Paciran Javanese. While my consultant recognizes this form, she immediately say *gak tau kringi nek Paciran* 'I've never heard it in Paciran'.

Similar to all TAM markers, the marker *oleh* 'allow' cannot occur as a possible modifier to a noun, so it does not appear to be an adjective.

(112)* Hesti   ndelok   oleh   pilem
    Hesti   AV.see   allow   film
    ('Hesti saw an allowable film.') (2june11.194)

The options we are left with in determining the category type of *oleh* 'allow' are that it could be a verb or an auxiliary. I suggested above given the interpretations that result that the root of *ngolehi* is the auxiliary *oleh* 'allow' and not the verb *oleh* 'to get, to receive' – this is the root of *ngolehno*. Further arguments that it is not a verb is that *oleh* 'allow' can front in yes-no questions (while verbs do not allow this construction). (Also, more specifically, it does not seem to be an transitive verb as it does not license a DP internal argument, as shown above in (95)a.) I argue that it seems most appropriate to define *oleh* 'allow' as an auxiliary based on word-order: it can only occur between the subject and the verb and it can front in yes-no questions, while main verbs cannot.

3.4   Summary

To summarize, the verbal morphology test proposed by Cole et al. (2008) to determine the category type of TAM markers gives at best clues whether or not they are verbs. With inflectional morphology, this conclusion is not necessarily appropriate as Cole et al. (2008) mention because there exist verbs that do not take verbal morphology in Javanese across all dialects. Specifically, it only works for transitive verbs that are not part of the exceptional subset that does not take such morphology. Further, this seems suspect as a test for the dialect of Paciran Javanese because it appears that the homorganic nasal prefix is not generally optional.

   With derivational morphology, the conclusions are less clear, as again, there is a large subset of verbs that do not take such morphology. And if they did take an applicative suffix, we could not immediately conclude that it is a verb since these suffixes can occur on noun, verb, adjective, or auxiliary roots. While we learned more about which TAM markers can take inflectional morphology (none) or derivational morphology (*oleh*) in Paciran Javanese, it did not aid in determining whether these markers are verbs

or auxiliaries since this information can only be taken as clues. Table 5 (repeated here) summarizes the tests used above in determining the category type of a subset of TAM markers in Paciran Javanese.

Table 5. Summary of tests for TAM markers as auxiliaries in Paciran Javanese

TAM MARKER	§3.1	§3.2	§3.3		
	Word order: Must occur between Subj & VP	Takes verbal negation *ora*	Fronts in yes-no questions	(Takes inflectional morphology)	(Takes derivational morphology)
kudu 'DEONT.must'	✓	✓	✗	✗	??
wes 'PERF'	✓	✓	✗	✗	✗
lagek 'PROG'	✓	✓	✗	✗	✗
ape 'FUT'	✓	✓	✗	✗	✗
tau 'EXP.PERF'	✓	✓	✓	✗	✗
oleh 'allow'	✓	✓	✓	✗	✓
iso 'can'	✓	✓	✓	✗	✗

Their word order properties suggests that they are auxiliaries in that they can only occur between the subject and the external argument. Further, that these TAM markers cannot occur sentence-initially or finally suggests that they are not adverbs. The test involving negation suggests that these markers are verbal or adjectival predicates, which includes auxiliaries. Fronting in yes-no questions provides further evidence that *tau* 'EXP.PERF', *oleh* 'allow', *iso* 'can' are auxiliaries and not verbs. Not allowing inflectional or derivational morphology is a clue that these TAM markers are not verbs. (Though I refer the reader to the above detailed discussion on using inflectional or derivational verbal morphology as a test.) These tests together suggest that the grammatical category of *kudu, wes, lagek, ape, tau, iso, oleh* is auxiliaries in Paciran Javanese.

4   Conclusion

In conclusion, I have provided evidence that one group of TAM markers are adverbs and the other group are auxiliaries in Paciran Javanese, as shown in Table 1, repeated from above.

Table 1. Category types of TAM markers in Paciran Javanese

Category Type	TAM marker	Gloss
ADVERB	*jekene*	'direct evidential'
	koyoke	
	ketoke	
	watake	'indirect evidential'
	bonake	
	mesthine	'epistemic.should'
	kudune	'deontic.should'
	mesthi	'epistemic.must'
	paleng	'maybe'
AUXILIARY	*kudu*	'deontic.must, bouletic, circumstantial'
	wes	'PERF, already'
	lagek	'PROG, just'
	ape	'FUT'
	tau	'EXP.PERF'
	oleh	'allow'
	iso	'can'

The following chapter discusses the relative word order of these markers, and I show that the adverbial TAM markers correspond to those that are positioned high in the syntax and the auxiliary TAM markers correspond to a lower syntactic position.

Chapter 3.
Relative order of TAM markers in Paciran Javanese

1 Introduction

In this chapter, I present the syntactic distribution of TAM markers in Paciran Javanese relative to each other and show which TAM markers have co-occurrence restrictions. This chapter is set against Cinque's (1999) proposal that all languages share a common hierarchy of clausal functional projections, introduced in §2. Through empirical evidence, I maintain the universality of Cinque's proposal and hold that Javanese does not have free word order with respect to TAM markers. The overall order is presented in §3 and the co-occurrence restrictions are discussed in §4.

Although some TAM markers seem to be able to occur in either order, as is the case for instance with *wes* 'PERF' and *mesthi* 'epistemic.must', I demonstrate in §5 that these apparent counterexamples are due to the ability of a TAM marker to directly modify another, in which case it is a different syntactic structure. In other cases, the free word order is actually due to a complication that there are two positions for one marker along the spine of the tree.

In addition to providing support for Cinque's proposal, evidence from the position of modals in Javanese in this chapter offers new insight into the hierarchy functional projections in Cinque (1999) for root modals in particular. Specifically, I show that necessity root modals ($Mod_{obligation}$) must be separated from possibility root modals ($Mod_{permission/ability}$) by an low aspectual projection. This point, among others, is discussed in how the syntax of the Javanese TAM system relates to Cinque's (1999) proposed hierarchy in the final section, §6.

2 Universal hierarchy of functional projections: Cinque (1999)

In this section, I review Cinque's (1999) proposal that all languages share a common ordering of functional projections above the *v*P/VP. In my investigation on a number of these functional projections relating to tense, aspect and modality on Paciran Javanese in the remainder of this chapter, I support Cinque's proposal that this ordering is universal.

Cinque (1999) argues for the existence of a fixed universal hierarchy of functional projections based on the positioning of adverbs, auxiliaries and functional clitics, particles or affixes in a number of unrelated languages. These clausal functional projections include mood, tense, aspect and modal projections.

Cinque first establishes that there is a fixed order for adverbs, looking at data mainly from Italian and French. To show that each adverb must respect a rigidly fixed hierarchy, Cinque gives sentences in which two or three adverbs are in a certain order and their inverse order is ungrammatical. He further tests this through predictions based on transitivity, which are borne out. The constant hierarchy indicates that there is only one base position for adverbs, which Cinque argues is in the specifier of distinct maximal projections. This method is demonstrated with the following examples in Italian, taken from Cinque (1999:5) (bolded items – JVK). The negative adverb *mica* necessarily precedes the adverb *già* 'already':

(1)   a.   Non hanno **mica già** chiamato, che io sappia.
            'They have not already telephoned, that I know.'
      b.   * Non hanno **già mica** chiamato, che io sappia.
            'They have already not telephoned, that I know.' (Cinque 1999:5, Ch.1, (3))

The adverb *già* 'already' must precede the adverb *più* 'any longer':

(2)   a.   All'epoca non possedeva **già più** nulla.
            'At the time (s)he did not possess already any longer anything.'
      b.   * All'epoca non possedeva **più già** nulla.
            'At the time (s)he did not possess any longer already anything.'
            (Cinque 1999:5, Ch.1, (5))

Since the negative adverb *mica* necessarily precedes *già* 'already' and *già* 'already' necessarily precedes *più* 'any longer' in Italian, by transitivity we expect that the negative adverb *mica* must precede *più* 'any longer'. This prediction is borne out:

(3) a. Non hanno chiamato **mica già**, da allora.
         'They haven't telephoned not any longer, since then.'
     b. * Non hanno chiamato **già mica**, da allora.
         'They haven't telephoned any longer not, since then.'
         (Cinque 1999:5, Ch.1, (7))

Through this method, Cinque arrives at a final order of 'higher adverbs' and 'lower adverbs', shown in (4) and (5).[43] Each adverb is representative of a class of adverbs, and adverbs in a particular class cannot co-occur.

(4) HIGHER ADVERBS (Cinque 1999:13, Ch.1,(58a))
     francamente > fortunatamente > evidentement > probilemente > ora   > forse
     frankly   > fortunately   > evidently   > probably   > now > perhaps

     > intelligentemente
     > intelligently

(5) LOWER ADVERBS (Cinque 1999:11, Ch.1,(44a))
     solitamente > mica > già   > più   > sempre > completamente > tutto
     usually   > not   > already > any longer > always > completely   > all

     > bene
     > well

Cinque demonstrates that this order is also held for adverbs in other related and unrelated languages including Norwegian, Bosnian/Serbo-Croatian, Hebrew, Chinese, and Albanian.

In terms of the position of adverbs, Cinque argues that they are located in the (left-branching) specifier position based on where verbal elements can appear. In Italian, Cinque (1999:45) shows that the active past participle *rimesso* can occur between any of the lower adverbs in (6) (except *tutto* 'all' and *bene* 'well'). Cinque (1999:49) shows that

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[43] The class of 'lower adverbs' and 'higher adverbs' seems to be specific to Italian, but the overall ordering can be extended across other languages, such as in French. Specifically, in Italian, the lower adverbs is the space "...delimited on the left by the leftmost position that an (active) past participle can come to occupy and on the right by a complement (or the subject) of the past participle" (Cinque 1999:4)

a similar pattern can be replicated with the string of higher adverbs in Italian, where a finite auxiliary can occur between each of the high adverbs.

(6) a. Da allora, non hanno **rimesso** di solito mica più sempre completamenta tutto bene in ordine
     b. Da allora, non hanno di solito **rimesso** mica più sempre completamenta tutto bene in ordine
     c. Da allora, non hanno di solito mica **rimesso** più sempre completamenta tutto bene in ordine
     d. Da allora, non hanno di solito mica più **rimesso** sempre completamenta tutto bene in ordine
     e. Da allora, non hanno di solito mica più sempre **rimesso** completamenta tutto bene in ordine
     f. Da allora, non hanno di solito mica più sempre completamenta **rimesso** tutto bene in ordine
         'Since then, they haven't usually not any longer always put everything well in order.' (Cinque 1999:45, Ch.2, (1))

On the assumption that verbs are heads and can move while adverbs remain in place (cf. Pollock 1989 for French), the different positions of the active past participle amongst the adverbs provides evidence that adverbs are in a specifier position. If adverbs were located in a head position, movement of the active past participle would be constrained via the Head Movement Constraint (Travis 1984).

Secondly, independent of considerations involving adverbs (and ignoring DP-related projections and negation), Cinque establishes that there is a fixed hierarchy of functional heads. For example, he looks at evidence from agglutinative suffixes. Assuming the Mirror Principle (Baker 1988) where suffix order is derived via head-movement, the order of morphemes is considered to be a reflection of the inverse order of the functional projections. (Note that this assumes a Kaynian (1994) structure whereby all languages are head-initial.) Cinque cites examples from Korean, Turkish, Una and Chinese. An elaborate example from Korean, using the order of suffixes to motivate the ordering of functional heads, is given below.

(7) ku pwun-i   caphi-si-ess-ess-keyss-sup-ti-kka?   KOREAN
     the person-NOM   catch-PASS-AGR-ANT-PAST-EPISTEM-AGR-EVID-Q
     'Did you feel that he had been caught?' (Cinque 1999:53, Ch.3, (1))

Cinque also looks at functional particles, which allow us to directly observe the order in head-initial languages. The languages Cinque cites include Guyanese Creole, Sranan Creole, Haitian Creole, and Gungbe. An example from Sranan Creole demonstrates the partial relative order of the functional particles, PAST > FUT > ANT > PROG, as in (8):

(8)   a ben   o   ben   e   dray   SRANAN CREOLE
      he PAST FUT   ANT   PROG turn
      'He would have been turning.' (Cinque 1999:61)

In addition to head-initial languages, Cinque also looks briefly at head-final languages such as Kachin, Mizo (Tibeto-Burman) and Maranungku (Australian) which display the mirror image order of the head-initial languages, assumed to be derived from an underlying Kaynian structure.

   When the two independently established hierarchies of adverbs and functional heads are matched from left to right, the results are quite striking as the order seems to provide no contradiction. Thus, "…the partial relative orders of functional heads for which there is overt evidence in different languages appear to be compatible with a single overall order" (Cinque 1999:52). What is impressive is that for unrelated language after unrelated language, the same order appears to be prevalent. Cinque arrives at the rich relative order below:

(9)   The universal hierarchy of functional clausal projections
      (Cinque 1999:106, Ch.4, (92))

[*frankly* **Mood**$_{speech\ act}$ [*surprisingly* **Mood**$_{evaluative}$ [*allegedly* **Mood**$_{evidential}$ [*probably* **Mod**$_{epistemic}$ [*once* **T**(past) [*then* **T**(future) [*perhaps* **Mood**$_{(ir)realis}$ [*necessarily* **Mod**$_{necessity}$ [*possibly* **Mod**$_{possibility}$ [*usually* **Asp**$_{habitual}$ [*again* **Asp**$_{repetitive(I)}$ [*often* **Asp**$_{frequentative(I)}$ [*intentionally* **Mod**$_{volitional}$ [*quickly* **Asp**$_{celerative(I)}$ [*already* **T**(Anterior) [*no longer* **Asp**$_{terminative}$ [*still* **Asp**$_{continuative}$ [*always* **Asp**$_{perfect(?)}$ [*just* **Asp**$_{retrospective}$ [*soon* **Asp**$_{proximative}$ [*briefly* **Asp**$_{durative}$ [*characteristically(?)* **Asp**$_{generic/progressive}$ [*almost* **Asp**$_{prospective}$ [*completely* **Asp**$_{(Sg)completive(I)}$ [*tutto* **Asp**$_{PlCompletive}$ [*well* **Voice** [*fast/early* **Asp**$_{celerative(II)}$ [*again* **Asp**$_{repetitive(II)}$ [*often* **Asp**$_{frequentative(II)}$ [*completely* **Asp**$_{SgCompletive(II)}$

Cinque argues that the adverb and functional head enters into a transparent semantic Specifier-Head relation. Cinque (1999:52) takes this correspondence to be "significant, that is, nonaccidental", and claims that this hierarchy of functional projections in its entirety is made available in all languages by UG (Cinque 1999:92).

In light of Cinque's findings, I explore the syntactic order of TAM markers in Paciran Javanese, a language whose TAM system has not yet been fully investigated. I focus on tense, aspect and modal markers, but do not extend this investigation to all projections such as frequentative, repetitive or celerative markers as outlined in Cinque's hierarchy in (9) above.

In the following section (§3), I determine that both adverbial and auxiliary TAM markers in Paciran Javanese must occur in a strict relative order. While Cinque (1999:153-167, Appendix 2) surveys the order of overt functional heads in a number of Austronesian languages including Malay, Kwaio, Ponapean, Kiribatese, Anejom, Samoan, Tokelau, and Big Nambas, Javanese is not among the Austronesian languages surveyed. The data presented in this chapter therefore provides support from an additional language for Cinque's proposal of a universal hierarchy.

3   TAM markers in Paciran Javanese occur in a fixed relative order

In this section, I present empirical evidence that all TAM markers, both adverbs and auxiliaries, occur in a fixed relative order in Paciran Javanese, as given in Table 1. The lines between columns in Table 1 represent that those TAM markers necessarily occur in a fixed relative order. Furthermore, we find that there is a clear correlation with type of category and syntactic height in this Austronesian language: TAM adverbs occur high and TAM auxiliaries occur low.[44]

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[44] In this chapter, I focus on the auxiliary *lagek* 'PROG'. Additional research is imperative in order to verify the ordering with *lagek* as an inceptive aspectual marker, as it can also occur sentence-finally.

Table 1. A sketch of the relative order of TAM markers in Paciran Javanese

ADVERBS		AUXILIARIES			
I	II	III	IV	V	VI
koyoke 'direct.evidential' *ketoke* 'direct.evidential' *jekene* 'direct.evidential' *watake* 'indirect.evidential' *bonake* 'indirect.evidential' *mesthine* 'epistemic.should' *kudune* 'deontic.should'	*mesthi* 'epistemic. must' *paleng* 'maybe'	*wes* 'PERF' *lagek* 'PROG'	*kudu* 'deontic must' *ape* 'FUT'	*tau* 'EXP. PERF'	*oleh* 'allow' *iso* 'can'

I first investigate the ordering of the adverbial TAM markers, proposed to occur at the top of the hierarchy in Paciran Javanese. For example, direct evidentials like *koyoke* must precede the necessity epistemic modal *mesthi*, as shown in (10).

(10) Context: *Nek omahe Bu Zumaroh, lampune makan*. (At Bu Zumaroh's house, the lights are on.)
bu Zumaroh **koyok-e mesthi** nok omah (*mesthi koyoke)
Mrs. Zumaroh seem-NE EPIST.must at house
'It seems that Bu Zumaroh must be at home.' (11.03.2011-N)

The modal *mesthi* 'epistemic.must' necessarily precedes *kudu* 'deontic.must':

(11) Context: *Nek numpak mobil...* (When you are riding in a car…)
wong **mesthi kudu** nganggo sabuk pengaman. (*kudu mesthi)
people EPIST.must DEONT.must AV.wear belt safety
'People certainly must wear a seatbelt.' (23.05.2011)

By transitivity, the relative order *koyoke* 'direct.evidential' > *kudu* 'DEONT.must' is predicted to hold. This prediction is correct, as shown in (12):

(12) Context: *Ono peraturan sing anyar, awakmu ora jakin nek peraturan anyar iku bener to ora*. (There is a new law, and you are not sure if this new law is right or not) (11.03.2011)
a. wong wong **koyok-e kudu** nganggo helm nek numpak sepeda
person person seem-NE DEONT.must AV.wear helmet if ride bicycle

montor
motor
'It seems that people must wear a helmet when they ride a motorcycle.'

b. * wong wong **kudu**   **koyok-e** nganggo helm nek numpak sepeda
person person DEONT.must seem-NE AV.wear helmet if   ride   bicycle

montor
motor
('It seems that people must wear a helmet when they ride a motorcycle.')

We have evidence so far for the following relative order:

(13) *koyoke* 'direct.evidential' > *mesthi* 'epistemic.must' > *kudu* 'deontic.must'

Considering a further segment of TAM markers, *paleng* 'maybe' precedes *wes* 'PERF',
but cannot follow it:

(14) bu   Yun **paleng wes** mampir nek bu   Zumaroh   (*wes paleng*)
Mrs. Yun maybe PERF AV.visit at   Mrs. Zumaroh
'Yun might have visited bu Zumaroh.' (4may11NTZ.048, 049)

Similarly, only the order *wes* 'PERF' > *iso* 'can' is acceptable.

(15) bu   Kharisma **wes iso** motong rambut   (*iso wes*)
Mrs. Kharisma PERF can AV.cut   hair
'Kharisma already can cut hair.' (4may11NTZ.027, 028)

Through the previous relative orders in (14) to (15), it is predicted by transitivity that
paleng 'maybe' precedes *iso* 'can'. This prediction is also borne out:

(16) pak Zaini **paleng iso** cerito bongso adat   ke-mati-an (*iso paleng*)
Mr. Zaini   maybe can tell   about tradition KE-AV.die-AN
'Zaini maybe is able to tell a story about funeral rites.' (4may11.081, 082)

The above examples provide evidence that there is a fixed relative order of the following
sequence in Javanese:

(17) *paleng* 'maybe' > *wes* 'PERF' > *iso* 'can'

Considering another segment of TAM markers in Javanese, we find again that these
markers must occur in a fixed relative order. The modal *kudune* 'ought to' can only
precede *mesthi* 'EPIST.must', as in (18). In the following example, (19), *mesthi*
'EPIST.must' necessarily precedes the aspectual marker *lagek* 'PROG'.

kudune > mesthi
(18) Context: *Gurune ngongkon*: (The teacher orders that...)   (**mesthi kudune*)
      Dayu **kudu-ne**   **mesthi**   marek-no   PR-e   disek
      Dayu   DEONT.must-NE   EPIST.must   AV.finish-APPL   homework-DEF   first
      'Dayu should certainly finish her homework first.' (25may11.050, 051)

mesthi > lagek
(19) Context offered: *Kulino isuk dodolan* (Habitually in the morning, [Bu Maula]
      sells [food].)   (**lagek mesthi*)
      bu   Maula **mesthi**   **lagek** dodol sego pecel sa'-iki
      Mrs. Maula EPIST.must   PROG sell   rice pecel SA-that
      'Maula must just be selling pecel rice now.' (4may11NTN.048, 049)

Comparing the order of *lagek* 'PROG' with *ape* 'FUT', only the order *lagek ape* is accepted
in (20). A strict relative order is also observed in (21) with *ape* 'FUT' and *iso* 'can'.

lagek > ape
(20) Jozi **lagek ape** gawe   kalimat sing anyar   (**ape lagek*)
      Jozi PROG FUT make   sentence REL   new
      'Jozi will shortly make new sentences.' (26Feb11.047, 048)

ape > iso
(21) Fina **ape iso**   jahit   (**iso ape*)
      Fina FUT can   sew
      'Fina will be able to sew.' (4may11ape.021, 022)

By transitivity, there are a number of possible orders that we could expect to hold. For
instance, since *kudune* 'ought' > *mesthi* 'EPIST.must'*,* and *mesthi* 'EPIST.must' > *lagek*
'PROG', we might expect that *kudune* 'ought' > *lagek* 'PROG' must occur in a strict
relative order as well. This is borne out, as the preferred order is *kudune > lagek*.[45]

kudune > lagek
(22) Context: *Sa'iki mari ashar…* (*Ashar* (the 3nd prayer time) is over now) (? *lagek >*
      kudune)
      Ulum **kudu-ne**   **lagek** adus
      Ulum   DEONT.must-NE   PROG   bathe
      'Ulum should be taking a bath.' (25may11.007, 008)

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[45] Note that some speakers accept *lagek > kudune* as well, but it is slightly marked. A possible solution of
this variability could be due to the different interpretations of *lagek*, interpreted as a progressive aspectual
marker as an auxiliary and as an inceptive aspectual marker as an adverb, which I have discussed in
Chapter 2. Under this view, when *lagek* syntactically scopes above *kudune*, it is the adverbial *lagek*
conveying inceptive aspect. Further research is necessary to confirm this approach and further explore this
with other TAM markers as I have only found such variable orders with *lagek* to be acceptable with
kudune.

Similarly, since TAM markers *lagek* 'PROG' > *ape* 'FUT' and *ape* 'FUT' > *iso* 'can' must occur in that order, by transitivity we would predict that *lagek* 'PROG' necessarily precedes *iso* 'can'. As shown in (23), this prediction holds as well.

lagek > iso
(23)   Context: *Kepala sekolah* (The principal) is organizing his students.   (*iso lagek)
        Hesti **lagek iso** balapan   sepeda
        Hesti PROG can competition   bike
        'Hesti just can do the bicycle competition.' (4may11.014, 015)

By extension from the ordering of the above two examples, the order *kudune* 'ought' > *iso* 'can' is expected to hold as well.

kudune > iso
(24)   Context: *Gurune Nana ngomong*: (Nana's teacher says:)   (*iso kudune)
        Nana **kudu-ne**   **iso** ngomong boso   inggris
        Nana DEONT.must-NE   can AV.talk   language English
        'Nana should be able to speak English.' (25may11.025, 026)

The following examples show that other combinations of TAM markers in this sequence also must be in a strict relative order. Specifically, *kudune* necessarily precedes *ape* 'FUT' as in (25), and *mesthi* 'EPIST.must' also necessarily precedes *ape* 'FUT' as in (26).

kudune > ape
(25)   Context: Sri nakal... (Sri is misbehaving…)   (*ape kudune)
        Sri **kudu-ne**   **ape** mondok
        Sri DEONT.must-NE   FUT AV.boarding.school
        'Sri should be going to boarding school.' (25may11.027, 029)

mesthi > ape
(26)   Context: Sampeyan weroh Pak Zaini ewoh ngapalno Al Qur'an (You know that
        Mr. Zaini is busy memorizing the Koran.)   (*ape mesthi)
        pak Zaini **mesthi**   **ape** moco   Al Qur'an dino iki
        Mr. Zaini EPIST.must FUT AV.read Al Qur'an day DEM
        'Zaini will certainly read the Qur'an today.' (23may11.019, 020)

From the above examples in (18)-(26), I have shown that the following sequence must occur in a strict relative order:

(27)   *kudune* 'ought to' > *mesthi* 'EPIST.must' > *lagek* 'PROG' > *ape* 'FUT' > *iso* 'can'

Another example set regarding the order of TAM markers concerns how *iso* 'can' is located relative to other TAM markers. Adding to the examples above with *paleng > iso* in (16)*, wes > iso* in (15)*, ape > iso* in (21), *lagek > iso* in (23), and *kudune > iso* in (24) the following orders demonstrate that *iso* 'can' only follows other TAM markers. This is shown with *ketoke* 'seem', *mesthine* 'EPIST.should', *kudu* 'DEONT.must', *lagek* 'PROG', *tau* 'EXP.PERF': for each of these TAM markers, *iso* 'can' necessarily follows that marker.

ketoke > iso
(28)   Jozi **ketok-e**   **iso**   nguleg   sambal   tomat   (*iso ketoke)
        Jozi seem-NE   can AV.grind.tool chili.sauce tomato
        'Jozi seems to be able to make tomato sambal.' (26april2011.061, 062)

mesthine > iso
(29)   Context: *mbak Haris gak repot dino sabtu* (Miss Haris is not busy on Saturday)
        Haris **mesthi-ne**   **iso** melu   neng Tuban   (*iso mesthine)
        Haris EPIST.must-NE can AV.join at   Tuban
        'Haris should be able to come with to Tuban.' (4may11.079, 080)

kudu > iso
(30)   Context: *Ape lulus kelas olah raga...* (In order to pass gym class...)
        awakmu **kudu**   **iso**   melayu sak   kilo   (*iso kudu)
        2SG   DEONT.must can run   1   kilometer
        'You must be able to run 1 km.' (17.02.2011)

lagek > iso
(31)   Context: *Lisa belajar jahit, wes patang wulan*. (Lisa learned how to sew 4 months
        ago.)
        sa'-iki Lisa **lagek** **iso**   jahit   (*iso lagek)
        now   Lisa PROG can   sew
        'Lisa can sew now.' (24.02.2011)

tau > iso
(32)   Context: *Dulu, bisa jalan jauh, tapi sekarang sudah tuwa, terus nggak bisa*.
        (Before, Nunung could walk very far, but now she's already old, and cannot.)
        Nunung **tau**   **iso** melayu nok   WBL   (*iso tau)
        Nunung EXP.PERF can walk   to   WBL[46]
        'Nunung once could walk to WBL.' (28.02.2011)

The above examples show that *iso* 'can' is one of the low TAM markers, as it necessarily follows any TAM marker that it can occur with. A final example set is with the other

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[46] WBL stands for *Wisata Bahari Lamongan* 'Marine Tourism Lamongan'. It is an amusement and water park in Lamongan, the region where Paciran is located.

lowest TAM marker, *oleh* 'allow'. Just like *iso,* the modal auxiliary *oleh* 'allow' must follow any marker it occurs with. This is shown in the following examples (33)-(40).

jekene > oleh

(33) Context offered: *Mida sudah besar* or *Mida wes oleh nduwe pacar* ("Mida is already old" or "Mida is already allowed to have a boyfriend")
mbak Mida **jeke-ne** **oleh** pacar-an   (*oleh jekene*)
Miss   Mida   I.think-NE   allow   boy/girlfriend-AN
'Mida seems to be allowed to date.' (28april11.010, 012)

mesthine > oleh

(34) Context: *Siti isek enom; nek WBL ono tas-tasan. Nek kepingin numpak tas-tasan, umur kudu dibawa 15 taun.* (Siti is still young. At WBL there is a ferris wheel. If [you] want to ride the ferris wheel, [your] age must be below 15 years old.)
Siti   **mesthi-ne**   **oleh**   numpak tas-tasan nek WBL (*oleh mesthine*)
Siti   EPIST.must-NE   allow   ride   bag-bag-N at   WBL
'Siti should be allowed to ride the ferris wheel at WBL.' (24may11.012, 013)

paleng > oleh

(35) Context offered: '*Sakarep wong tuwo*' (It's up to her parents.)
Kana **paleng oleh** melu   reng Tuban   (*oleh paleng*)
Kana maybe   allow   AV.join at   Tuban
'Kana might be allowed come with to Tuban.' (4may11oleh.005, 006)

kudu > oleh

(36) Context: *Presiden SBY ngomong*: (President SBY says:)
wong wong Indonesia **kudu**   **oleh** melbu   negoro Kanada
person person Indonesia DEONT.must allow AV.enter country Canada
'Indonesians have to be allowed to enter Canada.' (4may11oleh.030, 031)
(*oleh kudu*)

lagek > oleh

(37) Context: *Gek biyen Siti lan Rima ora konconan. Sa'iki wes dadi konco* (Before Siti and Rima were not friends. Now they have become friends.)
Siti   **lagek oleh** dolan nek omah-e   Rima   (*oleh lagek*)
Siti   PROG allow   visit   at   house-DEF Rima
'Siti is just allowed to visit Rima's house.' (4may11oleh.018, 019)

wes > oleh

(38) Context: *Anake kudu nduwe umur minimum 5 taun. Titus wes umur 6 taun* (Children must be minimum 5 years old. Tutus already is 6 years old.)
Titus **wes**   **oleh**   masuk sekolah   (*oleh wes*)
Titus PERF allow   enter   school
'Titus can already enter school.' (24Feb11.098, 099)

tau > oleh

(39)   Context: *...tapi sa'iki wes gak oleh soale gak aman* (...but now [she] is no longer
         allowed because it isn't safe)
         Yeni **tau**   **oleh**   reng dalan sendang   (*oleh tau)
         Yeni EXP.PERF allow at   road   Sendang
         'Yeni once was allowed to go to Sendang road.' (8april2011.009, 010)

ape > oleh

(40)   Context: *Fina melu ujian TOEFL wulan ngarep* (Fina is going to take the TOEFL
         exam next month.)
         Fina **ape oleh** daftar   reng universitas nok Amerika   (*oleh ape)
         Fina FUT allow register at   universitas at   USA
         'Fina will be allowed to register in university in the States.' (4may11oleh.027, 28)

The final two example sets with *iso* 'can', *oleh* 'allow' have shown that all TAM markers
must precede *iso* 'can' or *oleh* 'allow' in Paciran Javanese.

To summarize the results from the evidence presented above, TAM markers must
occur in a fixed relative order in Paciran Javanese as exemplified in Table 1 (repeated).

Table 1. The relative order of TAM markers in Paciran Javanese

ADVERBS		AUXILIARIES			
I	II	III	IV	V	VI
koyoke 'direct.evidential' *ketoke* 'direct.evidential' *jekene* 'direct.evidential' *watake* 'indirect.evidential' *bonake* 'indirect.evidential' *mesthine* 'epistemic.should' *kudune* 'deontic.should'	*mesthi* 'epistemic. must' *paleng* 'maybe'	*wes* 'PERF' *lagek* 'PROG'	*kudu* 'deontic. must' *ape* 'FUT'	*tau* 'EXP. PERF'	*oleh* 'allow' *iso* 'can'

Further, what is now clear from the relative order and the grammatical category of each
these markers (results from Chapter 2) is that these two points correlate in Paciran
Javanese: adverbial TAM markers are syntactically high and auxiliary TAM markers are
low.[47]

In terms of the order of TAM markers, there are two additional points that I will
discuss. First, some orders of TAM markers that I have not yet discussed are infelicitous

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[47] I am simply pointing out that the order and grammatical category correlate in Paciran Javanese and make
no claim for other languages or cross-linguistic effects. We know from English, for example, a high
adverbial TAM marker in Paciran Javanese *kudune* can be an auxiliary, *should*, and that low auxiliary
TAM marker in Paciran Javanese can be an adverb in English, as in *already*.

together. Specifically, the markers that are in the same column in Table 1 cannot co-occur. Certain other combinations of TAM markers cannot co-occur as well. I present evidence of co-occurrence restrictions for each column where applicable as well as for the other ill-formed combinations in the following section, §4.

Secondly, some orders that I have not yet discussed seem to have free word order. For instance the TAM markers *mesthi* 'EPIST.must' ~ *wes* 'PERF', *kudu* 'DEONT.must' ~ *tau* 'EXP.PERF', *kudu* 'DEONT.must' ~ *wes* 'PERF' or *tau* 'EXP.PERF' ~ *ape* 'FUT' all appear to allow either ordering. I will argue in §5 below that while it seems at first glance these markers allow free word order, once additional evidence is taken into consideration, there is only one fixed relative order possible along the spine of the syntactic tree as presented in Table 1, similar to Cinque (1999).

4   Co-occurrence restrictions of TAM markers in Paciran Javanese

While many TAM markers can co-occur as shown above, there are also a number of co-occurrence restrictions. For example, the markers occurring within the same column in Table 1 (see above) represent that those cannot co-occur. In this section, I first discuss each of these restrictions starting from Column I. I will put forward the classic argument that these markers cannot co-occur because they are competing for the same syntactic slot. There are also other TAM markers not within the same column that do not co-occur, which I discuss secondly. For each of these co-occurrence restrictions, I offer an explanation on semantic grounds as to why these restrictions arise.

4.1   Co-occurrence restrictions: competition of the same syntactic slot

The co-occurrence restrictions represented by the TAM markers grouped in the same column in Table 1 can be straightforwardly explained under the classic argument of competition. Specifically, these markers cannot co-occur because there is only one syntactic slot available. What makes these markers good candidates for this approach is that they all seem to share a common property, either semantically or syntactically. I will discuss each of the co-occurrence restrictions for Columns I, II, III, IV, and VI respectively.

As indicated in Column I, all TAM markers that share the suffix *–(n)e* cannot co-occur. These include *koyoke, ketoke, jekene, watake, bonake, mesthine, kudune.* I show that while some co-occurrence restrictions in this column could be explained by appealing to semantics, for others there does not appear to be any semantic reason why they could not co-occur. A simple solution for these co-occurrence restrictions arises on the view that these markers are competing for the same syntactic slot headed by the suffix *–(n)e*.

For an example of a co-occurrence restriction that could be due to semantic similarity is *koyoke* and *ketoke* 'direct evidential'. Both express possibility based on a source of evidence that can be visual. As shown in (41), changing the syntactic ordering so that the subject occurs between the two adverbial markers does not improve acceptability; these markers cannot co-occur.

(41)   Context: *Sesok isuk awakmu reng kemantenan. Awakmu pikir koncomu mbak Hamida reng kemantenan juga, tapi awakmu ora yakin soale wonge repot banget...* (Tomorrow morning you are going to a wedding. You think that your friend Hamida will go to the wedding too, but you are not sure because she is a very busy person...)
a. * aku **ketok-e**   **koyok-e**   ke-temu   Hamida
    1SG seem-NE   seem-NE   KE-meet   Hamida
    ('Apparently it seems that I will meet Hamida.') (24Feb11.003)

b. * **ketoke**   aku   **koyoke**   ke-temu Hamida
    seem-NE 1SG   seem-NE   KE-meet Hamida
    ('It seems that I apparently will meet Hamida.') (24Feb11.004)

Checking the grammaticality with respect to the different syntactic position is important, as independently, this construction is acceptable with different adverbs, as exemplified in (42), where the subject occurs between the adverbs *mesthine* 'EPIST.should' and *alon-alon* 'slowly'. An additional example is given in (43), where the subject occurs between the adverb *paling* 'maybe' and *sesok* 'tomorrow'.

(42)   **mesthi-ne**   Amina **alon-alon** ngombe teh panas-e
    EPIST.must-NE Amina slowly   AV.drink tea hot-DEF
    'It should be that Amina slowly drinks hot tea.' (8dec11T.052)

(43)   Context offered: 'cak Patrus makes himself handsome so that she's in love with
        him.'
        paling   mbak Ria **sesok**   nyeneng-i   cak Patrus
        maybe   Miss   Ria   tomorrow   AV.like-APPL   Mr. Patrus
        'Maybe Ria will be in love with Patrus tomorrow.' (30mar11.130)

TAM markers indicating indirect perceptual evidence in Paciran Javanese also cannot co-occur: it is incompatible to have *bonake* and *watake* in the same sentence. Semantically, it could be conceivable to have something like 'Given what I can infer from non-visual evidence, and given what I know about Hamida's characteristics and what happens normally, I meet Hamida'. However, such a combination is not acceptable as shown in (44). Again, placing one marker in sentence-initial position and one between the subject and the verb does not improve the acceptability judgment.

(44)   Context: *Sesok isuk awakmu reng kemantenan. Awakmu pikir koncomu mbak Hamida reng kemantenan juga, tapi awakmu ora yakin soale wonge repot banget...* (Tomorrow morning you are going to a wedding. You think that your friend Hamida will go to the wedding too, but you are not sure because she is a very busy person...)

    a. * aku **bonak-e**   **watak-e**   ke-temu   Hamida
        1SG seem-NE   character-NE KE-meet   Hamida
        ('It seems that I might meet Hamida.') (24Feb11.005)

    b. * **bonak-e**   aku **watak-e**   ke-temu   Hamida
        seem-NE   1SG character-NE   KE-meet   Hamida
        ('It seems that I might meet Hamida.') (24Feb11.006)

Furthermore, it is not possible for the marker *ketoke* 'seem' and the modal *kudune* 'ought to' to co-occur in either order, demonstrated in (45). This is an example whereby there does not seem to be any semantic reason why these markers could not co-occur (cf. the translation given in (45)a). Without the suffix *–(n)e* on the modal, however, it is possible to have the sequence *ketoke* 'seem' and *kudu* 'DEONT.must', underlying the fact that the co-occurrence has to do with the presence of *–(n)e* on both TAM markers. These facts are parallel with *koyoke* 'direct evidential' ~ *kudune* 'ought to'.

(45) a. * Dila **ketok-e kudu-ne**   diet
            Dila seem-NE DEONT.must-NE   diet
            ('It seems that Dila ought to diet.') (25may11.040)

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b. * Dila **kudu-ne**   **ketok-e** diet
     Dila DEONT.must-NE   seem-NE diet
     ('It seems that Dila ought to diet.') (25may11.043)

c. Dila **ketok-e** **kudu**   diet
    Dila seem-NE   DEONT.must diet
    'It seems that Dila has to diet.' (25may11.046)

Parallel data is also shown with the marker *watake* 'characteristically' and the modal *kudune* 'ought to' in (46). The consultant comments that such a combination is *salah satu* (literally translated as 'wrong one'), which can be understood as "Both are wrong together". Similar to *ketoke* 'seem' ~ *kudune* 'ought to' as shown above, without the suffix *–(n)e* on the modal, the sequence *watake kudu* is possible, either with *kudu* interpreted as 'want', (46)b, or as 'DEONT.must', (46)c. The same facts hold with the combination of the marker *jekene* 'I.think-NE' and *kudune* 'ought to' as well.

(46) a. * bu   Yani   **watak-e**   **kudu-ne**   ngrewang-i   ibu-ne
       Mrs. Yani   character-NE   DEONT.must-NE AV.help-APPL mother-DEF
       ('Normally Bu Yani ought to help her mother.') (25may11.058)

   b. bu   Yani   **watak-e**   **kudu**   ngrewang-i   ibu-ne
       Mrs. Yani   character-NE   DEONT.must   AV.help-APPL mother-DEF
       'It seems that Bu Yani *wants* to help her mother.' (25may11.060)

   c. Context offered: *Sampeyan weroh ono wong sing gawe sabuk pengaman, ono sing gak gawe. Terus sampyean bingung nek ono aturane to gak. Sampeyan durung ngerti.* (You know that there are people who wear a seatbelt, and there are those that don't. So you are confused whether there is a law or not. You are not sure.)
       wong   wong   **watak-e**   **kudu**   nganggo sabuk pengaman
       person person character-NE   DEONT.must AV.wear belt   safe
       'It seems that people *have to* wear a seat belt.' (25may11.062)

The two modal markers in Column I, *mesthine* 'EPIST.should' and *kudune* 'ought to', also cannot co-occur, as given in (47).

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(47) * wong   muslim   **mesthi-ne**   **kudu-ne**   muleh   neng omah   waktu-ne
       person   muslim   EPIST.must-NE DEONT.must-NE go.back   at   home   time-DEF

libur-an
free-AN
('It should be the case that Muslims ought to return home during the holidays.')
(25may11.054)

I have given evidence that all possible combinations of markers in Column I cannot co-occur. While some combinations could be perhaps due to semantic co-occurrence restrictions such as *ketoke* and *koyoke,* both direct evidential markers, for other combinations it is not clear that this could explain the unacceptability, such as with *ketoke* 'seem' and *kudune* 'ought to'. What all these markers share, though, is the suffix *-(n)e*. I propose therefore that the co-occurrence restrictions arise because all TAM markers with the suffix *–(n)e* compete for the same syntactic slot. I suggest that in Javanese this suffix *–(n)e* syntactically is a head and requires a specifier, as outlined in Figure 1.

Tree 1. -NEP
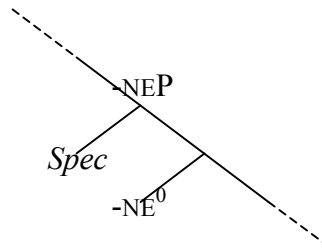
Specifically, I suggest that the *–(n)e* suffix is a categorizing head which designates the specifier it adjoins with as an adverb. I will show in Chapter 5 that this suffix also carries important semantics which affects the meaning of the item in its specifier; in Chapter 5, I focus on the effect it has on the modals *mesthine* 'EPIST.should'*, kudune* 'ought'.

In terms of the structure, I propose that *-(n)e* requires a XP specifier. I assume that the XP directly merges into the specifier of *–NEP* and the *–ne* then cliticizes to this XP to form the word.[48, 49] This structure is demonstrated in Tree 2 below with the adverb *mesthi*

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[48] Note that internal merge of a head to adjoin to the *–ne*[0] head would not be a possible derivation as it would violate the Head Movement Constraint. For example, the auxiliary head *kudu* would not be able to

'EPIST.must'. It appears that –*ne* allows XPs of a number of different categories, such as verbs (e.g. *ketok* 'see'), adverbs (e.g. *mesthi* 'EPIST.must'), auxiliaries (e.g. *kudu* 'DEONT.must) or nouns (e.g. *watak* 'character'). See the introduction to these TAM markers in Chapter 1 for examples of each of these roots.

Tree 2. Merging into the specifier of –NEP
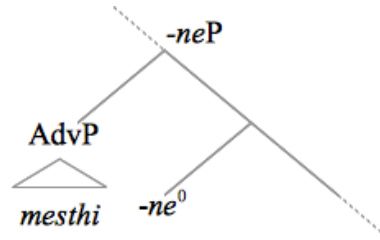
As a result of this syntactic restriction, only one TAM marker with the suffix –*(n)e* can occur per clause in Paciran Javanese. That is, there could never be a clause with two -NE, as in for instance (47) above, because there is only one –NEP in the clausal structure. This proposal captures the data.

Turning to the markers in Column II, *mesthi* 'EPIST.must' and *paleng* 'maybe' cannot co-occur. What these two modals share is that they are both epistemic modals, but differ in modal force, where *mesthi* conveys necessity and *paleng* conveys possibility force (see Chapter 5 for additional data based on a variety of fieldwork techniques that establish this point). I assume that there is only one epistemic modal projection, and *mesthi, paleng* each convey different values of the same head. As a result of their competition, only one of these markers can occur per CP. This seems to be on the right track as intuitively, a single event set in an epistemic context cannot be both a necessity and a possibility at once. As shown in (48), either order of *mesthi* 'EPIST.must' ~ *paleng* 'maybe' is not accepted in Paciran Javanese. However, I note that the order *paleng mesthi* is generally judged to be less ungrammatical than the opposite order.

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raise via head-movement to form *kudune* in the case of a higher overt head such as *wes*. We would therefore predict that *kudune wes* in the same clause would be ungrammatical, contrary to fact. Therefore, internal merge is not a tenable option.

[49] In this type of movement, -*(n)e* is a clitic. I have been using the term 'suffix' to refer to –*(n)e* in this dissertation in its descriptive use (i.e. as an affix that occurs at the end of a word). Additional research on the phonological and morphological aspects of this affixation will be necessary to determine its exact status. The important point here is to account for the co-occurrence restrictions: that only one word with -*(n)e* can occur per clause.

(48)   Context: *Ely suweneng rujak, tapi nek mangan bendino, wetenge loro*. (Ely loves
       rujak (unripe tropical fruits covered in a spicy peanut sauce), but if [she] eats [it]
       everyday, her stomach will hurt.)
    a. #??Ely **paleng mesthi**   rujakan   engko sore
           Ely   maybe EPIST.must k.o.salad-AN   later   afternoon
           ('It's a possibility that Ely is sure to eat *rujak* later in the afternoon.')
           (23may11.022)

    b. * Ely **mesthi**   **paleng** rujakan   engko sore
           Ely   EPIST.must maybe   k.o.salad-AN   later   afternoon
           ('It is necessarily the case that Ely might eat *rujak* later in the afternoon.')
           (23may11.023)

As indicated in Column III, the markers *wes* 'PERF' and *lagek* 'PROG' cannot co-occur. I
have outlined in Chapter 1 and 2 that these markers are both aspectual markers. I suggest
that these two markers are competing for the same syntactic slot, but each represent
opposite values. That is, it is clear that the combination of *lagek* 'PROG' and *wes* 'PERF' is
not semantically compatible: *lagek* expresses that an event is ongoing, while *wes*
indicates completion (Robson 2002:54)[50]. In effect, when asked about this combination in
(49), the consultant replies that it is unacceptable because *lagek* indicates *masih
dikerjakan* 'still is working' and *wes* indicates *sesudah selesai ndandani,* that '[you are]
already finished repairing' – you can't both still be repairing and done repairing in one
event. In either order this combination is infelicitous.

(49) a. * tukang   mekanik **lagek wes**   ndandan-i   sepeda montor-e
         worker   mechanic PROG already AV.fix-APPL bike   motor-DEF
         ('The mechanic was fixing the motorbike') (17feb11NR.038)

    b. * tukang   mekanik **wes**   **lagek** ndandan-i   sepeda montor-e
         worker   mechanic already PROG AV.fix-APPL bike   motor-DEF
         ('The mechanic was fixing the motorbike') (17feb11NR.039)

Turning to another co-occurrence restriction in Column IV, the modal marker *kudu*
interpreted as 'deontic.must' cannot occur with the future marker *ape* 'FUT'.[51] For

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[50] Although the natural endpoint may not have been attained, as Javanese is an atelic language. This was
noted as well in Chapter 1 with some examples.
[51] Note that this co-occurrence restriction also seems to hold when *kudu* is interpreted as 'want', as shown
in (i). To convey the 'want' interpretation, the consultant offered *kudu* by itself in (i(b)) or with the verb
(ke)pingin in (i(c)). I leave this co-occurrence restriction aside for now, as I show below that *kudu* 'want'
has different syntactic properties: it is categorized as a verb, thus located lower in the structure than *kudu*
'deontic.must'.

instance, consider the following context where Arim's mother orders her daughter to be a teacher in (50). Here, neither the order *kudu* 'deontic.must' > *ape* 'FUT' nor the order *ape* 'FUT' > *kudu* 'deontic.must' are acceptable.

(50)   Context: ibune Arim ngongkon : (Arim's mother orders …)
    a. * Arim **kudu**   **ape** dadi   guru
           Arim   DEONT.must FUT become teacher
           ('Arim must be going to become a teacher.') (23may11_2.025)

    b. * Arim **ape kudu**   dadi   guru
           Arim   FUT DEONT.must become teacher
           ('Arim must be going to become a teacher.') (23may11_2.026)

An additional example of the co-occurrence restriction with *ape* 'FUT' when *kudu* is interpreted as 'deontic.must' is given in (51). As a repair to (51), the consultant offers the sentence with only one of the markers as in (52).

(51)   Context: *Tanggal 1 Agustus 2011* (The date is August 1st, 2011)
    a. * wong muslim **kudu**   **ape** poso
           person muslim DEONT.must FUT fasting
           ('Muslims have to fast in the future.') (19Feb11.001)

    b. * wong muslim **ape kudu**   poso
           person muslim FUT DEONT.must   fasting
           ('Muslims will have to fast.') (19Feb11.002)

(52) a.   wong muslim **kudu**   poso
           person muslim DEONT.must   fasting
           'Muslims have to fast.' (19Feb11.003)

    b.   wong muslim **ape** poso
           person muslim FUT fasting
           'Muslims will fast.' (19Feb11.004)

(i) a. * aku   **ape kudu**   dadi   guru
          1SG   FUT kudu   become teacher
          ('I will want to be a teacher.') (23may11_2.029)
    b.   aku **kudu** dadi   guru
          1SG   want   become teacher
          'I want to be a teacher.' (23may11_2.031)
    c.   aku **pingin** dadi   guru
          1SG want   become teacher
          'I want to be a teacher.' (23may11_2.030)

To account for this co-occurrence restriction, we can again appeal to the classic proposal that these two markers are competing for the same syntactic slot, such as a NecessityRootP.[52]

However, there may be a semantic reason behind this proposal: I suggest that the modal marker *kudu* is in fact inherently future-oriented, and therefore does not need to and cannot co-occur with a future marker. Data from temporal adverbs in (53) seem to support this proposal: while *kudu* 'DEONT.must' can co-occur with *sa'iki* 'now' and *sesok* 'tomorrow', this modal cannot co-occur with *wingi* 'yesterday'. I assume that this also holds for bouletic *kudu* 'want', but further research is necessary to confirm this hypothesis.

(53) a. # mbak Jozi **wingi**   **kudu**   nganggo kerudung nok Aliyah
        Miss Jozi yesterday DEONT.must wear   veil   at   Aliyah
        ('Jozi was required to wear a head-scarf at Aliyah yesterday.') (15Feb11.037)

    b.   sampeyan **sa'-iki**   **kudu**   marek-no   PR-e
       2SG   SA-that DEONT.must AV.finish-APPL homework-DEF
       'You have to finish your homework now.' (23may11_2.062)

    c.   mbak Jozi **sesok**   **kudu**   nganggo kerudung nok Aliyah
       Miss Jozi tomorrow DEONT.must AV.wear veil   at   Aliyah
       'Jozi must wear a head-scarf at Aliyah tomorrow.' (15Feb11.036)

Comparing *kudu* to other modals, *mesthi* 'EPIST.must' and *kudune* 'ought' are felicitous when they co-occur with *ape*, as I have shown above in (25)-(26). The data with temporal adverbs reflects this co-occurrence: for example, the modal *mesthi* 'EPIST.must', which can occur with the future marker *ape*, does not have any restrictions with temporal adverbs like *kudu* 'DEONT.must' does.

(54)   Context: *Soale Jozi kulino reng Yogya sak wulan ping pisan* (Because Jozi usually goes to Yogya once a month...)
        Jozi **mesthi**   **ape** reng Yogya   minggu ngarep
        Jozi EPIST.must FUT at   Yogyakarta week   AV.will
        'Jozi must be going to go to Yogya next week.' (4may11ape.025)

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[52] Further data on these modals is shown in Chapter 5.

(55) dokter **mesthi sesok / sa'-iki / wingi**   merban   tanga-ne Diki
      doctor EPIST.must tomorrow/ SA-that / yesterday AV.bandage hand-DEF Diki
      'The doctor will certainly bandage Diki's hand tomorrow.'
      'The doctor certainly is bandaging Diki's hand now.'
      'The doctor has certainly bandaged Diki's hand yesterday.'
      (23may11.056, 057, 058)

To recap, because *kudu* 'DEONT.must' has restrictions with the future marker *ape* and independently cannot by itself be used in a past tense context, I suggest that *kudu* is inherently future-oriented. The modal *kudu* 'DEONT.must' contrasts with *mesthi* 'EPIST.must', which can occur with *ape* 'FUT' and has no restrictions in being used in different temporal settings.

I now turn to the co-occurrence restrictions of the markers in Column VII. The following examples demonstrate that *iso* 'can' and *oleh* 'allow' cannot co-occur in Paciran Javanese. For instance, in (56), the consultant comments that the combination of these two markers are *salah satu*, "both are wrong together". Another attempt is given in (57), but again, both *iso* 'can' and *oleh* 'allow' are not accepted together.

(56)   Context: *nek WBL, ono permeinan kanggo bocah-bocah umure 5-15 taun. Umure Rima 10 taun* (At WBL, there is a ride for children aged between 5-15 years. Rima is 10 years old.)
   a. * Rima **oleh   iso**   melu   per-mein-an
        Rima allow can   AV.join PER-play-AN
        ('Rima is allowed to be able join the game.') (4may11oleh.049)

   b. * Rima **iso   oleh**   melu   permeinan
        Rima can   allow AV.join PER-play-AN
        ('Rima is able to be allowed to join the game.') (4may11oleh.050)

(57) * wong **iso   oleh**   nduwe   'free speech'; kewan ora **iso   oleh**
      person can   allow AV.have free speech   animal NEG can   allow
      ('People can be allowed to have free speech; animals do not have the ability to have permission') (4may11oleh.052)

I assume that the modals *iso* 'can' and *oleh* 'allow' cannot co-occur because they are also competing for the same syntactic slot. Following Cinque (1999:81) on these two types of modality, we may consider "...these two notions as two different values of one and the same head".

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Thus far I have provided evidence that the markers that occur in the same column in Table 1 (repeated here) have co-occurrence restrictions. I proposed that each of the above restrictions are due to competition of only one syntactic slot. In some cases, I have noted further semantic incompatibility that could also contribute to the co-occurrence restrictions (such as for *wes* 'PERF' and *lagek* 'PROG', *kudu* 'deontic.must' and *ape* 'FUT', *iso* 'can' and *oleh* 'allow'), suggesting that they are represented as different values affiliated with the same projection. I now turn to additional co-occurrence restrictions in Paciran Javanese that fall outside of the argument that those markers are competing for the same syntactic slot.

Table 1. The relative order of TAM markers in Paciran Javanese

ADVERBS		AUXILIARIES			
I	II	III	IV	V	VI
koyoke 'direct.evidential' *ketoke* 'direct.evidential' *jekene* 'direct.evidential' *watake* 'indirect.evidential' *bonake* 'indirect.evidential' *mesthine* 'epistemic.should' *kudune* 'deontic.should'	*mesthi* 'epistemic. must' *paleng* 'maybe'	*wes* 'PERF' *lagek* 'PROG'	*kudu* 'deontic must' *ape* 'FUT'	*tau* 'EXP. PERF'	*oleh* 'allow' *iso* 'can'

4.2 Co-occurrence restrictions: semantic incompatibility

Additional co-occurrence restrictions that occur independently of the strict relative ordering of TAM markers in Paciran Javanese (as indicated in Table 1 above) are the following: *kudu* 'DEONT.must' and *lagek* 'PROG', *kudune* 'ought to' and *kudu* 'DEONT.must', *mesthine* 'EPIST.should' and *mesthi* 'EPIST.must'. I provide evidence for each of these restrictions, and I speculate on the reasons for the co-occurrence restrictions regarding modal markers. See Chapter 5 for additional empirical evidence concerning the semantic nature of each of these modal markers.

First, the modal marker *kudu* 'DEONT.must' and the aspectual marker *lagek* 'PROG' cannot co-occur, as shown in (58) and with either order in (59).

(58)   Context: *Sa'wise sarapan, ibune ngomong*: (After breakfast, Mother says:)
     * sampeyan **kudu**   **lagek** sikat-an
     2SG   DEONT.must PROG   teeth-AN
     ('You have to be brushing your teeth.') (4may11NTN.063)

(59) a. * wong wong **kudu**   **lagek** nganggo helm kabeh nek numpak
       person person DEONT.must PROG   wear   helmet all   if   ride

       sepeda   montor
       bike   motor
       ('Everyone must be wearing a helmet when they drive a motorcycle.')
       (17feb11NR.016)

    b. * wong wong **lagek kudu**   nganggo helm   kabeh nek
       person person   PROG DEONT.must   wear   helmet   all   if

       numpak sepeda montor
       ride   bike   motor
       ('Everyone must be wearing a helmet when they drive a motorcycle.')
       (17feb11NR.017)

However, one consultant offers an example with either order of the combination of *kudu* ~ *lagek*, where the inceptive reading of *lagek* is more prominent. In follow-up with other consultants, they do not find this sentence to be acceptable. I speculate that the use of *lagek* for the speaker in (60) is the adverb *lagek,* but this requires more research.

(60)   Context offered: *Nek guru metu kelas, muride ojo kerjo, tapi nek mbalik neng kelas, oleh kerjo maneh* (When the teacher leaves the class, the students cannot work, but when [the teacher] comes back to the class, they are allowed to work again.)
    ? nek   aku melbu   kelas sampeyan **kudu**   **lagek//lagek kudu**
    when 1SG AV.enter class 2SG   DEONT.must PROG PROG DEONT.must

    ngerjak-no   tugas
    AV.work-APPL   work
    'When I enter the class, you must be just working on your assignment.'
    (4may11NTN.035, 036)

An additional co-occurrence restriction with *kudu* 'DEONT.must' is with *kudune* 'ought to'. As demonstrated in (61), these markers cannot co-occur in either order. [53]

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[53] One might wonder whether the combination of *kudune* and *kudu* is possible where the two *kudu* markers are different: e.g. *kudune* is composed of *kudu* 'deontic.must' merged with *–(n)e* and *kudu* is the syntactically lower 'want'. Further research is necessary to confirm if this is grammatical or not. However,

(61)   Context: *Gurune ngongkon*: (The teacher orders that...)
    a.   * Dayu **kudu-ne**   **kudu**   marek-no   PR-e   disek
           Dayu   DEONT.must-NE   DEONT.must   AV.finish-APPL   homework-DEF   first
           ('Dayu should have to finish her homework first.') (25may11.048)

    b.   * Dayu **kudu**   **kudu-ne**   marek-no   PR-e   disek
           Dayu   DEONT.must   DEONT.must-NE   AV.finish-APPL   homework-DEF   first
           ('Dayu should have to finish her homework first.') (25may11.049)

Similarly, it is infelicitous for the modal markers *mesthi* 'EPIST.must' and *mesthine* 'EPIST.should' to co-occur, as indicated in (62).

(62)   Context: *Pak Fatihul belajar boso jepang wes suwi* (Fatihul has been learning Japanese for a long time)
    * pak Fatihul **mesthi-ne**   **mesthi**   ngerti boso   jepang
      Mr. Fatihul   EPIST.must-NE   EPIST.must know   language   Japan
      ('Pak Fatihul should certainly understand Japanese.') (23may11.034)

Concerning possible semantic restrictions of the combination of *kudune* 'ought' and *kudu* 'DEONT.must' or *mesthine* 'EPIST.should' and *mesthi* 'EPIST.must', it seems that there is a general co-occurrence restriction on Javanese modals and the type of force, as seen with *mesthi* and *paleng* above. To reiterate, while *mesthi* and *paleng* are both epistemic modals, *mesthi* expresses necessity and *paleng* expresses possibility; hence they cannot co-occur because the same event cannot be qualified as both a possibility and a necessity at once. This example in (63) is repeated from above.

(63)   Context: *Ely suweneng rujak, tapi nek mangan bendino, wetenge loro*. (Ely loves rujak (unripe tropical fruits covered in a spicy peanut sauce), but if [she] eats [it] everyday, her stomach will hurt.)
    a.   #??Ely **paleng mesthi**   rujak-an   engko sore
           Ely maybe   EPIST.must k.o.salad-AN   later   afternoon
           ('It's a possibility that Ely is sure to eat rujak later in the afternoon.')

    b.   * Ely **mesthi**   **paleng** rujak-an   engko sore
           Ely EPIST.must   maybe   k.o.salad-AN   later   afternoon
           ('It is necessarily the case that Ely might eat rujak later in the afternoon.')
           (23may11.022, 023)

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given that consultants never offered a repair or alternate context for the combination of *kudune + kudu*, it seems unlikely such an interpretation is available.

Therefore, it seems that modals in Javanese cannot co-occur in the same clause when they have the same type of modality (e.g. deontic, epistemic, etc.) but have different modal force. Specifically, I suggest that similar to the semantic restriction with *paleng* and *mesthi* above, the same event cannot be qualified as both a necessity and a weak necessity as with *mesthi* 'EPIST.must' and *mesthine* 'EPIST.should' or *kudu* 'DEONT.must' and *kudune* 'ought'. For example, *kudu* and *kudune* cannot co-occur because they both are deontic modals but express different force – necessity and weak necessity. The markers *mesthi* and *mesthine* also express different force, but as both epistemic modals, they cannot co-occur.

However, the combination of *kudu* 'deontic.must' and *oleh* 'allow' yields grammaticality in Paciran Javanese, as shown in (64). They both are interpreted as deontic in terms of the type of modality, but have different modal force: *kudu* is a necessity modal while *oleh* is a possibility modal.

(64)   Context: Your parents are really strict and they rarely let you go out. Tonight there is a party that you really want to go to, so you are begging your parents to go.
aku **kudu**   **oleh** lungo neng   pesta   (*oleh kudu)
1SG DEONT.must allow   go   at   party
'I have to be allowed to go to the party.' (17feb11NR.089, 090)

That the combination of *kudu* 'deontic.must' and *oleh* 'allow' in (64) is accepted suggests that either (i) the generalization that modals in Javanese cannot co-occur in the same clause if they have the same type of modality is wrong or (ii) the generalization is right and the modals *kudu* 'deontic.must' and *oleh* 'allow' are not actually in the same clause or domain. I leave these two options open for now.

The co-occurrence facts of modal markers in Paciran Javanese that have the same type of modality (e.g. *epistemic, deontic*) are summarized in Table 2.

Table 2. Overview of co-occurrence restrictions for modal markers which have the same type of modality in Paciran Javanese

	WEAK NECESSITY	NECESSITY	POSSIBILITY	CO-OCCURRENCE ACCEPTABLE?
EPISTEMIC	*mesthine*	*mesthi*	-	✖
	-	*mesthi*	*paleng*	✖
DEONTIC	*kudune*	*kudu*	-	✖
	-	*kudu*	*oleh*	✔

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Importantly, the following data shows that the co-occurrence restrictions do not occur when each modal marker refers to a *different* type of modality. For instance, *kudune* 'ought to', a deontic modal, can co-occur with *mesthi* 'EPIST.must', an epistemic modal.

(65)   Context: *Nek lampu ndek omahe Bu Yun iku makan, iku artine Bu Yun nek omah. Awakmu weroh sa'iki lampune makan nek omahe Bu Yun.* (When the light is on at Mrs. Yun's house, this means that Yun is home. You know that the light is on right now at Mrs. Yun's house.)
bu   Yun   **kudu-ne**   **mesthi**   nek omah
Mrs. Yun   DEONT.must-NE EPIST.must at   house
'Yun ought to certainly be at home.' (14june2011.005)

Similarly, the epistemic modal *mesthine* 'should' can co-occur with the deontic modal *kudu* 'DEONT.must', as shown in (66).

(66)   Context: *Nek awan iku puwanas. Izzun dadi tamu nek Paciran, terus Izzun ono acara rapat sa'iki. Panggonane adoh tapi Izzun gak iso caraone numpak sepeda montor. Soale Izzun tamu nek Paciran...* (When it's noon, it's so hot. Izzun is a guest in Paciran, and Izzun has important meeting now. The meeting is far but Izzun doesn't know how to ride a motorbike. Since Izzun is a guest in Paciran....)
cak Adi **mesthine**   **kudu**   ngeter-no   Izzun neng kantor
Mr. Adi EPIST.must-NE DEONT.must AV.bring-APPL Izzun at   office
'Adi should have to take Izzun to the office.' (14june2011.003)

The above two examples show that it is felicitous to have modals that express both different types of modality (epistemic vs. deontic) as well as different types of force (necessity vs. weak necessity) co-occurring. Paciran Javanese also allows modals to co-occur when they have the same force, but different types of modality – but only in a certain order. For instance, *mesthi* 'EPIST.must' and *kudu* 'DEONT.must' can co-occur, as in (67). Both these modals express necessity, while *mesthi* is used in epistemic contexts and *kudu* is used as a deontic modal here.

(67)   Context: *Ono wong mati* (Someone has passed away...)
bu Zum   **mesthi**   **kudu**   ngelewat   (*kudu mesthi*)
Mrs. Zumaroh EPIST.must   DEONT.must AV.meet.family.of.deceased
'Zum certainly must visit the family of the deceased.' (23may11.046, 047)

The other combinations of modals with the same force (possibility) are *paleng* 'epistemic.may' and *oleh* 'allow' as shown in (35) above, and *paleng* 'epistemic.may'

and *iso* 'circumstantial.can' as shown in (16) above. The only combination that does not co-occur is with *oleh* 'allow' and *iso* 'circumstantial.can' which I argued above to be competing for the same syntactic slot (see e.g. (56) in section 4.1 above).

Therefore, the generalization (putting aside *kudu* 'DEONT.must' and *oleh* 'allow') that Javanese modals cannot co-occur when each modal marker has the same flavour (e.g. *mesthine* 'EPIST.should' and *mesthi* 'EPIST.must' or *kudune* 'ought' and *kudu* 'DEONT.must') does not extend when each modal marker has the same force. Other combinations, however, are acceptable as illustrated above. Table 3 provides a summary of these findings (again, putting aside *kudu* 'DEONT.must' and *oleh* 'allow').

Table 3. Co-occurrence restrictions of modality in Paciran Javanese

		TYPE OF MODALITY	
		SAME	DIFFERENT
FORCE	SAME	n/a	✓
	DIFFERENT	✗	✓

To summarize briefly the discussion on the co-occurrence restrictions of TAM markers in Javanese from both sections 4.1 and 4.2, I have proposed that (i) a number of restrictions are due to a blocking effect when multiple items are competing for the same syntactic slot and (ii) other restrictions are due to semantic incompatibility.

4.3   Summary of data on relative ordering and co-occurrence restrictions

From the evidence in Paciran Javanese that TAM markers occur in a strict relative order and that certain markers cannot co-occur (but are competing for the same syntactic slot), an outline of the syntactic structure for TAM markers can now be articulated, presented below in Tree 3. This can be seen as an extension of what I have presented in Table 1 above.

Tree 3. Syntactic structure for TAM markers in Paciran Javanese
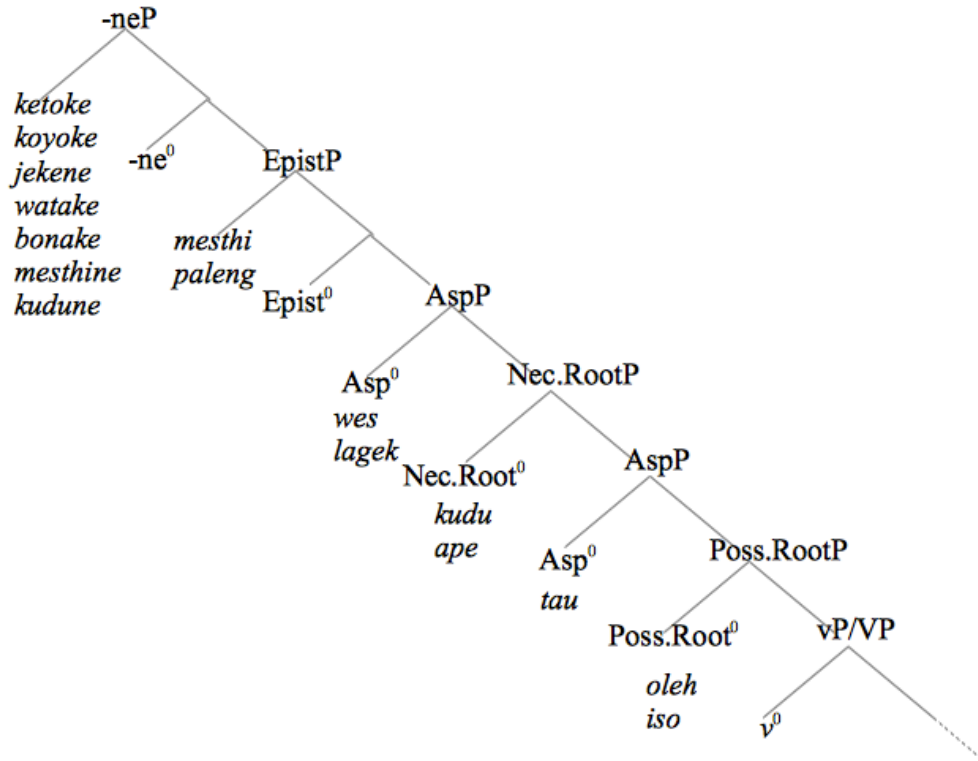
I will discuss the implications of the syntactic structure for TAM markers in Paciran Javanese in light of the universal ordering proposed by Cinque (1999) in §6 below. Before discussing these cross-linguistic issues, I will first turn to apparent free word order of certain TAM markers and show that there is a strict relative order for each case.

5 Apparent free word order of certain TAM markers in Paciran Javanese

In Paciran Javanese, although most TAM markers necessarily occur in a strict relative order, there are cases of some TAM markers that appear to allow either ordering, contra Cinque's (1999) hypothesis that all TAM markers follow a universal strict relative order. Robson (1992:55) notes that in Standard Javanese when two or more auxiliaries occur together, sometimes the order is free. Furthermore, he states that no clear meaning differences arise. However, no examples are given for this occurrence in Standard

Javanese. In Paciran Javanese, the markers that appear to co-occur in either order are the following:

(i) *wes* 'PERF' ~ *mesthi* 'EPIST.must'
(ii) *tau* 'EXP.PERF' ~ *kudu* 'DEONT.must'
(iii) *tau* 'EXP.PERF' ~ *ape* 'FUT'
(iv) *wes* 'PERF' ~ *kudu* 'DEONT.must'

Despite the fact that both orders can occur in Paciran Javanese, I argue that only one order corresponds to the strict hierarchical order that Cinque (1999) proposes, which is along the spine of the syntactic tree as in Tree 3 above. The other order, I argue, is a result of either (i) a different structure via modification or (ii) a complication regarding two slots for the same lexical item. Supporting evidence is drawn from syntactic and/or semantic differences in each case.

In addition to these specific cases of apparent free order, I also explore a more general putative free word order that appears to reflect information structure in Paciran Javanese. Specifically, I find that TAM auxiliaries may occur to the left of TAM adverbs as answers to yes-no questions, but not in declarative clauses. I discuss this phenomenon in light of the putative free word order and suggest a generalization based on what orders can or cannot occur in the construction of answers to yes-no question.

5.1   Investigating the order of *mesthi ~ wes*

According to the hierarchy of TAM markers proposed by Cinque (1999), an epistemic modal marker would necessarily precede a perfective marker. If this hierarchy is universal, one would expect that in Paciran Javanese only the order *mesthi* 'EPIST.must' > *wes* 'PERF' occurs (the 'expected' order), and the order *wes* 'PERF' > *mesthi* 'EPIST.must' (the 'unexpected' order) would be judged as an unacceptable string. However, both orders of *mesthi ~ wes* are judged to be equally acceptable as shown in (68) and sometimes no difference in meaning arises.

(68)   Context: *Sampeyan wes suwe gak ketemu Jozi* (You haven't seen Jozi in a while)
  a.   Jozi **mesthi**   **wes** muleh   neng Kanada
       Jozi EPIST.must PERF go.back at   Canada
       'Jozi must have gone home to Canada.' (23may11.007)

    b.   Jozi **wes mesthi**   muleh   neng Kanada
          Jozi PERF EPIST.must go.back at   Canada
          'Jozi must have gone home to Canada.' (23may11.008)

Given this variation, the question immediately arises as to whether this 'free word order' as Robson (1992:55) suggests may be the case in Standard Javanese for some auxiliaries or the 'free word order' is only apparent. I argue for the latter. I will show that the different orders of *mesthi* 'EPIST.must'~ *wes* 'PERF' in Paciran Javanese are related to a syntactic difference through three different tests: (i) meaning shifts, (ii) constituency via adverb placement and topicalization and (iii) co-occurrence patterns.

       A first clue that the different orders with *mesthi* 'EPIST.must'~ *wes* 'PERF' are not due to 'free word order' is that different meanings can arise with the different orders. In (69)a with the expected order *mesthi* > *wes* (assuming the universal ordering proposed in Cinque 1999), the consultant explains that "...you can eat breakfast at 7am or 8am, but the important thing is that you are done eating at 9am." Here, the aspectual marker *wes* is modifying the VP *sarapan* 'breakfast', which has the effect that this action must be completed by 9am; the consultant emphasizes that you are *pasti sudah selesai* 'definitely already finished'.

       With the unexpected order *wes* > *mesthi* in (69)b, the consultant explains that "it's certain that you always take breakfast at 9am", and you haven't eaten breakfast beforehand. In other words, *wes* does not modify the VP *sarapan* in (69)b, because it's not required that you are finished eating breakfast. Instead, it is only modifying the modal *mesthi*, with the effect of intensifying its meaning.

(69) a.   U'ud **mesthi**   **wes** sarapan   nek jam   songgo isuk
          U'ud EPIST.must PERF breakfast at   clock 9   morning
          'U'ud must have already eaten breakfast at 9a.m.' (4june2011.019)

      b.   U'ud **wes**   **mesthi**   sarapan   nek jam   songgo isuk
          U'ud PERF EPIST.must breakfast at   clock 9   morning
          'U'ud certainly must be eating breakfast at 9a.m.' (4june2011.022)

Adverb placement provides a second argument based on constituency that each ordering has a different syntax. With the expected order *mesthi* 'EPIST.must' > *wes* 'PERF' in (70)a, the adverb *sa'iki* 'now' can occur between the TAM markers, showing that in this order

the TAM markers can be separated. But with the opposite order in (70)b, it is ungrammatical to have the adverb occur between the TAM markers, suggesting that they are closely attached in this order. Note that this is the only difference in temporal adverb placement; all other positions for *sa'iki* 'now' are equally accepted for both orders.

(70) a.   (*sa'iki*) Pak Suwanan (*sa'iki*) **mesthi**   (*sa'iki*) **wes** nok omah (*sa'iki*)
          now   Mr. Suwanan now   EPIST.must now   PERF at   home now
          'Pak Suwanan must already be at home now.'
          (4june2011.001-004), (17may11.024-027)

     b.   (*sa'iki*) Pak Suwanan (*sa'iki*) **wes** (**sa'iki*) **mesthi**   nok omah (*sa'iki*)
          now   Mr. Suwanan now   PERF now   EPIST.must at   home now
          'Pak Suwanan must be at home now.' (4june2011.005-008), (17may11.020-023)

I suggest that the difference in adverb placement reveals two distinct syntactic structures. Specifically, with the expected order *mesthi* 'EPIST.must'> *wes* 'PERF', I propose that both TAM markers are located on the spine of the tree, as shown in Tree 2 below. I assume that the TAM marker *mesthi* 'EPIST.must', as an adverb, is located in the specifier position of its own maximal projection as in e.g. Cinque (1999) and that *wes* 'PERF', as an auxiliary, is located in the head position. The structure in Tree 4 would allow an adverb, such as *sa'iki* 'now', to occur in-between these markers.

Tree 4. *Located on the spine of the tree.*
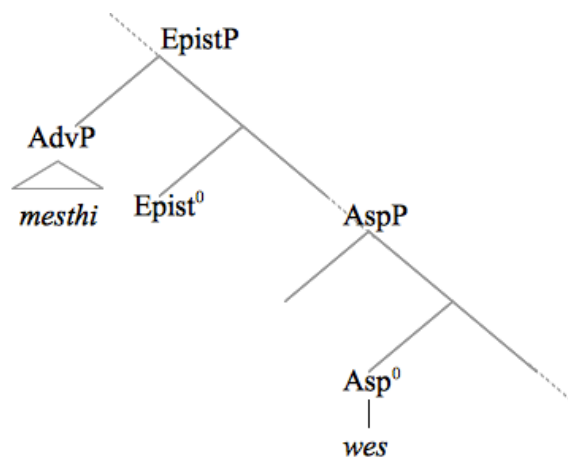
With the unexpected order *wes* > *mesthi*, I propose that *wes* 'PERF' is modifying only *mesthi* 'EPIST.must', and is represented syntactically as 'limb or XP-modification', where

wes is modifying the XP adverb *mesthi* in specifier position. This structure, as given in Tree 5, does not allow a spinal adverb to occur between the XP-adjoined [*wes-mesthi*].[54]

Tree 5. *XP-modification*
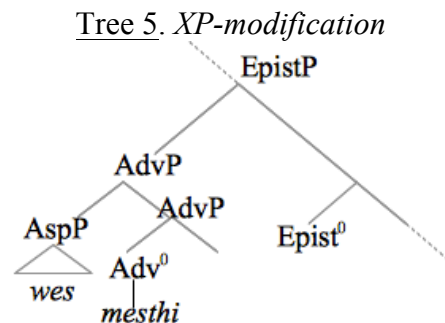
One might argue for an alternative approach to explain the temporal adverb facts in (70); namely, a temporal adverb can never occur to the right of *wes* 'PERF'. The adverb *sa'iki* cannot occur to the right of *wes* 'PERF' as shown in (70)b when *mesthi* 'EPIST.must' syntactically scopes below. It also cannot occur to the right of *wes* 'PERF' in (70)a when *mesthi* 'EPIST.must' syntactically scopes above *wes* 'PERF', shown here:

(71) * Pak Suwanan **mesthi**   **wes**   (*sa'iki*) nok omah
        Mr. Suwanan EPIST.must PERF now   at   home
        ('Pak Suwanan must already be at home now.')

While this approach explains the above facts, this explanation is self-contained. It does not extend to other data, such as the facts with topicalization in (74) that I show below. Furthermore, the phenomenon that temporal adverbs cannot occur to the right of *wes* 'PERF' is part of a general property of the Javanese clause structure. That is, not only with *wes* 'PERF' as in (72), but all auxiliaries do not support a temporal adverb to its right in a declarative sentence.

(72) Context offered: Wong takok kapan mulai buka ('Someone asks when the store is opened.')
    a.   pak Suwanan *sa'-iki* **wes**   buka   toko-ne
          Mr. Suwanan SA-that already open   store-DEF
          'Suwanan now has opened his store.' (30mar11.003)

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[54] I refer to XPs in specifiers as being 'limbs' and XPs that constitute the clause (i.e. that are not in a specifier position) as being along the 'spine'.

b. * pak Suwanan **wes** *sa'-iki* buka toko-ne
Mr. Suwanan already SA-that open store-DEF
('Already now Suwanan has opened his store.') (30mar11.007)

Additional examples with auxiliaries *ape* 'FUT' and *oleh* 'allow' in (73), representing the class of TAM auxiliaries in Paciran Javanese, demonstrate that temporal adverbs are ungrammatical with a temporal adverb such as *sesok* 'tomorrow' to its right.

(73) a. Bu Maula (**sesok**) **ape** (***sesok***) mbungkus sego pecel
Mrs. Maula tomorrow FUT tomorrow AV.package rice *pecel*
'Bu Maula will package up 'pecel' rice tomorrow.' (15Feb11.017, 019)

b. pak Fatihul (**sesok**) **oleh** (***sesok***) ngulang kelas siji
Mr. Fatihul tomorrow allow tomorrow AV.teach class one
'Fatihul may teach Class 1 tomorrow.' (30mar11.054, 057)

These facts show that the approach based on an adverbial placement restriction interacting with the aspectual marker *wes* is untenable.

Another test that provides further evidence that the different orders of *mesthi ~ wes* have a different syntax is topicalization. The expected order *mesthi* 'EPIST.must' > *wes* 'PERF' cannot be topicalized, as in (74)a, while the unexpected order *wes* 'PERF' > *mesthi* 'EPIST.must' in (74)b can.

(74) a. * **mesthi wes**, Eva reng Bali sa'iki
EPIST.must PERF, Eva to Bali SA-that
('it must have been the case that Eva went to Bali now.') (17-05-2011.061)

b. **wes mesthi**, Eva reng Bali sa'iki
PERF EPIST.must, Eva to Bali SA-that
'Certainly, Eva went to Bali now.' (17-05-2011.060)

Assuming that topicalization is a test for constituency, that the expected order *mesthi > wes* cannot be topicalized shows that it is not a constituent on its own. The evidence here supports the analysis that both TAM markers are located on the spine of the tree in this order as in Tree 4 above. Conversely, that *wes > mesthi* can be topicalized strongly suggests that it is a constituent on its own, also supporting the limb-modification structure

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as in Tree 5 above.[55] Note that the alternative approach that temporal adverbs cannot occur to the right of *wes* 'PERF' would not be able to account for this data.

A last piece of evidence that these different orders have a different syntax is due to multiple occurrences in the same sentence. We have seen evidence for two locations for *wes* 'PERF': one on the spine of the tree, and one that can directly modify *mesthi* 'EPIST.must'. We predict then that *wes* 'PERF' would be able to occur twice in the same sentence, since it is modifying different items. Example (75) shows that this prediction is borne out.

(75)   Context: *Eva iku wong bule. Eva manggon nek Indonesia wes suwi.* (Eva is a foreigner. Eva has lived in Indonesia for a long time.)
Eva **wes mesthi**   **wes**   nyicipi   sego goreng
Eva PERF EPIST.must PERF   AV.taste   rice   fried
'Eva certainly must have tried fried rice.' (4june2011.014)

In sum, a number of tests such as meaning differences, topicalization, adverb or auxiliary placement have provided evidence that the different orders of *wes* 'PERF' and *mesthi* 'EPIST.must' actually have a different syntactic structure. Specifically, I have suggested that the expected order *mesthi* 'EPIST.must' > *wes* 'PERF' corresponds to when the projections of both TAM markers are located on the spine of the tree. With the unexpected order of *wes* 'PERF' > *mesthi* 'EPIST.must', I have suggested that here *wes* is directly modifying *mesthi* via limb XP adjunction. I now turn to exploring the apparent free word order of *kudu ~ tau* in Paciran Javanese.

5.2   Investigating the order of *kudu ~ tau*

While the surface order suggests that *kudu ~ tau* allows free word ordering, I show that it is clear that the order relates to the different interpretations of *kudu* 'deontic.must' or 'want'. Recall from Chapter 1 that *kudu* can have different interpretations such as 'deontic.must' and 'want' (see Chapter 5 for a full description of all the interpretations). These two interpretations are illustrated in (76) for 'deontic.must' and (77) for 'want'.

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[55] Note that topicalization may provide additional evidence that *mesthi* is located in a specifier position: topicalization of an XP is straightforward, while topicalization of an X^0 would require remnant movement. Further evidence is necessary to fully understand either derivation, but the XP analysis would be a natural explanation.

(76)   awakmu **kudu**   **wes** adus
          2SG   DEONT.must PERF bathe
          'You have to have taken a bath.' (4june2011_RF.046)

(77)   Context: *Arim isek cilik. Arim oleh mangan pedes, tapi gak kepingin* (Arim is still
          young. Arim is allowed to eat spicy food, but she doesn't want to.)
          Arim **ora kudu** mangan pedes
          Arim NEG want   AV.eat   spicy
          'Arim doesn't want to eat spicy food.' (4june2011_RF.013), (20june2011.002)
          (≠ 'Arim doesn't have to eat spicy food.') (4june2011_RF.014)

I show in this section that there is a direct correlation with the meaning of *kudu* and its position with respect to *tau*, as summarized in Table 4 below. Specifically, high *kudu* positioned above *tau* 'EXP.PERF' (*kudu* > *tau*), is always interpreted as 'deontic.must', while low *kudu* positioned below *tau* 'EXP.PERF' (*tau* > *kudu*) is always interpreted as 'want'.

Table 4. Interpretation of *kudu* in different orders of *kudu* ~ *tau*

	'deontic.must'	'want'
kudu > *tau*	✓	✗
tau > *kudu*	✗	✓

Consider the order of *tau* > *kudu* in (78)a, which is proposed to be interpreted as 'want'. When asked if *kudu* > *tau* could also be used here in elicitation, it is less preferred. The consultant offers instead (79), where the context given is conducive to a 'deontic.must' interpretation of *kudu*.

(78) a.   Dina **tau**   **kudu** bel-ajar   boso   Jepang tapi gak
          Dina EXP.PERF want BEL-learn language Japan but NEG

          sido
          in.the.end
          'Dina once wanted to learn Japanese, but it didn't happen in the end.'
          (23may11_2.019)

    b. ?? Dina **kudu**   **tau**   bel-ajar   boso   Jepang tapi gak
          Dina DEONT.must EXP.PERF BEL-learn language Japan but NEG

          sido
          in.the.end
          ('Dina once wanted to learn Japanese, but it didn't happen in the end.')
          (23may11_2.020)

(79)　Context offered: *Dokter ngongkon....* (The doctor orders...)
　　　Dina　**kudu**　　　**tau**　　　　ngombe　obat　　　iku
　　　Dina　DEONT.must　EXP.PERF　AV.drink　medicine　that

　　　(nek　aku　mrekso　　　sampeyan　maneh)
　　　when　1SG　AV.examine　2SG　　　again
　　　'Dina has to have drunk this medecine (if I examine you again).'
　　　(23may11_2.021)

Further evidence that *kudu* cannot be interpreted as 'want' in the order *kudu > tau* is shown with more detailed contexts in (80) and (81). Each of the following contexts targets a 'want' reading where the subject wanted to do something, but it was never an obligation to do that thing. In both these examples, only the order *tau > kudu* is felicitous.

(80)　Context: Hesti wanted to go to university in the past, but now she changed her mind and wants to be a tailor instead. It wasn't an obligation for her to go to university, she just wanted to before.
　　a.　mbak　Hesti　**tau**　　　**kudu**　daftar　　neng kuliah
　　　　Miss　Hesti　EXP.PERF　want　register　at　　course
　　　　'Hesti once wanted to register in university.' (11june2011.003)

　　b. # mbak　Hesti　**kudu**　　　　**tau**　　　daftar　　neng kuliah
　　　　Miss　Hesti　DEONT.must　EXP.PERF register　at　　course
　　　　'Hesti had to once register in university.' (11june2011.004)

(81) Context (English): Dayu is now old, and she can't work with her hands very well because she has arthritis in her hands. Before, when she was well, she loved working with plants and learning how to grow different kinds of flowers. Dayu wasn't required to know about plants for any reason (she wasn't a farmer or a botanist). It was just her hobby, and she really liked it. Now she does not want to learn about plants anymore because of her arthritis problem.
　　a.　Dayu　**tau**　　　**kudu**　ngerti　bongso　kembang-kembang
　　　　Dayu　EXP.PERF　want　know　about　　flower-flower
　　　　'Dayu once wanted to learn about flowers.' (11june2011.015)
　　b. # Dayu　**kudu**　　　　**tau**　　　ngerti　bongso　kembang-kembang
　　　　Dayu　DEONT.must　EXP.PERF know　about　　flower-flower
　　　　('Dayu had to once to learn about flowers.') (11june2011.016)

The fact that only *tau > kudu* is felicitous in the examples above provide support for two points: (i) *kudu* can be interpreted as 'want' when it follows *tau* 'EXP.PERF' and (ii) *kudu* cannot be interpreted as 'want' when it precedes *tau* 'EXP.PERF', but only as 'deontic.must'.

In fact, similar to the interaction in (78)-(79), the consultant comments that *kudu* > *tau* does not fit in the context in (81) and says that Dayu in this sentence doesn't want to learn about flowers, but it is *seperti ngongkon* 'like ordering'. Instead, the consultant offers the sentence in (82) where the 'deontic.must' reading is salient for *kudu* (cf. (79)).

(82) awakmu **kudu**   **tau**   sinau boso   inggris soal-e   gak
   2SG   DEONT.must   EXP.PERF study language English because-DEF NEG

   tau   belas   sinau
   EXP.PERF at.all   study
   'You have to once study English because you never study at all.'

With the order *tau* > *kudu*, can *kudu* also be interpreted as 'deontic.must'? We can test this with a context that only targets the interpretation of 'deontic.must' (and not 'want'): if *tau* > *kudu* is felicitous, then we can conclude that the interpretation of 'deontic.must' is available, and *tau* 'EXP.PERF' may also be positioned above high *kudu*. If *tau* > *kudu* is infelicitous, then we can conclude that there is only one position of *tau* 'EXP.PERF'. The outcome of (83) shows that there is only one position of *tau* 'EXP.PERF', since *kudu* cannot be interpreted as 'deontic.must' in this order.

(83) Context: Budi's parents ordered Budi to work when he was young. (Budi is now old and he is retired; he doesn't work now.) When he was young, Budi didn't want to work; he wanted to go to university but there was no money, so he had to work.
  a. Budi **kudu**   **tau**   kerjo
    Budi DEONT.must EXP.PERF   work
    'Budi once had to work.'

  b. # Budi **tau**   **kudu** kerjo
    Budi EXP.PERF want work
    'Budi once wanted to work.' / ('Budi once had to work.') (5June2012)

Additional support that *kudu* in *tau* > *kudu* cannot be interpreted as 'deontic.must' comes from VP-topicalization data. In (84)a, where *kudu* has been topicalized, *kudu* can only mean 'want' similar to *kepingin* 'want' in (84)b. If it could be interpreted as 'deontic.must', then we would expect two positions for *tau* 'EXP.PERF'– this is not the case, and therefore supports the hypothesis that there is only one position of *tau* 'EXP.PERF'. Further, it suggests that low *kudu* 'want' is actually a verb, since it can

undergo VP-topicalization. This is an important finding, as the different positions of *kudu* correlates with a difference in grammatical category as well: low *kudu* 'want' is a verb and high *kudu* 'deontic.must' is an auxiliary. See Chapter 4 for further examples of VP-topicalization and for further evidence that low *kudu* ('want') is a verb.

(84)   Context: Mbiyen, Zulfah kepingin mbuka toko, tapi sa'iki wes gak ono waktune
         (Before, Zulfah wanted to open a store, but now there's no longer time.)
     a.   [_{VP} **kudu**   mbuka   toko-ne]   Zulfah **tau**   *t*_{VP}
             DEONT.must AV.open store-DEF   Zulfah EXP.PERF
             'Wanted to open her store, Zulfah once [did].'
          # 'had to open her store, Zulfah once [did].' (26nov11.077)

     b.   [_{VP} **kepingin** mbuka   toko-ne]   Zulfah **tau**   *t*_{VP}
             KE-want   AV.open store-DEF   Zulfah EXP.PERF
             'Wanted to open her store, Zulfah once [did].' (26nov11.078)

In sum, what sets the different orders of *kudu ~ tau* apart from *mesthi ~ wes* and *kudu ~ wes* is that *kudu ~ tau* is related only to the different interpretations of *kudu*. There is one position of *tau* 'EXP.PERF', and all three markers are located on the spine of the tree.

        To summarize this sub-section, I have argued that the different orders of *kudu ~ tau* simply relate to two distinct positions for *kudu* along the spine of the tree which each have a different interpretation as well as a different grammatical category. In contrast, I have argued above that the different positions of *wes* 'PERF' with *mesthi* 'EPIST.must' relate to a different syntax: *wes > mesthi* is XP-adjunction, while for *mesthi > wes*, both TAM markers are positioned on the spine of the tree. This research therefore shows that each apparent free word order may not be due to the same effects. I turn now to an examination of apparent free word order with the markers *tau* 'EXP.PERF' and *ape* 'FUT'.

5.3   Investigating the order of *tau ~ ape*

In term of the surface order of *tau* 'EXP.PERF' with respect to *ape* 'FUT', for some speakers, either order is acceptable, while for others *tau > ape* is preferred, and yet still others prefer *ape > tau*. Using tests with topicalization and fronting with yes-no questions, I suggest that the order of *ape > tau* is located along the spine of the tree, while the order *tau > ape* results from head adjunction of *tau* 'EXP.PERF' to *ape* 'FUT', assuming that as auxiliaries, they are both located in a head position. While further

research on these different orderings with *tau ~ ape* is necessary to better understand possible meaning differences, the results from topicalization and auxiliary-fronting seem promising as these are similar results as found with *wes* 'PERF' and *mesthi* 'epistemic.must'. I first give examples of the different ordering and individual speakers preferences, and then show the tests.

For some speakers, there is no preference as to the order of *tau* 'EXP.PERF' and *ape* 'FUT', as demonstrated in (85) and (86): both *ape > tau* and *tau > ape* are judged to be equally grammatical.

(85) a. tukang batu **ape tau**   gawe omah tapi durung mari
         worker rock FUT EXP.PERF make house but not.yet finish
         'The stonemason would build a house, but he is not yet finished.'
         (17-05-2011.071)

     b. tukang batu **tau**   **ape** gawe omah tapi durung mari
         worker rock EXP.PERF FUT make house but not.yet finish
         'The stonemason would build a house, but he is not yet finished.'
         (17-05-2011.072)

(86) a. cak Joko   **tau**   **ape** dadi   dokter tapi gak sido
         Mr. bachelor EXP.PERF   FUT become doctor but   NEG in.the.end

         soal-e   gak lulus   ujian
         because-DEF   NEG succeed test
         'Joko was going to be a doctor but not in the end because he didn't pass the exam.' (10june2011.022)

     b. cak Joko   **ape tau**   dadi   dokter tapi gak sido
         Mr. bachelor FUT EXP.PERF become doctor but   NEG in.the.end

         soal-e   gak lulus   ujian
         because-DEF   NEG succeed test
         'Joko was going to be a doctor but not in the end because he didn't pass the exam.' (10june2011.023)

Example (87) shows that either order is acceptable in a declarative clause for some speakers with a first or second person or proper noun external argument.

(87) a. aku/ sampeyan/ bu Yeni **ape tau**   lungo reng Kanada tapi gak
        1SG/ 2SG/   Mrs. Yeni FUT EXP.PERF go   at   Canada but   NEG

        nduwe   paspor
        AV.have passport
        'I was going to go to Canada, but I don't have a passport.'
        'You were going to go to Canada, but you didn't have a passport.'
        'Bu Yeni was going to go to Canada, but she didn't have a passport.'
        (10june2011.042,043,044)

    b. aku/ sampeyan/ bu Yeni **tau**   **ape** lungo reng Kanada tapi gak
        1SG/ 2SG/   Mrs. Yeni EXP.PERF FUT go   at   Canada but   NEG

        nduwe   paspor
        AV.have   passport
        'I was going to go to Canada, but I don't have a passport.'
        'You were going to go to Canada, but you didn't have a passport.'
        'Bu Yeni was going to go to Canada, but she didn't have a passport.'
        (10june2011.045,046,047)

While some speakers equally allow both orders of *tau* 'EXP.PERF' and *ape* 'FUT', other speakers prefer the order of *tau > ape*. While there is this preference, note that the opposite order is still judged to be grammatical for some speakers. For instance, one speaker comments that *ape > tau* is less good, but you can still say it; "*kurang sip, tapi bisa*".

(88) a.   Agus **tau**   **ape** mangan rajungan
          Agus EXP.PERF FUT   AV.eat   crab
          'Agus would eat crab.' (10june2011.013)

    b. ? Agus **ape tau**   mangan rajungan
          Agus FUT EXP.PERF AV.eat   crab
          'Agus would eat crab.' (10june2011.014)

Examples (89) and (90) were each elicited with three speakers. While all three speakers accept *tau > ape,* one speaker does not consider *ape > tau* to be as grammatical and prefers *tau > ape*. (The other two speakers allow both orders equally).

(89)   Context: Sudah pernah daftar ke universitas kedokteran, tapi gak jadi (mungkin
        soale gak punya uang cukup...)
    a.   Siti **tau**   **ape** dadi   dokter
         Siti EXP.PERF FUT become   doctor
         'Siti would be a doctor...' (10Apr11.105)

b. ? Siti **ape tau** dadi dokter
Siti FUT EXP.PERF become doctor
'Siti would be a doctor...' (10Apr11.104)

(90) a. Devi **tau** **ape** mbuak iwak-e pas enom biyen
Devi EXP.PERF FUT AV.throw.out fish-DEF when young before
'Devi would throw away the fish when she was young.' (4may11tau.017)

b. ? Devi **ape tau** mbuak iwak-e pas enom biyen
Devi FUT EXP.PERF AV.throw.out fish-DEF when young before
'Devi would throw away the fish when she was young.' (4may11tau.016)

From results from elicitation with (91), another speaker also prefers the order *tau > ape* to the opposite order, *ape > tau*, but considers both orders to be grammatical.

(91) a. Jozi **tau** **ape** dolan nek sekolahan ben-dino minggu,
Jozi EXP.PERF FUT visit at school-N every-day week

sampek sa'-iki sek dolan bendino minggu
until SA-that still visit every?-day week
'Jozi would visit the school every week, up until now she still visits there every week.' (4may11tau.023)

b. ? Jozi **ape tau** dolan nek sekolah-an ben-dino minggu,
Jozi FUT EXP.PERF visit at school-AN every-day week

sampek sa'-iki sek dolan ben-dino minggu
until SA-that still visit every-day week
'Jozi would visit the school every week, up until now she still visits there every week.' (4may11tau.024)

However, one speaker preferred the opposite order *ape* 'FUT' > *tau* 'EXP.PERF', as shown in (92). This speakers states that while both orders have the same meaning *"artine podho"*, the order *tau* 'EXP.PERF' > *ape* 'FUT' is not common, *"gak common"*.

(92) a. ? Titis **tau** **ape** lungo reng Kanada terus gak sido
Titis EXP.PERF FUT go at Canada then NEG in.the.end

soal-e paspor durung dadi
because-NE passport not.yet become
'Titis would have gone to Canada, but not in the end because her passport is not ready.' (4may11ape.016)

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b.   Titis **ape tau**   lungo reng Kanada terus gak sido
      Titis will EXP.PERF go   at   Canada then NEG in.the.end

      soal-e   paspor kari
      because-DEF   passport left.behind
      'Titis would have gone to Canada, but not in the end because she forgot her passport.' (4may11ape.015)

To sum up the findings in elicitation, three speakers judge either order of *tau* 'EXP.PERF' with *ape* 'FUT' to be acceptable, three speakers prefer the order *tau > ape*, and one speaker prefers the order *ape > tau*. Because more speakers have a preference for *tau > ape* over *ape > tau*, we might expect that if there is any structural distinction between these two orders that the order *tau > ape* reflects the ordering along the spine of the syntactic tree, while *ape > tau* might reflect a different structure, such as head adjunction. However, the results from topicalization and auxiliary-fronting in yes-no questions suggest otherwise.

    Concerning the constituency test of topicalization, two out of three speakers accept the ordering *tau > ape* to be topicalized, while all three speakers judge the topicalization of the auxiliaries *ape > tau* to be ungrammatical. This data suggests that *tau > ape* is a constituent, possibly the result of a complex head[56], while *ape > tau* is not a constituent, possibly located along the spine.

(93) a. ? **tau**   **ape** Risa lungo reng Australi
          EXP.PERF FUT Risa go   at   Australia
          ('would ever, Risa go to Australia.') (2/3 accepted) (10june2011.016)

    b. * **ape tau**   Risa lungo reng Australi
          FUT EXP.PERF Risa go   at   Australia
          ('would ever, Risa go to Australia') (3/3 rejected) (10june2011.015)

Results from fronting multiple auxiliaries in yes-no questions seem to corroborate this conclusion. In Paciran Javanese, multiple auxiliaries may front in yes-no questions only

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[56] This data then raises the question of what kind of structure(s) can be topicalized in Javanese. With *wes mesthi*, I argued above that this is limb-movement of an XP that has topicalized, assuming that *mesthi* is an XP as an adverb. However, with auxiliaries *tau ape*, I assume that this is a complex head. In order to topicalize this structure, however, this would involve spinal remnant movement of an XP, which is a very different derivation than limb XP-movement. Further research is required to better understand this possible derivation of topicalization Javanese. As I show in Chapter 4, Javanese is at the cross-roads of two major types of languages (A-type vs. B-type, Travis (2008)); as such, these two different avenues in order to derive topicalization may not be surprising.

with the addition of the focus particle *toh* or the question particle *opo*. These examples are shown with *toh*, which is always located at the right edge of its focus associate. These types of yes-no questions are further discussed in Chapter 4. The important condition here is that multiple fronted auxiliaries obligatorily maintain their relative order. For instance, with the future marker *ape* 'FUT' and modal *iso* 'can' in declarative clauses the order is obligatorily *ape* > *iso*, as shown in (94) (repeated from (21) above).

(94) a. Fina **ape iso** jahit
         Fina FUT can sew
         'Fina will be able to sew.' (4may11ape.021)

     b. * Fina **iso ape** jahit
         Fina can FUT sew
         ('Fina will be able to sew.') (4may11ape.022)

This order *ape* 'FUT' > *iso* 'can' must be maintained in multiple auxiliary fronting in yes-no questions, demonstrated in (95) with the particle *toh*. Just as in the declarative clause, the order *iso* 'can' > *ape* 'FUT' is grammatical when fronted to form a yes-no question.

(95) a. **ape iso toh** Hamida nggendhong   Ayu?
         FUT can PRT Hamida AV.carry.on.hip beautiful
         'Is Hamida going to be able to carry Ayu?' (15dec11T.080 (offered))

     b. * **iso ape toh** Hamida nggendhong   Ayu?
         can FUT PRT Hamida AV.carry.on.hip beautiful
         ('Is Hamida going to be able to carry Ayu?') (15dec11T.081 (offered))

Because of this condition, fronting of multiple auxiliaries in yes-no questions can provide a good way to test what order of constituents is along the spine of the tree. We can then apply it to the different orders of *tau* 'EXP.PERF' ~ *ape* 'FUT'. We would predict that only the order that is along the spine of the tree is grammatical when fronted. Interestingly, only the order *ape* > *tau* is grammatical when fronted to form a yes-no question, as shown in (96), suggesting that *ape* > *tau* is the order along the spine of the tree.

(96) a.   Putri **ape** **tau**   ke-temu   Britney Spears
           Putri FUT EXP.PERF KE-meet   Britney Spears
           'Putri would once meet Britney Spears.' (26nov11.087)

     b.   **ape** **tau**   **toh** Putri ke-temu   Justin Bieber?
           FUT EXP.PERF PRT Putri KE-meet   Justin Bieber
           'Would Putri once meet J.B.?' (26nov11.090)

The order *tau > ape* cannot be fronted, suggesting that this order is not along the spine of the tree. This order in a declarative clause is grammatical for this speaker (furthermore, this speaker has no preference for the order of *tau* 'EXP.PERF' ~ *ape* 'FUT'), but as fronted in an attempt to form a yes-no question similar to (96)b above, this order is unaccepted for either example in (97)b or (98).

(97) a.   Jozi **tau**   **ape** nyobak iwak pe
           Jozi EXP.PERF FUT AV.try   fish ray
           'Jozi once would try stingray.' (26nov11.082)

     b. * **tau**   **ape** **toh** Jozi nyobak   iwak pe?
           EXP.PERF FUT PRT Jozi AV.try   fish ray
           ('once would Jozi try stingray?') (26nov11.086)

(98) * **tau**   **ape** **toh** Putri ke-temu   Justin Bieber?
          EXP.PERF FUT PRT Putri KE-meet   Justin Bieber
         ('would Putri once meet J.B.?') (26nov11.091)

These results corroborate the results found with the topicalization test; namely that only *ape > tau* reflects the syntactic ordering along the spine of the tree, exemplified in Tree 6, while *tau > ape* reflects a constituent, possibly as a complex head, as shown in Tree 7.

Tree 6. *Located on the spine of the tree.*   Tree 7. *Head adjunction*
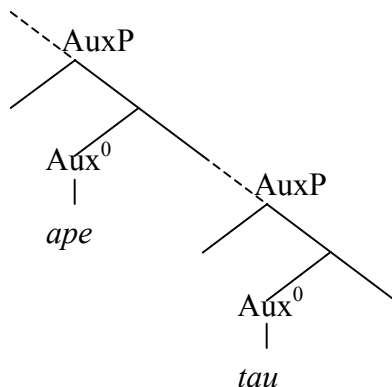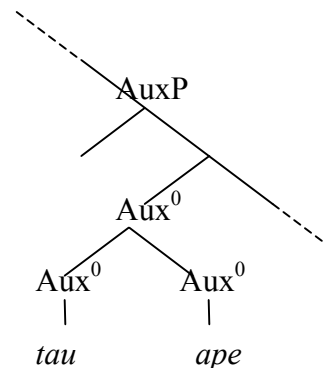
This line of analysis seems promising, but further research is necessary. That is, the results from fronting in yes-no questions may not be conclusive. This is because *ape* 'FUT' as a non-moveable auxiliary cannot front unless it is pied-piped by a moveable auxiliary, as shown with the order *tau > ape*. Therefore, that *tau > ape* is ungrammatical could simply be due to the fact that *ape* 'FUT' cannot be fronted on its own. See Chapter 4 for more data on auxiliary fronting in yes-no questions.

Further, we might expect if *tau > ape* is a complex head, then the co-occurrence with a second instance of *tau* 'EXP.PERF' could be possible. This prediction is not borne out; the example in (99) shows that the co-occurrence is ungrammatical. However, this could be for independent reasons, as it is not clear what (if any) meaning differences arise with the different orders.

(99) * cak Joko **tau** **ape tau** dadi dokter tapi gak sido
      Mr. bachelor EXP.PERF FUT EXP.PERF become doctor but NEG in.the.end

      soal-e   kurang   pinter
      because-NE   less   smart
      ('Joko was going to be a doctor but not in the end because he wasn't smart enough.') (10june2011.019)

Further tests such as the placement of adverbs or adding different temporal markers may aid in better understanding the structure and the possible meaning differences for the orders *tau >ape* and *ape > tau*. For now, I will assume that the structures above in Tree 6, where *ape > tau* represents the order along the spine, and in Tree 7, where *tau > ape* represents a complex head, are on the right track.

5.4   Investigating the order of *kudu ~ wes*

In this section, I briefly introduce an additional example of apparent free word order among TAM markers in Paciran Javanese with *kudu* 'DEONT.must' ~ *wes* 'PERF'. However, no clear semantic or syntactic differences between the two linear orders arises and I point out two hypotheses.

Both orders of *kudu* 'DEONT.must' ~ *wes* 'PERF' seem to be equally acceptable in Paciran Javanese as demonstrated in (100) and (101).[57, 58]

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[57] Concerning the interpretation of *kudu* as 'want', the order *wes > kudu* allows for this interpretation, while

(100) nek   numpak sepeda montor wong sa'-iki **wes kudu//**   **kudu**
       when   ride   bike   motor   person SA-that PERF DEONT.must DEONT.must

      wes nganggo   helm
      PERF AV.wear   helmet
      'When riding a motorbike, people now must already be wearing a helmet.'
      (16may2011.057, 060)

(101) sampeyan sa'-jan-e   wingi   **kudu**   **wes** // **wes kudu**
       2SG   SA-real-DEF yesterday DEONT.must PERF   PERF DEONT.must

      marek-no   PR-e
      AV.finish-APPL homework-DEF
      'You actually had to have finished your homework yesterday.'
      (23may11_2.070, 071)

One hypothesis is that one type of modification reflects an order along the spine of the tree while the other order reflects a different type of modification such as XP-limb modification or head-adjunction, such as what is suggested for the different orders of *mesthi* 'EPIST.must'~ *wes* 'PERF' and *tau* 'EXP.PERF' ~ *ape* 'FUT'. However, results to gain insight into this alternative are inconclusive; the tests that worked well with *mesthi* 'EPIST.must' ~ *wes* 'PERF' do not distinguish *kudu* 'DEONT.must'~ *wes* 'PERF'. For instance, neither order can be topicalized.

    A second hypothesis is that there are two positions for *wes* along the spine of the tree, similar to what Soh (2011, 2012) argues for the completive or perfective aspectual marker *dah* 'already' in Colloquial Malay spoken in West Malaysia. This could be a possibility, as I have proposed there are two aspectual positions in Paciran Javanese. There is already a 'high' aspect position where *wes* is currently proposed to be located. The 'low' aspect position where the experiential perfective marker *tau* is proposed to be located is in fact lower than the position proposed for *kudu* 'deontic.must'. This could be a second position for *wes* 'PERF' in Javanese. Although additional research is necessary to further investigate the possible structural and/or semantic differences between the two

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the opposite order *kudu > wes* does not. This asymmetric result shows that there is not apparent free word order with respect to when *kudu* is interpreted as 'want'. The only apparent free word order occurs with *kudu* interpreted as 'deontic.must'.

[58] In (101), note that *wingi* 'yesterday' can co-occur with *kudu* 'DEONT.must' with the addition of *wes* 'PERF'. This suggests that the perfective aspectual marker *wes* licenses the occurrence of *wingi* 'yesterday'.

orders of *kudu* 'DEONT.must' ~ *wes* 'PERF', I do not presume that this is an example of free word order in Paciran Javanese.

5.5 Different orders marking informational structure

In this section, I discuss a final difference in ordering in Paciran Javanese between adverbial and auxiliary TAM markers. In this case, I argue that the difference in ordering between TAM markers is not an instance of free word order as it (i) that reflects informational structure and (ii) can only occur in a specific construction; namely, as an answer to yes-no questions. Therefore, the difference in ordering is not a violation of the universal hypothesis as proposed in Cinque (1999) for a strict relative order of functional projections.

To illustrate, as I have shown in this Chapter above in §3, multiple TAM markers must occur in a strict relative order in declarative clauses. For instance, the adverbial *ketoke* 'direct.evidential' must precede the auxiliary *iso* 'can', as shown in (102).

(102) Jozi **ketok-e   iso** ngulek   sambal tomat   (***iso ketoke**)
       Jozi see-NE   can   AV.mortar sambal   tomato
       'Jozi seems to be able to make tomato sambal.' (26april2011.061, 062)

The opposite order is allowed, however, as an answer to a question, either by itself, (103), or in a full sentence, (104), suggesting that this order is only permitted when it reflects information structure. One might argue that the short answer in (103) does not provide evidence that an auxiliary TAM marker can precede an adverbial TAM marker, as adverbial TAM markers can generally occur sentence-finally independently (see Chapter 2). That is, this simple answer could be composed of the auxiliary marker plus an elided VP followed by a sentence-final adverbial TAM marker. However, the fact that this order is permitted in a full answer such as (104) is strong evidence that this order is not due to the independent placement of an adverbial marker.

(103) Jozi **iso toh** nggawe sambal tomat? -**Iso   ketok-e**
       Jozi can Q   make   sambal tomat   -can   seem-NE
       A: 'Can Jozi make tomato sambal?' B: 'Yes, it seems so.'

(104) Jozi **iso toh** nggawe sambal tomat? -Yo Jozi **iso ketok-e**   nggawe
       Jozi can Q   make   sambal tomat -yes Jozi can   seem-NE AV.make

       sambal tomat
       sambal tomat
       A: 'Can Jozi make tomato sambal?'
       B: 'Yes, it seems that Jozi can make tomato sambal.'

Therefore, it seems that different informational structure allowed in answers can license a lower TAM marker to precede a higher TAM marker. In this section, I simply make note of this phenomenon, but I do not provide an analysis here. Further tests, especially focusing on prosody, are needed for to clarify these types of sentences and to see whether all TAM auxiliaries can precede a higher TAM marker. The following examples underline this pattern and highlight possible distinctions.

To start, it appears that not all low TAM auxiliaries are licensed to precede a higher one in full sentence answers. The example in (105) shows again (just like (104) above) that the auxiliary *iso* 'can' precede a higher TAM marker such as *mungkin* 'maybe', either as this string by itself, (105)b, or in a full sentence answer, (105)c.[59]

(105) a.   Kuna'ah **mungkin iso** ngelangi
           Kuna'ah maybe   can AV.swim
           'Kun'ah might be able to swim.' (3june11mungkin.012)

      b.   A: Kuna'ah iso   ngelangi toh? B: **Iso   mungkin**
           Kuna'ah can AV.swim Q   can   maybe
           A: 'Can Kuna'ah swim?' B: 'Yes, maybe.' (3june11mungkin.013)

      c.   A: Kuna'ah iso   ngelangi toh? B: Kuna'ah **iso   mungkin** ngelangi
           Kuna'ah can swim   Q   Kuna'ah can   maybe   AV.swim
           A: 'Can Kuna'ah swim?' B: 'Kuna'ah can mabybe swim.'
           (3june11mungkin.014)

However, in a focus construction such as an answer, other auxiliaries such as *wes* 'PERF' are accepted as a string by itself when preceded by a higher TAM marker, (106)c, but not in a full sentence answer, (106)d, as noted by the consultant (Indonesian) *kalau dengan kalimat lengkap gak bisa* 'when [it's] in a full sentence, [you] cannot'.

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[59] *mungkin* 'maybe' is a borrowing from Indonesian and is used in Paciran Javanese, but it seems to be prevalent among younger speakers.

(106) a.   mas Ali **paleng wes** njalok kabar-e Yeni
        Mr. Ali maybe already AV.ask news-DEF Yeni
        'Ali might have found out about Yeni's news.' (5may11paleng.047)

    b.   A: mas Ali **wes** njalok kabar-e Yeni toh?
          Mr. Ali already AV.ask news-DEF Yeni Q
        A: 'Did Ali find out Yeni's news?'

    c.   B: **wes paleng**
          already perhaps
        B: 'Yes, perhaps.'

    d. * B: mas Ali **wes paleng** njalok kabar-e Yeni
          Mr. Ali already maybe AV.ask news-DEF Yeni
        ('Ali might have found out about Yeni's news.') (5may11paleng.048)

The data in (106) brings up two points: (i) the 'simple' answer of the string of TAM markers compared to a full sentence answer may have different constructions and should be examined separately and (ii) further research needs to be conducted to understand which auxiliaries allow the unexpected order in full sentences and which do not. For example, it is not clear if the future marker *ape* can appear in an answer preceding a higher TAM marker as consultants have given conflicting judgments. In (107), the consultant comments that the order in (107)b would not be an acceptable 'simple' answer, referring to *ape watake* as a string by itself. But in (108)b, another speaker comments that you can understand this, but it's not as good [as the expected order in (108)a]; it's usually an answer, *faham, tapi kurang enak; biasane jawabane.* It is not clear whether as an answer in (108), this refers to a string by itself or a full sentence answer.

(107) a.   pak Agus **watak-e ape** ngundak-no rega-ne pitik
        Mr. Agus character-NE FUT AV.raise-APPL price-DEF chicken
        'It's likely that Agus will raise the price of chickens.' (26april11.007)

    b. * pak Agus **ape watak-e** ngundak-no rega-ne pitik
        Mr. Agus will character-NE AV.raise-APPL price-DEF chicken
        ('It's likely that Agus will raise the price of chickens.') (26april11.008)
        [*not good as an answer]

(108)   Context: Devi pinter biologi...
    a.   Devi **mesthi-ne** **ape** dadi   dosen   biologi
        Devi EPIST.must-NE FUT become professor biology
        'Devi should be going to become a biology professor.' (24may11.020)

    b. * Devi **ape mesthi-ne**   dadi   dosen   biologi
        Devi FUT EPIST.must-NE become professor biology
        ('Devi should be going to become a biology professor.') (24may11.021)
        [✓? possibly good as an answer]

This research will be important to follow up on, as the ability to front in focus constructions such as answers may be related to whether or not they can front with a question particle like *opo* or *toh*, data which is discussed in Chapter 4.

Furthermore, we might ask if there is a more precise generalization than 'lower TAM markers can precede higher ones when focused'. For example, we could question whether this distinction can be more specifically specified in terms of grammatical categories as the auxiliary TAM markers can precede adverbial ones when focused. This is shown to hold with an adverbial marker with the suffix *–ne, mesthine* 'EPIST.should', and an auxiliary TAM marker*, iso* 'can' in (109), and with an adverbial TAM marker without this suffix, *paleng* 'maybe' and an auxiliary TAM marker, *oleh* 'allow' in (110). While the opposite orders *iso > mesthine* and *oleh > paleng* are both ungrammatical as indicated in declarative clauses, consultants comment that as an answer to a question, both are acceptable; "*nek jawab pertanyan, iso*" or "*jawab*".

(109)   Context: ibune Titin ngomong (Titin's mother says...)
    a.   wong wedok **mesthi-ne**   **iso** masak
        person FEM   EPIST.must-NE can   cook
        'Women should be able to cook.' (24may11.016)

    b. * wong wedok **iso mesthi-ne**   masak
        person FEM   can EPIST.must-NE cook
        ('Women should be able to cook.') (24may11.017)
        [✓good as an answer]

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(110) Context: "sakarep wong tuwo" (It's up to her parents...)
    a.   Kana **paleng oleh** melu   reng Tuban
          Kana   maybe   allow   AV.join at   Tuban
          'Kana might be allowed come with to Tuban.' (4may11oleh.005)

    b. * Kana **oleh paleng** melu   reng Tuban
          Kana   allow maybe   AV.join at   Tuban
          ('Kana might be allowed come with to Tuban.') (4may11oleh.006)
          [✓good as an answer]

However, it seems that adverbials without the suffix *–ne* such as *mesthi* 'epistemic.must' can also precede adverbials with the suffix *–ne*, such as *watake, jekene,* etc. With the unexpected order (given the hierarchy as shown above), while they are judged ungrammatical in declarative sentences, consultants comments that as an answer, *jawaban*, this is possible.

(111) Context: *Sampeyan ngerti mas Faiz nduwe hp telu* (You know that Faiz has 3 cellphones)
    a.   Faiz **watak-e**   **mesthi**   dodol-an pulsa
          Faiz character-NE EPIST.must sell-AN   credit
          'It seems that Faiz must sell cell phone credit.' (23may11.040)

    b. * Faiz **mesthi**   **watak-e**   dodolan pulsa
          Faiz EPIST.must   character-NE sell-AN   credit
          ('It seems that Faiz must sell cell phone credit.') (23may11.042)
          [✓good as an answer]

(112) Context: *Sampeyan ngerti mas Faiz nduwe hp telu* (You know that Faiz has 3 cellphones)
    a.   Faiz **jeke-ne**   **mesthi**   dodol-an pulsa
          Faiz I.think-NE EPIST.must   sell-AN   credit
          'It seems that Faiz must sell cell phone credit.' (23may11.039)

    b. * Faiz **mesthi**   **jeke-ne**   dodolan pulsa
          Faiz EPIST.must I.think-NE   sell-AN   credit
          ('It seems that Faiz must sell cell phone credit.') (23may11.041)
          [✓good as an answer]

With two successive auxiliary TAM markers, the unexpected order is never possible, either in a declarative sentence or as an answer to a question.

(113) Konteks (Indonesian): sekarang gak boleh pakai celana, tapi selumnya, boleh
   (Now [Mayu] can't wear pants, but before, [she] could.)
  a. Mayu **tau** **oleh** nganggo celono
    Mayu EXP.PERF allow AV.wear pants
    'Mayu once was allowed to wear pants.' (28Feb11.071)

  b. * Mayu **oleh** **tau**   nganggo celono
    Mayu allow EXP.PERF AV.wear pants
    ('Mayu once was allowed to wear pants.') (28Feb11.072)
    [*not good as an answer]

Therefore, the generalization seems to be at two levels, as shown in Table 5 below. One, focus constructions as in an answer appear to license auxiliary TAM markers to precede any adverbial TAM markers (although further research may uncover exceptions among certain auxiliaries). Two, within the domain of adverbial TAM markers, focus seems to also license lower adverbial ones (those without the suffix *–ne*) to precede a higher adverbial TAM marker (those with the suffix *–ne*). However, within the domain of auxiliary TAM markers, focus within answers does not permit any lower auxiliaries to precede higher auxiliaries.

Table 5. Licensing of opposite order of TAM markers by focus within answers

Order along spine	Focus can license opposite order
Adv TAM > Aux TAM	✓
Adv TAM > Adv TAM	✓
Aux TAM > Aux TAM	✗

Finally, it is not clear whether this generalization can also be extended beyond TAM markers to include other adverbial markers such as temporal markers like *sa'iki* 'now', *sesok* 'tomorrow'. One consultant comments that when the auxiliary TAM markers precedes the adverbial temporal marker, such as in (114)b with *kudu* 'deontic.must', while this is ungrammatical in a declarative sentence, this could be an answer, *untuk jawaban*. Note that this construction is only available for TAM auxiliaries, as it is grammatical in declarative sentences for an adverbial TAM marker to precede or follow a temporal adverb. Follow-up research is necessary to see if other adverbials also allow TAM auxiliaries to precede them in focus constructions like answers.

(114) a.　sampeyan **sa'-iki/ sesok** **kudu** marek-no PR-e
　　　2SG　　SA-that/ tomorrow DEONT.must AV.finish-APPL homework-DEF
　　　'You have to finish your homework now.' (23may11_2.062, 064)

　　b. ?? sampeyan **kudu** **sa'-iki/ sesok** marek-no PRe
　　　2SG　　DEONT.must SA-that/ tomorrow AV.finish-APPL homework-DEF
　　　('You have to finish your homework now.') (23may11_2.063, 065)
　　　[✓good as an answer]

To summarize the above points, I have noticed areas where the unexpected order of TAM markers seems to be licensed in focus constructions, specifically, as answers to yes-no questions. A number of avenues have been suggested for further research including (i) comparing 'simple answers' of the TAM marker string by itself to full sentence answers, (ii) exploring whether each auxiliary has the ability to precede a higher adverbial TAM marker or not and relating this to the type of auxiliary that allows fronting in yes-no questions (as shown in Chapter 4), (iii) investigating whether all auxiliary TAM markers can precede temporal adverbials (or other high adverbials) in answers. Finally, this phenomenon was noticed in the context of answers to yes-no questions. It will be useful to understand whether this phenomenon is also available in other focus constructions such as corrective focus.

5.6　Summary of apparent free word orders in Paciran Javanese

The goal of §5 was to investigate the putative free word order of the following combinations:

(i)　　*wes* 'PERF' ~ *mesthi* 'EPIST.must'
(ii)　　*tau* 'EXP.PERF' ~ *kudu* 'DEONT.must'
(iii)　　*tau* 'EXP.PERF' ~ *ape* 'FUT'
(iv)　　*wes* 'PERF' ~ *kudu* 'DEONT.must'

In light of the cross-linguistic evidence in Cinque (1999) for a universal hierarchy of functional projections, it was hypothesized that the 'unexpected' order of the above combinations would arise from other structural means or semantic differences. In effect, this is what was found, showing that the counterexamples are only putative counterexamples to Cinque's proposal.

In particular, structural differences was found for *wes* 'PERF' ~ *mesthi* 'EPIST.must' in §5.1: the expected order of *mesthi* > *wes* was found to be due to their position along the syntactic spine, while the unexpected order of *wes* > *mesthi* was argued to be due to modification via limb modification. A similar argument was suggested for the different orders of *tau* 'EXP.PERF'~ *ape* 'FUT' in §5.3. With the marker *kudu,* a complication regarding two interpretations was cleared – there are in fact two positions for *kudu,* one high one corresponding to the 'deontic.must' interpretation and one low one corresponding to the 'want' interpretation. Once this was understood, the apparent free word order of *tau* 'EXP.PERF'~ *kudu* 'DEONT.must'/'want' was no longer a puzzle as shown in §5.2. The different word orders with *wes* ~ *kudu* in §5.4 focused on *kudu* 'deontic.must'; *kudu* interpreted as 'want' is predictable given its scope relative to *wes* 'PERF'*,* similar to the finding with *tau* 'EXP.PERF'. With *wes* 'PERF' ~ *kudu* 'deontic.must', however, it still remains unclear if there are any structural distinctions regarding *wes* 'PERF' and whether there are two positions corresponding to a 'high' and 'low' aspectual projection for this marker. Section 5.5 ended on a similar note that there remains further research to do on word order differences concerning different informational structure with answers to yes-no questions, as this data is preliminary.

Therefore, despite many free word order look-alikes on the surface, I have shown that these are only apparent counterexamples to Cinque's (1999) proposal of a universal strict hierarchy of clausal functional projections.

6   Relating back to Cinque (1999)

In the above sections, I have provided empirical evidence that (i) TAM markers occur in a strict relative order in Paciran Javanese and (ii) examples showing apparent free word order are not counterexamples to Cinque's proposal of a universal hierarchy of functional clausal projections. In this section, I would like to directly compare the order of TAM markers found in Paciran Javanese to the universal hierarchy proposed in Cinque (1999).

The main points discussed in this section are the following. One, the general order between the order of TAM markers in Javanese compared to the order of markers as proposed in Cinque (1999) as given in (115) (repeated from above) is found to be the same. Two, Javanese does not have grammaticalized tense markers, but has an abundance

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of aspectual and modal markers. Three, this study on Javanese offers insight into the position of root modal projections, which are not yet integrated into the universal hierarchy as proposed in (115) in Cinque (1999). I will discuss each point in relation to the syntactic projections proposed for Paciran Javanese in Tree 3 (repeated below).

(115) The universal hierarchy of functional clausal projections
        (Cinque 1999:106, Ch.4, (92))

[*frankly* **Mood**_{speech act} [*surprisingly* **Mood**_{evaluative} [*allegedly* **Mood**_{evidential} [*probably* **Mod**_{epistemic} [*once* **T**(past) [*then* **T**(future) [*perhaps* **Mood**_{(ir)realis} [*necessarily* **Mod**_{necessity} [*possibly* **Mod**_{possibility} [*usually* **Asp**_{habitual} [*again* **Asp**_{repetitive(I)} [*often* **Asp**_{frequentative(I)} [*intentionally* **Mod**_{volitional} [*quickly* **Asp**_{celerative(I)} [*already* **T**(Anterior) [*no longer* **Asp**_{terminative} [*still* **Asp**_{continuative} [*always* **Asp**_{perfect(?)} [*just* **Asp**_{retrospective} [*soon* **Asp**_{proximative} [*briefly* **Asp**_{durative} [*characteristically(?)* **Asp**_{generic/progressive} [*almost* **Asp**_{prospective} [*completely* **Asp**_{(Sg)completive(I)} [*tutto* **Asp**_{PlCompletive} [*well* **Voice** [*fast/early* **Asp**_{celerative(II)} [*again* **Asp**_{repetitive(II)} [*often* **Asp**_{frequentative(II)} [*completely* **Asp**_{SgCompletive(II)}

The relative order of TAM markers in Paciran Javanese generally corresponds to the ordering that Cinque (1999) proposes, where evidential/modal markers are high and aspect markers are lower. We can compare Cinque's hierarchy given in (115) above with the order of TAM markers found in Paciran Javanese, given in Tree 3:

Tree 3. Syntactic structure for TAM markers in Paciran Javanese
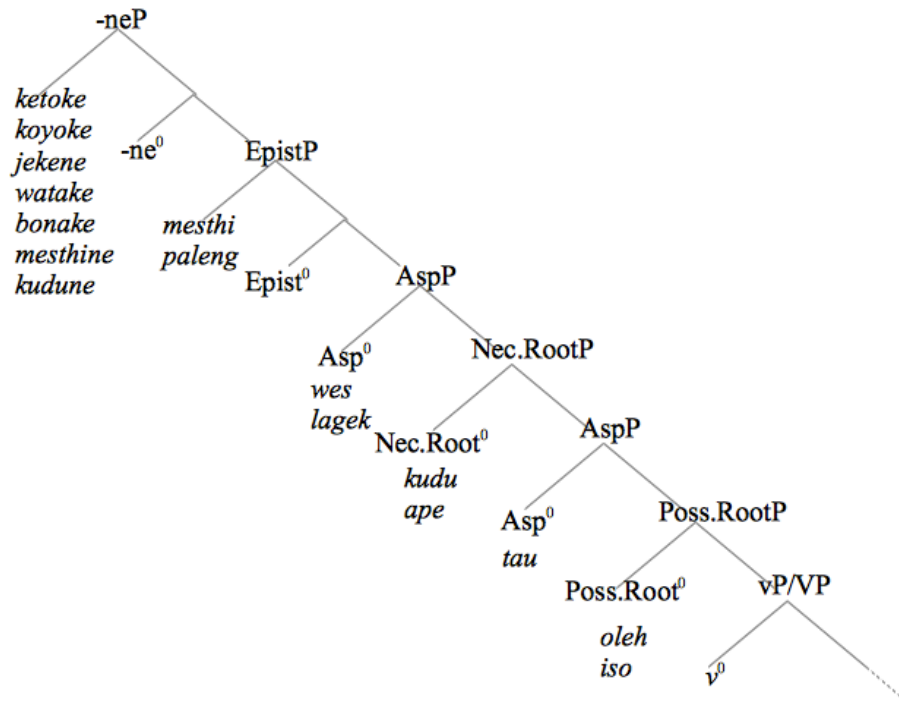
While it is not possible to compare every projection in Cinque (1999) to those proposed in Paciran Javanese since a number of aspectual projections that Cinque proposes such as frequentative, celerative, etc. were not investigated, the results are still striking in that the general order lines up.

6.1 –neP and EpistemicP

In particular, the 'high' projections appear to line up very well. The –NEP in the Javanese clause structure, for instance, appears to subsume the first three projections in Cinque (1999): [*frankly* Mood_speech act [*surprisingly* Mood_evaluative [*allegedly* Mood_evidential. Recall that Mood_speech act adverbs all have the *–(n)e* suffix as well, as was shown in Chapter 2. These include *sa'benere, sa'temene, sa'tenane* 'actually, really, truly' (Horne 1961:496-497). I suggest that *mesthine* 'EPIST.should', *kudune* 'ought' are part of Mood_evaluative, and that *koyoke, ketoke, jekene, bonake, watake* are all expressions of the Mood_evidential projection. Horne (1961:77-78) terms these expressions "sentence themes" whereby "...a noun expression having the suffix *–(n)e* attached to it which introduces a Javanese sentence and forms a construction meaning 'the [theme] is [so-and-so]'." Horne's general

idea is correct, although I have shown in Chapter 1 and 2 that other roots (auxiliaries, verbs, etc.) besides nouns can form these expressions.

The following projection includes EPISTEMIC markers *mesthi* 'epistemic.must' and *paleng* 'maybe' in Paciran Javanese, which directly compares to the epistemic projection proposed in the hierarchy by Cinque (1999) in (115) above.

6.2 T(past), T(future)

The next projections proposed in Cinque (1999) as in (115) are tense projections. I suggest that Javanese does not have any overt grammatical marker that corresponds to T(past) or T(future). One possible candidate for T(future) in Paciran Javanese is the auxiliary *ape*. However, if *ape* 'FUT' were to be in this position, it would predict that it can occur above the high aspectual markers *wes* 'PERF' and *lagek* 'PROG', but this is not the case. The order of TAM markers in Javanese therefore suggests that *ape* is not a tense marker, but rather a modal marker that is positioned below the high aspectual node. Similarly, *tau* 'EXP.PERF' is also too low to be a candidate for a T(past) marker in Cinque's hierarchy.

Instead of grammaticalized markers for tense, Paciran Javanese can use either context or temporal adverb expressions like *wingi* translated as 'yesterday' to convey an event in the past or *sesok* translated as 'tomorrow' to convey an event in the future. This wider use of *wingi* is illustrated in a fieldwork example in (116). Given the context, it cannot be the case that the girl speaking saw me swimming yesterday, because I did not go swimming then; I had gone three days earlier. Further, it was not the case that the girl who told me that she saw me swimming was confused about the day because in follow-up, it was clear she knew that it was not exactly yesterday, but some days ago. (It was more that I was confused!)

(116) Context: I had gone swimming at the local pool three days before a girl said this to me.
   Girl: aku **wingi**   ndelok   sampeyan ngelangi
       1SG   yesterday AV.see   2SG   AV.swim
       'I saw you swimming.' (Fieldwork 2011)

Neither Horne (1961) nor Robson (1992) have noted these wider uses of *wingi* 'yesterday' and *sesok* 'tomorrow', suggesting that either (i) this is a more recent

development, (ii) these wider uses of *wingi, sesok* are particular to the dialect spoken in Paciran (and surrounding areas), or (iii) these uses were simply overlooked in their grammar. Whatever the case might be, I suggest that the temporal adverbs *wingi, sesok* may be affiliated with the T(past) and T(future) projections respectively[60], as they must precede all aspectual markers.

6.3   High AspP

In terms of the high aspectual projection proposed in the Javanese clause for *wes* and *lagek*, I suggest that this one projection also appears to express multiple projections in Cinque's (1999) hierarchy. Specifically, as outlined in Chapter 1, the marker *wes*, translated often as 'already' (Horne 1961:509) could mark both T(anterior) where the event time precedes reference time (e.g. 'John had *already* gone surfing when Harry had gone swimming' (Cinque 1999:94)) and Asp-terminative, in which a situation reaches an end-point, though not necessarily the natural end-point (Cinque 1999:95). An example where *wes* can mark T(anterior) is given in (117).

(117)   naliko Jozi **wes**   gawe   kalimat Bu Zum   lagek teko
       when   Jozi already make   sentence Mrs. Zumaroh PROG come.from
       'When Jozi had made sentences, bu Zum just arrived.' (20may11.059)

An example where *wes* expresses Asp-terminative is presented in (118)a, where I asked for a translation from English into Javanese of *'They built up the house'*. That the situation reaches an end-point, but not necessarily the natural end-point (that the building of the house is complete) is underlined in (118)b, where it is felicitous to follow-up with *'but they are not finished'*.

(118)a.   wong iku   seng **wes**   garap omah-e
        person that REL   already build   house-DEF
        'They built up the house.' (20may11.022)

    b.   wong iku   seng **wes**   garap omah-e   tapi durung mari
        person that REL   already build   house-DEF but not.yet finish
        'They built up the house, ...but they are not done yet.' (20may11.023)

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[60] Although *wingi, sesok* may not be grammaticalized forms.

The aspectual marker *lagek*, also proposed to occur in the high aspectual projection in the Javanese clause seems to also encompass multiple aspectual heads as proposed in Cinque (1999) including Asp-retrospective, Asp-progressive. Retrospective aspect refers to "an event that has taken place a short while before some reference time" (Cinque 1999:96). Progressive aspect refers to an event that is ongoing at the utterance time.[61]

In addition to each of these markers themselves encompassing multiple aspectual projections as proposed in Cinque (1999), I have proposed above that *wes* and *lagek* are located in the same syntactic slot. This appears to be on the right track, as Cinque (1999:95) suggests that Asp-terminative and Asp-continuative can be the same aspectual head. Thus, the high aspectual projection in Javanese may minimally be composed of these two Aspectual projections, but it could be composed of more.

The fact that the markers *lagek* and *wes* can also be used to mark retrospective aspect and proximative aspect in combination with another marker may be further evidence that these two markers are two values of the same aspectual head. For instance, as shown in Chapter 1 and 2, *lagek* by itself can be used to express retrospective aspect, and this meaning can be enhanced with the marker *(men)tas* 'just now, a moment ago' (Horne 1961:476). On the flip side, *lagek* in combination with *ape* 'FUT' can express proximative aspect, which refers to an event that will take place a short while *after* some reference time (Cinque 1999:97). The marker *wes* 'PERF' in combination with *ape* also conveys proximative aspect, but it is more immediate than *lagek ape*. Horne (1961) translates this combination of *wes ape* as 'about to'.

6.4   NecessityRootP

While it is clear where this particular modal projection is located in Paciran Javanese, it is not as clear where the root modal projections of Mod$_{obligation}$, Mod$_{permission/ability}$ are positioned among the universal hierarchy in Cinque (1999) given in (115) above. Independent of the universal hierarchy including aspect and tense, Cinque (1999:81, (12)) has proposed the following order for modal projections.[62]

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[61] I have not looked into the marker *isek*, which is translated as 'still' (*isih* in Robson 1992:65). This could be a candidate to mark Asp-continuative.

[62] I do not discuss alethic modality in Javanese, which would correspond to the projections of Mod(necessity) and Mod(possibility) in Cinque's (1999) hierarchy.

(119) $\text{Mod}_{\text{Epistemic}}$ … > $\text{Mod}_{\text{necessity}}$ > $\text{Mod}_{\text{Possibility}}$ > $\text{Mod}_{\text{volitional}}$ > $\text{Mod}_{\text{obligation}}$ > $\text{Mod}_{\text{permission/ability}}$

Although Cinque (1999:17) places the modal projections of $\text{Mod}_{\text{Epistemic}}$ … > $\text{Mod}_{\text{necessity}}$ > $\text{Mod}_{\text{Possibility}}$ within the overall hierarchy as given in (115) above, the root modal projections of $\text{Mod}_{\text{volitional}}$, $\text{Mod}_{\text{obligation}}$, $\text{Mod}_{\text{permission/ability}}$ are not present in this final proposal.[63]

Since Javanese modals in general lexicalize for both modal force (e.g. necessity, possibility, etc.) and modal flavour (e.g. epistemic, deontic, etc.) (see Chapter 5), this language provides an opportunity to better understand where the placement of the root modal projections are among the overall hierarchy of clausal functional projections. I propose a position for $\text{Mod}_{\text{obligation}}$ and $\text{Mod}_{\text{permission/ability}}$ within the general hierarchy.

In the functional projections proposed for Paciran Javanese, I have suggested that there is one modal projection for 'necessity root modals' including *kudu* interpreted as 'deontic.must' and *ape*, a future modal. The empirical evidence given above shows that this projection is positioned between the two aspectual projections (which I have termed 'high' and 'low' aspect) in Paciran Javanese. This projection could be considered the counterpart of what Cinque terms the $\text{Mod}_{\text{obligation}}$ projection, but more general in that it does not only encompass deontic modality but also other root modalities such as teleological, circumstantial, and future modality. See Chapter 5 for further discussion on what type of modality *kudu* expresses. Before turning to discussing the other root modal projections in Javanese ($\text{Mod}_{\text{permission/ability}}$), I will first comment on the low aspectual projection.

6.5 LowAspP

In Paciran Javanese, there is an additional low aspectual projection. This projection includes *tau* 'EXP.PERF', translated as *'ever'* (Horne 1961:502), which I have suggested is an experiential perfect marker in Chapter 1. As this is a sub-type of perfective aspect, this could correspond to the Asp-perfect projection in the overall hierarchy proposed by Cinque as in (115) above. However, while in the overall hierarchy in Cinque (1999),

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[63] Mod(volitional) is not discussed here, as I have found that *kudu* interpreted as 'want' is a verb.

Asp-perfect is proposed to be positioned between Asp-continuative and Asp-retrospective (argued to be part of the high aspectual projection with *wes* and *lagek*), in Paciran Javanese this projection appears lower, as it is not a part of the 'high' aspectual projection.[64]

6.6   PossibilityRootP

With respect to the Mod$_{\text{permission/ability}}$ projection corresponding to *oleh* 'allow' and *iso* 'can', the position of this projection in Cinque is compatible with the Paciran Javanese data; all other modal projections are structurally positioned above Mod$_{\text{permission/ability}}$. The data in Paciran Javanese also corroborates Cinque's (1999:81) suggestion that permission and ability are two values of one and the same head. Therefore, there would be one modal projection for both *oleh* 'allow' and *iso* 'can'.

6.7   Summary of comparing Cinque (1999) with data in Paciran Javanese

In this section, I would like to summarize the main points of the structural comparison between the universal hierarchy of clausal functional projections proposed by Cinque (1999) and the case study on TAM markers in Paciran Javanese. As stated at the outset, in general, the order of TAM markers in Paciran Javanese compared to Cinque's overall hierarchy (as given in (115) above) is compatible, providing further evidence that this hierarchy is universal.

An important point was raised in that Paciran Javanese does not seem to have grammaticalized tense markers. Instead, either context or temporal adverbs such as *wingi* 'yesterday' or *sesok* 'tomorrow' may be used to convey tense. Further, there are a number of aspectual and modal markers that can indirectly convey tense, such as *tau* 'EXP.PERF' which can only refer to a past event and *ape* 'FUT', suggested to be a type of root modal, which can only refer to a future event.

In terms of the root modal projections, this study on Javanese offered insight into the location of these projections, which have not yet integrated into the universal hierarchy as proposed in Cinque (1999). Specifically, I proposed that Mod$_{\text{obligation}}$

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[64] In investigating the order of *kudu ~ wes* above, one hypothesis is that there are two positions along the spine for *wes,* following Soh (2011, 2012) for *dah* in Colloquial Malay. LowAspP could be a candidate for this second position, but it is left as an open research question.

(NecRootP) is positioned between a high aspectual position (Asp$_{continuative}$, Asp$_{terminative}$) and a low aspectual position (Asp$_{(exper)perfective}$). Further, the Mod$_{permission/ability}$ (PossRootP) is lower than both the high and low aspectual projections. In terms of the semantic coverage of Mod$_{obligation}$, I suggested that this projection (NecRootP) has a wider coverage of necessity root modals.

These similarities and differences are summarized in the following table where I have included the functional projections as in Cinque (1999) in the top row, the projections as named in Paciran Javanese in the middle row, and the TAM markers included under each projection in the bottom row. The table shows clearly that the general order proposed in Cinque (1999) corresponds to the order found with the TAM markers in Paciran Javanese.

Table 6. Line-up of TAM markers in Paciran Javanese
with functional projections in Cinque (1999)

CINQUE (1999)	Mood$_{SpeechAct}$	Mood$_{evaluative}$	Mood$_{evidential}$	Mod$_{epistemic}$	T$_{(past)}$	T$_{(future)}$
PACIRAN JAVANESE	**-neP**			**Mod$_{epistemic}$**	**T$_{(past)}$**	**T$_{(future)}$**
TAM MARKERS	*pancene* *sa'benere* *sa'jane* *sa'jatine* *sa'temene*	*mesthine* *kudune*	*koyoke* *ketoke* *jekene* *watake* *bonake*	*mesthi* *paleng* *mungkin*	*wingi* *(*tau)*	*sesok* *(*ape)*

CINQUE (1999)	T$_{Ant}$	Asp$_{terminative}$	Asp$_{continuative}$	Asp$_{retrospective}$	Asp$_{proximative}$	Asp$_{gen/prog}$
PACIRAN JAVANESE	**HighAspP**					
TAM MARKERS	*wes*		*lagek*	*lagek ((men)tas)*	*lagek ape* *wes ape*	*lagek*

CINQUE (1999)	Mod$_{obligation}$	Asp$_?$	Asp$_{perfective}$	Mod$_{permission/ability}$
PACIRAN JAVANESE	**NecRootP**	**LowAsp**		**PossRootP**
TAM MARKERS	*kudu* *ape*	*tau*	*wes*	*oleh* *iso*

In follow-up research, it will be interesting to look at how Paciran Javanese expresses some of the aspectual functional projections which I have not yet explored. These include celerative aspect, repetitive aspect, frequentative aspect, habitual aspect. In addition, I

would like to understand how other adverbial markers (if they exist) may relate to the auxiliary TAM markers in this dialect.

7 Syntactic distribution of TAM markers in other dialects of Javanese

In other dialects of Javanese, research on only two dialects; namely Tengger Javanese (Conners 2008) and Peranakan Javanese (Cole et al. 2008) specifically discuss the syntactic distribution of TAM markers. While Robson (2002) discusses the order of some TAM markers in Standard Javanese, this is only with respect to negation or the plural marker *padha*, and not with respect to other TAM markers themselves.

Similar the findings discussed in this Chapter for Paciran Javanese, the ordering of TAM markers is also argued to be restricted in Tengger Javanese and Peranakan Javanese. For Tengger Javanese, Conners (2008:112) reports that the word order of TAM markers is in general more restricted than with lexical words. Generally, Conners reports that they must occur adjacent to the word that they are modifying, although the adjacency is not strict. With respect to the order of TAM markers relative to each other, Conners (2008:128) argues that they generally occur in a fixed order due to their semantics. For example, Conners (2008:116) states that the outer modal (*gek* 'PROG') takes scope over the inner modal (*urung* 'not.yet') as in (120):

(120) Basa   Inggeris **gèk   urung** di-terjemah-en.
      language English PROG   not.yet di-translate-na
      'There's still not anyone to translate the English.' (Conners 2008:115, (55a))

However, he does not demonstrate the specific order of all markers or that the alternative order is ungrammatical.

For Peranakan Javanese, Cole et al (2008) explore how six TAM markers behave. They demonstrate that they must occur in a fixed relative order as shown in Table 7.

Table 7. The surface order of auxiliaries in Peranakan Javanese (Cole et al 2008:17)

I	II	III	IV
wis 'already'	*harus* 'must' *pernah* 'PERF'	*gelem* 'want' *meh* 'will' *gek* 'PROG'	*isa* 'can'

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The auxiliaries that co-occur within a column in Table 9 either indicate that they do not co-occur or that they allow variable order. The auxiliaries that do not co-occur are *harus 'must' ~ pernah 'PERF' (Column II, Cole *et al.* 2008:17,fn 21). The counterpart in the dialect of Paciran Javanese can co-occur (*kudu* 'deontic.must' and *tau* 'EXP.PERF'). Other auxiliaries that are found not to co-occur in Peranakan Javanese are *harus 'must' ~ gek 'PROG' and *harus 'must' ~ meh 'will' (Cole et al. 2008:17, fn 20). Similar co-occurrence restrictions was found to be the case in Paciran Javanese as well, with the counterparts *kudu* 'DEONT.must' ~ lagek 'PROG' and *kudu* 'DEONT.must' ~ ape 'FUT' (in either order).

Cole et al. (2008) report that the auxiliaries that allow either order in Peranakan Javanese are *gelem* 'want' ~ *meh* 'will', *pernah* 'PERF' ~ *meh* 'will', and *pernah* 'PERF' ~ *gek* 'PROG'. Where there are apparent counter-examples to the fixed order, they suggest that the unexpected order is due to the lower marker selecting for an embedded CP clause. Under this proposal, *gelem* 'want' and also *pernah* 'PERF' could select for either a VP or a CP. Therefore, with the unexpected order *gelem* 'want' > *meh* 'will', the auxiliary *gelem* 'want' would select for a CP as in (121)a. When *gelem* 'want' selects for a lower auxiliary such as *isa* 'can', the assumption would be that it selects for a VP, as in (121)b.

(121) a. $[_{VP} [_V \textit{gelem}] [_{CP} ...[_{FP} [_F \textit{meh}] ...]]$ (cf. Cole et al. 2008:19, (77))
b. $[_{VP} [_V \textit{gelem}] [_{VP} [_V \textit{isa}] ...]]$

In Paciran Javanese, apparent free word order of TAM markers was found to be due to different syntax (modification via a projection along the spine of the tree vs. head-adjunction), and not due to different complementation properties. It would be interesting to try certain constituency tests such as topicalization, adverb placement in Peranakan Javanese to better situate the proposal by Cole et al. (2008).

8   Summary

In conclusion, I have presented empirical evidence that TAM markers Paciran Javanese uphold a strict relative order corresponding to the universal hierarchy proposed in Cinque (1999). Where free word order seemed to be the case, I determined that the different

word orders arise due to structural distinctions such as modification along the spine vs. modification via head-adjunction, and not via concentric adjunction (left and right) as advocated in proposals such as Ernst (2002). Finally, in comparison with the order of projections in Cinque (1999), Javanese provided insight into the positions of root modal projections among aspectual ones, although it was noted that further research is necessary into other low aspectual and adverb markers in this language to fully understand their position.

Chapter 4.
Classes of Auxiliaries in Paciran Javanese

1   Introduction

This chapter explores the syntax of TAM auxiliaries in Paciran Javanese. I show that there are two classes of auxiliaries: those that can front in yes-no questions and those that cannot, similar to findings by Cole et al. (2008) on Peranakan Javanese, a dialect spoken in Semarang, Central Java by ethnic Chinese. The research in this chapter was first inspired by Cole et al.'s (2008) finding that auxiliary fronting in yes-no questions partitions TAM auxiliaries into two classes.

Strikingly, not only does this partition of TAM auxiliaries hold in yes-no questions for Paciran Javanese, I find that the same partition is also found in two other constructions in this dialect; namely, with VP-topicalization and subject-auxiliary answers to yes-no questions. As these three constructions have not been fully investigated before, in §2 I introduce the main properties based on the data of each of these constructions.

Based on the properties of each construction, I argue in my analysis that there is a syntactic distinction between two domains that differentiates the high auxiliaries from the low auxiliaries. I propose that the low auxiliaries are dominated by a maximal projection, MP, that serves as a an intermediate landing site for A'-extraction across all three syntactic constructions. Specifically, I suggest that this projection is a phase edge in Javanese and acts as a complementizer-like position above vP, similar to proposals that the vP periphery is parallel to the split CP such as Belletti (2004).

A core feature of my proposal is to recognize the dual nature of Javanese syntax similar to Indonesian (Travis 2008) as encompassing both A-type as well as B-type language properties in terms of the X/XP parameter proposed in Travis (2005, 2006), discussed in §3. As such, I suggest that the derivation of VP-topicalization and subject-

auxiliary answers exemplify an A-type language property, as it seems to involve spec-to-spec movement while the derivation of auxiliary fronting in yes-no questions exemplify a B-type language property, as it is suggested to involve XP-remnant movement (e.g. spinal phrasal movement).

After introducing the theoretical syntactic background in §3, I present my analysis in sections 4 and 5 for each construction. In §4, I present the proposed derivations for both VP-topicalization and subject-auxiliary answers, which are argued to have the same basic derivation. I argue that the difference in behaviour between high and low auxiliaries is captured via an intermediate comp-like projection between these two domains and locality constraints. This structural distinction also plays a major role in the derivation of auxiliary fronting in yes-no questions, presented in §5, which ties these three constructions together structurally. In addition to this distinction, I suggest that auxiliaries that can front must also be featurally different from those that cannot.

I now turn to presenting the properties of the three constructions in Paciran Javanese that each partition the class of TAM auxiliaries in the same manner: VP-topicalization, subject-auxiliary answers, and auxiliary fronting in yes-no questions.

2   Two classes of Javanese auxiliaries

Two types of auxiliaries in Paciran Javanese are distinguished by three different syntactic phenomena; namely, VP-topicalization, subject-auxiliary answers to yes-no questions, and auxiliary fronting in yes-no questions, a fact that has not been documented before. These two types are illustrated in Table 1 and reflect two syntactic groups: the 'high' class of auxiliaries include *wes, kudu, lagek, ape* and the 'low' class of auxiliaries include *tau, oleh, iso*. What is striking is that these two groups are structurally delineated; this fact will play an important role in the proposed analysis.

Table 1. Two classes of auxiliary TAM markers in Paciran Javanese

HIGH AUXILIARIES		LOW AUXILIARIES	
wes 'PERF'	*kudu* 'deontic.must'	*tau* 'EXP.PERF'	*oleh* 'allow'
lagek 'PROG'	*ape* 'FUT'		*iso* 'can'

In this section, I show that the exact same two classes of auxiliaries in Javanese are partitioned in the same way in each syntactic construction. Alongside this data, I present the main syntactic properties of each construction in Paciran Javanese: VP-topicalization in §2.1, subject-auxiliary answers in §2.2, and auxiliary fronting in §2.3.[65]

2.1 VP-topicalization in Paciran Javanese

This section focuses on the properties of VP-topicalization in Paciran Javanese. What is interesting in Javanese is that only a subset of the TAM auxiliaries given in Table 1 above allow VP-topicalization; namely, the low auxiliaries *tau* 'EXP.PERF', *oleh* 'allow' and *iso* 'can'. I show first in §2.1.1 the partition of TAM auxiliaries into two classes. Second, I present evidence in §2.1.2 that VP-topicalization is not blocked by other auxiliaries when this construction appears with multiple auxiliaries. Finally, in §2.1.3, I show that VP-topicalization minimally targets a vP and maximally NegP, but it cannot target an AuxP.

2.1.1 VP-topicalization distinguishes high vs. low auxiliaries

First, VP-topicalization is only licensed with low auxiliaries. The following examples in (3)-(2) show this with each of the low auxiliaries, *oleh* 'deontic.may'*, iso* 'can', *tau* 'EXP.PERF' respectively.[66] VP-topicalization requires a salient context as indicated in the contexts provided with the examples.

(1)   Context: *Opo mbak Jozina oleh nganggo celono reng ngaji?* (Can Jozina wear
        pants to the reciting of the Holy Qur'an?) (7mar11_2.013)
        Nganggo   celono reng ngaji,   Jozi **oleh**
        AV.wear   pants to   *ngaji*, Jozi allow
        'Wear pants to the reciting of the Holy Qur'an, Jozi is allowed to.'

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[65] With respect to these two classes of auxiliaries, I investigated a fourth syntactic construction: VP-Ellipsis. Preliminary results show that putative VP-Ellipsis does not group TAM auxiliaries in the same way that VP-topicalization, subject-auxiliary answers to yes-no questions or auxiliary fronting in yes-no questions do. Specifically, *tau, iso oleh, wes* all allow putative VP-Ellipsis while *lagek, ape* do not. This finding raises two directions to explore. On one side, this data could suggest that this construction is not actually VP-Ellipsis but derived via other kinds of ellipsis such as stripping, gapping (Goldberg 2005). On the other side, this finding could suggest that VP-Ellipsis is actually VP-Ellipsis but it does not share a similar derivation to VP-topicalization as argued for in, for instance, Johnson (2001). Interestingly, Fortin (2007) argues that Indonesian, a closely related language, does have VP-Ellipsis. Further research is necessary to better understand the syntax of putative VP-Ellipsis in Javanese.
[66] I assume for (3) that a vP with a silent verb *lungo* 'go' has topicalized, as argued in Chapter 2 for constructions with a directional PP like *reng, neng* in Paciran Javanese.

(2)   gotong   watu-ne,   cak Kholiq   **iso**
        lift   rock-DEF   Mr. Kholiq   can
        'Lift the stone, Kholiq can.' (7mar11_2.003)

(3)   Context offered: '*opo Jozi tau reng Jakarta?*' ('Did Jozi ever go to Jakarta?')
        reng Jakarta,   Jozi (wes)   **tau**
        at   Jakarta,   Jozi PERF   EXP.PERF
        'To Jakarta, Jozi once went.' (7mar11_2.106)

With high auxiliaries, however, VP-topicalization is not licensed. Examples with *wes* 'PERF', *lagek* 'PROG', *ape* 'FUT', *kudu* 'deontic.must' are all ungrammatical, (4)-(7).

(4)   Context: *Opo Bu Zumaroh ape masak iwak botok*? (Will Bu Zumaroh make grilled fish?)
        * masak iwak botok, Bu   Zumaroh   **ape**.
        cook   fish *botok*, Mrs. Zumaroh   FUT
        ('Cook grilled fish in banana leaves, Bu Zumaroh will.') (7mar11_2.020)

(5)   * ngerti boso   arab,   murid-e   **wes**
        know   language   Arabic student-DEF   PERF
        ('Understanding Arabic, the student did.') (7mar11_2.028)

(6)   a. * gawe   nastar,   mbak Nunung   **lagek   pe**
            make   cookies   Miss Nunung   PROG   will
            ('Making cookies, Nunung is just about to do.') (7mar11_2.007)

      b. * tuku beras,   pak Suwanan   **lagek   tas**
            buy   uncooked.rice Mr. Suwanan   PROG   moment.ago
            ('Selling rice, Pak Suwanan did a moment ago.') (7mar11_2.035)

(7)   * mbayar dendo, Gayus **kudu**
        AV.pay fine   Gayus DEONT.must
        ('Pay a fine, Gayus must do.') (7mar11_2.040)

The above examples therefore show that VP-topicalization partitions TAM auxiliaries in Paciran Javanese into two classes. We will see below in §2.2 and §2.3 that two other syntactic constructions, subject-auxiliary answers to yes-no questions and auxiliary fronting in yes-no questions, also divide TAM auxiliaries in Paciran Javanese into the same two sets.

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Before turning to further properties of VP-topicalization, note that without any auxiliaries, verb-initial is also a natural, acceptable declarative sentence in Javanese, such as in (8) in standard Javanese spoken in Yogyakarta and in (9) from Paciran Javanese.

(8) [_{VP} nyolong gedang] maling-e
        steal   banana, thief-DEF
        'The thief stole some bananas.' (Badib 1980:99)

(9) Context : I'id talking : What was it called ? the ones that didn't understand
        before... there are ones that can't speak kromo ....
        lali   aku, tau   opo   ngono,   lali
        forget 1SG, EXP.PERF what   like.that, forget
        'I forget, before or like that, [I] forget.' (ELAN_Apr27_11_IJ_I'id.18:43)

This difference from the canonical word order of SVO has been noted by a number of researchers such as Badib (1980), Robson (1992), Conners (2008). Robson (1992:18-19) states that:

> "The subject is not necessarily found at the beginning of the sentence, however. This is because a principle of Javanese is that the thing which the speaker wishes to emphasize is placed at the beginning, and this need not be the subject – it may be some other part of the sentence, such as the predicate or a part of it."

I suggest that verb-initial word order such as in (8) and (9) above may have a different construction than the VP-initial construction formed with an auxiliary. For instance, verb-initial word order does not seem to require a heavy pause between the VP and the subject, while the construction with the auxiliary does. I suggest that verb-initial word order may involve a right-dislocated subject, whereas the subject remains in situ in VP-topicalization. Further research is necessary to confirm this proposal. In this chapter, I concentrate on only the clear cases of VP-topicalization; that is, when there is at least one auxiliary following the subject. I now turn to presenting further properties of VP-topicalization in the following sub-sections.

2.1.2   *VP-topicalization is not blocked by higher auxiliaries*

In the investigation of VP-topicalization with multiple auxiliaries, two important properties are brought to light. One, in the case of multiple auxiliaries, VP-topicalization is not blocked either by high auxiliaries or additional low auxiliaries. Two, VP-topicalization is grammatical with multiple auxiliaries only if the right-most auxiliary is

from the set of low auxiliaries. Each point will be discussed in greater detail as I present the following data.

With there being two classes of auxiliaries partitioned in terms of their relative syntactic order, 'low' and 'high' auxiliaries, there are three possible combinations of auxiliary types in the case of multiple auxiliaries with VP-topicalization. These are: (i) two low auxiliaries, (ii) a high plus a low auxiliary and (iii) two high auxiliaries. Note that the combination of a low and a high auxiliary is predicted not to occur given the strict relative order between these two classes.[67] Each possible combination is shown in turn below.

With two low auxiliaries, such as *tau > iso* in (10) or *tau > oleh* in (11), VP-topicalization is possible. This shows that VP-topicalization is not blocked by a higher low auxiliary (whereas we will see that such blocking occurs in auxiliary fronting in yes-no questions below in §2.3). The baseline examples are given first in (10)a and (11)a to be able to compare with the VP-topicalization construction.

(10)   Context: *Yun Mun wes tuwo, pas enom, gek biyen, iso nggendhong* (Sister Mun is already old. When [she was] young, a long time ago, [she] could carry Putri)
    a.   yu   Mun **tau**   **iso** nggendhong   Putri
          sister Mun EXP.PERF can AV.carry.on.hip Putri
          'Sister Mun once could carry Putri.' (26nov11.013)

    b.   nggendhong   Putri, yu   Mun **tau**   **iso**
          AV.carry.on.hip Putri   sister Mun EXP.PERF can
          'Carry Putri, yu Mun once could.' (26nov11.014)

(11)   Context offered: "*sa'iki gak oleh numpak sepedae Adi*" (Now, [she] is not allowed to ride Adi's bike)
    a.   Nunung **tau**   **oleh**   numpak sepeda-e Adi
          Nunung EXP.PERF allow ride   bike-DEF   Adi
          'Nunung once was allowed to ride Adi' bike.' (26nov11.045)

    b.   numpak sepeda-e Adi, Nunung **tau**   **oleh**
          ride   bike-DEF Adi Nunung EXP.PERF allow
          'Ride Adi's bike, Nunung was once allowed to.' (26nov11.046)

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[67] One possibility of this order a reader might suggest is that where *kudu* interpreted as 'want' is a lower non-moveable auxiliary, located above moveable ones (*tau, oleh, iso*). However, I argued in Chapter 3 and also in this Chapter in §2.1.4 that *kudu* interpreted as 'want' is a verb, and therefore, [low > high auxiliary] is not considered to be a possible sequence.

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Similarly, with a linear order of a high auxiliary such as *ape* 'FUT' followed by a low auxiliary such as *iso* 'can' as in (12)a, VP-topicalization is also possible, as indicated by the grammaticality of (12)b.

(12)   Context offered: *belajar setiap hari, dadi bisa // Dayu latihan terus, mben dino*
         ([She] is learning every day so she can [swim] // Dayu is continuing to practice
         everyday)
   a.   Dayu **ape iso**   ngelangi
          Dayu FUT   can   AV.swim
          'Dayu will be able to swim.' (26nov11.021)

   b.   ngelangi, Dayu **ape iso**
          AV.swim   Dayu FUT   can
          'Swim, Dayu will be able to.' (26nov11.022)

Another example with a high auxiliary plus a low one is with *wes > iso* in (13)b, or with three auxiliaries, *wes > tau > iso* as in (13)c. In both cases, VP-topicalization is judged as grammatical showing that high auxiliaries do not block VP-topicalization.

(13)   Context offered: *Gek biyen gak iso* (Before, [she] couldn't.)
   a.   yu   Mun **wes iso** nggendhong   Kana
          sister Mun PERF can AV.carry.on.hip Kana
          'Yu Mun already can carry Kana.' (26nov11.018)

   b.   nggendhong   Kana, yu   Mun   **wes   iso**
          AV.carry.on.hip Kana sister Mun PERF   can
          'Carry Kana, yu Mun already can.' (26nov11.019)

   c.   nggendhong   Putri, yu   Mun   **wes tau**   **iso**
          AV.carry.on.hip Putri sister Mun PERF EXP.PERF   can
          'Carry Putri, yu Mun once could.' (26nov11.015)

(14)   Context offered: '*Opo Jozi wes tau mangan sayur lodeh?*' (Has Jozi already ate
         lodeh vegetables?)
         mangan sayur   lodeh, Jozi **wes   tau**
         AV.eat   vegetable *lodeh* Jozi PERF   EXP.PERF
         'Eaten *lodeh* vegetables, Jozi did once.' (7mar11_2.110)

It is clear therefore, that VP-topicalization is not blocked by high or additional low auxiliaries (unlike subject-auxiliary inversion as shown below in §2.3).

However, with the sequence of two successive high auxiliaries, VP-topicalization is not well-formed. I propose that the ungrammaticality is the result of the fact that the

right-most auxiliary is a high auxiliary. This is shown for *kudu* 'deontic.must' > *wes* 'PERF' in (15).

(15) a.　mbak　Rifka　**kudu**　　　**wes**　marek-no　　　tugas-e　sa'-durung-e
　　　　Miss　Rifka　DEONT.must　PERF　AV.finish-APPL　task-DEF　SA-not.yet-NE

　　　　ashar
　　　　ashar
　　　　'Miss Rifka has to already be finished her work before *ashar* (3rd prayer
　　　　time).'

　　b.　* marek-no　　　tugas-e　sa'-durung-e　ashar, mbak　Rifka　**kudu**
　　　　　AV.finish-APPL　task-DEF　SA-not.yet-NE　*ashar*, Miss　Rifka　DEONT.must

　　　　wes
　　　　PERF
　　　　('Finished her work before *ashar*, Miss Rifka has to already be.')
　　　　(14july2012)

Based on the grammaticality judgment results on each of these combinations with high and low TAM auxiliaries, there are two main generalizations. First, neither high nor low auxiliaries in Paciran Javanese block VP-topicalization. Second, this construction is only grammatical when the right-most auxiliary is a low auxiliary, underlining the fact that only this group of auxiliaries allows for VP-topicalization of their complement. I now turn to investigating the actual syntactic size of the topicalized 'VP' that Paciran Javanese allows in the following section.

2.1.3　Syntactic size of the topicalized element in VP-topicalization

This construction has been termed 'VP-topicalization' so far with the tacit assumption that it is the VP that is topicalizing, and not a larger XP. In this section, I make explicit the syntactic size of what exactly can topicalize in this construction (although I still call it 'VP-topicalization'). I show that this XP can minimally be a vP and maximally a NegP. I show that higher projections cannot be topicalized, such as an AuxP.

Before turning to these investigations, I first underline that VP-topicalization minimally targets a v^0. I assume that voice morphology is located in v^0 following e.g. Sato (2008) for Javanese. Therefore, the actor voice as signaled by a homorganic nasal prefix in Javanese provides evidence that the vP is fronting in VP-topicalization

constructions. We have seen that actor voice constructions can undergo VP-topicalization is shown above in §2.1.1 - §2.1.2; one example is repeated here in (16) from (1).

(16)   Context: *Opo mbak Jozina oleh nganggo celono reng ngaji?* (Can Jozina wear pants to the reciting of the Holy Qur'an?)
nganggo   celono reng ngaji,   Jozi   **oleh**
AV.wear   pants to   *ngaji*, Jozi allow
'What Jozi is allowed to do is wear pants to the reciting of the Holy Qur'an.'
(7mar11_2.013)

In terms of the syntactic size of this topicalized XP, it is therefore minimally *v*P that is topicalizing (not VP), as schematized in (17) for actor voice constructions.[68]

(17)   *v*P undergoes 'VP-Topicalization':
[$_{TopP}$ [$_{vP}$ **VERB ...**]] Top^0], [$_{TopP}$ SUBJ ... [t_{vP}]]

Note that I assume that the external argument ('subject') in Javanese is located in the specifier of a TopicP in Javanese, following Cole et al. (2002). Poedjosoedarmo (1977) and Cole et al. (2002) show clearly that the 'subject' in Javanese has topic-like properties, such as not allowing indefinite NPs or *wh*-phrase in 'subject' position. This is similar to many Austronesian languages, such as in Tagalog (e.g. Schachter 1976, Keenan 1976), Malagasy (e.g. Pearson 2005), Malay (Mashudi 1976, Alsagoff 1992), Indonesian (Soemarmo 1970), Madurese (Davies 1999), among others.

Now considering 'AuxP' for topicalization, I show that in Paciran Javanese it is not possible to target this projection, (18). This can be shown with two low auxiliaries, such as with *tau > iso*. Although VP-topicalization would be licensed by the low auxiliary *tau* as in (18)b, it is ungrammatical to topicalize the auxiliary plus the VP.

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[68] In Paciran Javanese, while a vP in actor voice (indicated by a homorganic nasal prefix) can topicalize, vP in a by-phrase passive or a non-demoted agent passive (passive type II) cannot. The exact nature of this issue is left as an open question at this point. Importantly, however, it is not due to the syntactic size of the XP that is topicalizing as the possibility for VP-topicalization with actor voice shows that it is possible to topicalize a vP and not only a VP.

(18)   Context: *sa'iki Dewi wes tuwo, dadi gak iso ngelangi. dhisek iso, tapi gak iso sa'iki*. (Now Dewi is old so [she] cannot swim. Before [she] could, but now she can't.)

    a.   Dewi **tau**   **iso**   ngelangi
           Dewi EXP.PERF can AV.swim
           'Dewi once could swim.' (26nov11.005)

    b. * **iso** ngelangi, Dewi **tau**
           can AV.swim Dewi EXP.PERF
           ('Can swim, Dewi once.') (26nov11.007)

Similarly, VP-topicalization is not possible with the sequence of the two low auxiliaries *tau* 'EXP.PERF' > *oleh* 'allow'. It is ungrammatical to topicalize the lower auxiliary (*oleh*) with the VP complement as in (19)b as well as the higher low auxiliary (*tau*) with the VP complement, (19)c. While both are ungrammatical, it is interesting that (19)b, which would reflect the strict relative order of auxiliaries, *tau* > *oleh*, is slightly less ungrammatical than (19)c, which does not maintain the strict relative order as determined in Chapter 3 for TAM markers in Paciran Javanese.

(19)   Context: "*Sa'iki gak oleh numpak sepedae Adi*" (Now, [she] is not allowed to ride Adi's bike)

    a.   Nunung **tau**   **oleh** numpak sepeda-e Adi
           Nunung EXP.PERF allow ride   bike-DEF Adi
           'Nunung once was allowed to ride Adi's bike.' (26nov11.045)

    b. *? **oleh**   numpak sepeda-e Adi, Nunung **tau**
           allow ride   bike-DEF Adi Nunung EXP.PERF
           ('Allowed to ride Adi's bike, Nunung once [did].') (26nov11.047)

    c. * **tau**   numpak sepeda-e Adi, Nunung **oleh**
           EXP.PERF ride   bike-DEF Adi Nunung allow
           ('Once ridden Adi's bike, Nunung was allowed to.') (26nov11.048)

It is not possible to check the properties of how 'big' the XP is that topicalizes in VP-topicalization with the linear sequence of a high auxiliary followed by a low one, such as in (20) with *ape* 'FUT' > *iso* 'can'. This is because high auxiliaries independently do not license VP-topicalization. Therefore, this would mask whether or not it is grammatical to topicalize a VP plus an auxiliary as in (20)b. For this reason, these examples, which are all ungrammatical, are not discussed further.

(20)   Context offered: *Belajar setiap hari, dadi bisa // Dayu latihan terus, mben dino*
         ([She] is learning every day so she can [swim] // Dayu is continuing to practice
         everyday)
     a.   Dayu **ape iso**   ngelangi
          Dayu FUT   can   AV.swim
          'Dayu will be able to swim.' (26nov11.021)

     b. * **iso**   ngelangi, Dayu **ape**
          can   AV.swim Dayu FUT
          ('Can swim, Dayu will.') (26nov11.023)

To summarize the data above, I have shown that a VP headed by an auxiliary (an 'AuxP')
cannot undergo 'VP-topicalization', even when this construction is licensed by another
low auxiliary. This is exemplified in the schema in (21), showing that a VP headed by an
AuxP is not grammatical in the specifier of TopicP:

(21)   AuxP cannot undergo 'VP-Topicalization':
        * $[_{TopP}$ $[_{AuxP2}$ AUX $[_{vP}$ VERB ...]]] Top^0], $[_{TopP}$ SUBJ ... $[_{AuxP1}$ AUX t_{AuxP2}]]

Another possibility for topicalizing an XP larger than a *v*P in 'VP-topicalization' is a *v*P
selected by a low NegP, assuming that negation heads its own maximal projection in
Javanese. I investigate this in (22) with each of the low auxiliaries.

(22) a.   **gak** mangan sego, Pak Suwanan gak **tau**
           NEG   AV.eat   rice,   Mr.   Suwanan   NEG EXP.PERF
           'Not eaten rice, Mr. Suwanan has never.' (14july2012)

     b.   **gak** mangan sego, Jozi **iso**
           NEG   AV.eat   rice,   Jozi can
           'Not eating rice, Jozi can.' (14july2012)

     c.   **gak** melbu   WBL, Jozi **oleh**
           NEG   AV.enter   WBL,   Jozi allow
           'Not entering WBL, Jozi may.' (14july2012)

As shown by the grammaticality of each of these examples above, it is possible to
topicalize an XP larger than VP, namely NegP.[69] This is sketched in (23):

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[69] Note that the non-topicalized counterparts of these sentences are all grammatical in Paciran Javanese.

(23)   NegP can undergo 'VP-Topicalization':
        [$_{TopP}$ [$_{NegP}$ **NEG** [$_{vP}$ **VERB …**]]] TOP^0], [$_{TopP}$ SUBJ … [$_{AuxP2}$ AUX t_{NegP}]]

Therefore, while a VP dominated by an AuxP cannot undergo VP-topicalization, a VP dominated by NegP can. [70]

To recap this section, I have made explicit the syntactic size of the XP that can be topicalized in a VP-topicalization construction in Paciran Javanese. The minimum size of the topicalized XP is *v*P assuming that voice morphology, such as the homorganic nasal prefix in the actor voice construction, is located in *v*^{0} (e.g. Sato 2008). It appears that an XP as big as NegP can topicalize in this construction, but an AuxP dominating VP cannot. Therefore, the maximum size of the topicalized XP is low NegP in Paciran Javanese.

2.1.4   *VP-topicalization as a test for verbhood*

Having established that VP-topicalization minimally targets vPs and maximally NegP, this construction can also be used as a test to see what can or cannot be considered a verb.[71]

Revisiting the examples above with topicalizing *tau* 'EXP.PERF', *oleh* 'allow' or *iso* 'can' in (18)-(19), the fact that such topicalization is ungrammatical suggests that these TAM markers are all not verbs. This finding provides further support for the conclusion determined in Chapter 2 that these markers are not verbs, but auxiliaries.

What is striking, however, is that it is grammatical to topicalize the TAM marker *kudu* when it is interpreted as 'want', (24)b, suggesting that the grammatical category of *kudu* 'want' is a verb. The baseline example is given in (24)a. As was shown in Chapter 3

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[70] I have also investigated topicalizing with a manner adverb such as *alon-alon* 'slowly' and leaving the adverb behind with moveable auxiliaries, but the results seem to vary with the auxiliary. For example, it is not possible (either way) with *iso* 'can' or *oleh* 'allow', but it is possible (only with fronting the adverb) with *tau* 'EXP.PERF'. An example is given with *oleh*:

    (i) * **alon-alon**   mangan soto-ne, Dewi   **oleh**
         slowly   AV.eat soto-DEF Dewi   allow
         ('Slowly eat the Indonesian soup, Dewi may.') (8dec11T.067)
    (ii) * mangan soto-ne, Dewi   **oleh alon-alon**
         AV.eat   soto-DEF Dewi   allow   slowly
         ('Eat the Indonesian soup, Dewi may do so slowly.') (8dec11T.069)
 It is interesting that the split seems to be related to their syntax: *tau* is syntactically higher than *iso, oleh* and *iso, oleh* behave similarly, but I leave this data for further research.

[71] It was already introduced in Chapter 3 that *kudu* interpreted as 'want' is a verb based on data with this construction as well as auxiliary fronting in yes-no questions.

on the syntactic distribution of TAM markers in Paciran Javanese, when *tau > kudu*, the marker *kudu* can only be interpreted as 'want'.

(24)   Context: *Mbiyen, Zulfah kepingin mbuka toko, tapi sa'iki wes gak ono waktune*
        (Before, Zulfah wanted to open a store, but now there is no longer time.)
    a.   Zulfah **tau**   **kudu** mbuka toko-ne
        Zulfah EXP.PERF want   AV.open store-DEF
        'Zulfah once wanted to open her store.' (26nov11.074)

    b.   **kudu** mbuka toko-ne,   Zulfah **tau**
        want AV.open store-DEF Zulfah EXP.PERF
        'Wanted to open her store, Zulfah once [did].'
      # 'Had to open her store, Zulfah once [did].' (26nov11.077)

Underlining the fact that *kudu* in (24)b is interpreted as 'want', the consultant offered (25)a with the verb *kepingin* 'want', showing that these examples seem to be parallel. However, *kudu* 'want' and *kepingin* 'want' do not behave in tandem in all respects. Specifically, while *kepingin* 'want' can license VP-topicalization[72], as shown in (25)b, *kudu* 'want' cannot, (25)c.

(25) a.   **ke-pingin** mbuka   toko-ne,   Zulfah   **tau**
        KE-want   AV.open store-DEF Zulfah   EXP.PERF
        'Wanted to open her store, Zulfah once [did].' (26nov11.078)

    b.   mangan es krim, Salsa **ke-pingin**
        AV.eat   ice cream Salsa KE-want
        'To eat ice cream, Salsa wants.' (7mar11_2.059)

    c. * mbuka   toko-ne,   Zulfah **tau**   **kudu**
        AV.open store-DEF Zulfah EXP.PERF want
        ('Open her store, Zulfah once wanted to.') (26nov11.075)

Therefore, through the use of VP-topicalization be as an additional test for 'verbhood' of TAM markers, I conclude that the markers *tau* 'EXP.PERF', *oleh* 'allow', and *iso* 'can' are all not verbs, while the status of *kudu* interpreted as 'want' is a verb. I now turn to a summary of the properties of VP-topicalization.

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[72] The focus in VP-topicalization in this dissertation is on the interaction of the topicalized vP and different TAM auxiliaries. I have not yet closely investigated how other verbs, such as *kepingin* 'want', behave in VP-topicalization constructions with different types of complementation properties. It could be that not all verbs allow for VP-topicalization.

2.1.5 *Summary of properties of VP-topicalization*

This section summarizes the properties of VP-topicalization for the dialect of Javanese spoken in Paciran, East Java. First, and most interesting, VP-topicalization is licensed only by low TAM auxiliaries, showing that this construction partitions the set of auxiliary TAM markers into two classes. Secondly, VP-topicalization is not blocked by higher auxiliaries, whether they are part of the 'high' or 'low' class. Third, VP-topicalization minimally targets a *v*P and maximally a low NegP. In the following section, I discuss an additional construction in Javanese that partitions the same subset of auxiliaries as does VP-topicalization: answers to questions that contain only the subject plus the auxiliary.

2.2 Answers to yes-no questions

In investigating the properties of what I call 'subject-auxiliary answers' to yes-no questions in Paciran Javanese, the data is striking: the same two classes of auxiliaries are partitioned in this construction as they are with VP-topicalization. This partition is summarized in Table 2 below.

Table 2. Interaction of auxiliary TAM markers in Paciran Javanese
with VP-topicalization and Subject-Auxiliary answers

TAM marker	License VP-topicalization	License Subj-Aux Answers
kudu 'deontic.must'	✖	✖
wes 'PERF'	✖	✖
lagek 'PROG, just'	✖	✖
ape 'FUT'	✖	✖
tau 'EXP.PERF'	✔	✔
oleh 'allow'	✔	✔
iso 'can'	✔	✔

I will suggest in §4.1 and §4.2 below that VP-topicalization and subject-auxiliary answers have the same underlying structure and differ in a trivial way: in VP-topicalization the VP-topic remains overt, while in subject-auxiliary answers, the VP-topic is elided.

In this section, I focus on the syntactic properties of this construction. I first briefly review the types of answers to yes-no questions that are possible in Paciran Javanese. Secondly, I present evidence that a particular type of answer, which I have termed 'subject-auxiliary answers', is not grammatical with all TAM auxiliary markers in

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Paciran Javanese as indicated in Table 2 above. That is, I find that low auxiliaries can license subject-auxiliary answers, while high ones cannot.

2.2.1 *Types of answers to yes-no questions in Paciran Javanese*

In Paciran Javanese, it appears that answers to yes-no questions can take the form of a number of different constituents of the tree or a head of the spine. However, one type of answer seems to have syntactic restrictions; specifically, 'subject-auxiliary answers' in which the VP is elided is only grammatical with low TAM auxiliaries. Here, I give examples of a variety of answer-types, and in the following section, I investigate the variation with the 'subject-auxiliary'-type answers in detail.

In terms of answering with different constituents, an answer can always be a full sentence in Paciran Javanese. This is exemplified in (26):

(26) A: Bu   Nana   lagek   masak toh?
         Mrs. Nana   PROG   cook   PRT

     B: iyo, bu   Nana   lagek   masak
         yes Mrs. Nana   PROG   cook
         A: 'Mrs, Nana is cooking, right?' B: 'Yes, Mrs. Nana is cooking.'
         (21may2012.101)

It is possible to elide any argument in an answer, such as the external in (27) or both the external and the internal argument in (28), thereby pronouncing a smaller constituent of the spine. This is very prevalent in spoken Javanese and it occurs across the board (not only in answers to yes-no questions), especially if they are previously mentioned in the discourse (e.g. Ewing 2005, Conners 2008).

(27) A: cak Ali kudu   mbayar dendo toh?
         Mr. Ali DEONT.must AV.pay   fine   PRT

     B: iyo, kudu   mbayar dendo
         yes DEONT.must AV.pay   fine
         A: 'Ali has to pay the fine right?' B: 'Yes, [he] has to pay a fine.'
         (21may2012.092)

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(28) A: ape   tau   toh   Jozi nyobak iwak   pe?
           FUT   EXP.PERF PRT   Jozi AV.try   fish   sting.ray

      B: iyo, ape tau   nyobak
          yes, FUT   EXP.PERF   AV.try
          A: 'Would Jozi have tried stingray?' B: 'Yes, [she] would have tried [stingray].' (14july2012)

In terms of types of answers with a head of the spine, answers to yes-no questions can for example take the form of *iyo* 'yes' or *ora/gak* 'no' as in (29), a verb as in (30), or an auxiliary as in (31). Note that all TAM auxiliaries allow for this type of answer except for the future marker *ape*. This seems to be a semantic restriction, as temporal XPs such as *wingi* 'yesterday' also cannot occur as a one-word answer.

(29) A: opo mbak Nunung ape   masak kuwe?
           what Miss   Nunung FUT   cook   cake

      B: **iyo**   //   **ora**
          yes   NEG
          A: 'Will Miss Nunung bake a cake?' B: 'Yes.' // 'No.' (14Feb11.011)

(30) A: Pak Arif lagek ngajar   opo   ora?
           Mr.   Arif   PROG   AV.learn what   NEG

      B: iyo, **ngajar**
          yes   AV.learn
          A: 'Is Pak Arif teaching or not?' B: 'Yes, [he's] teaching.' (26Feb11.005)

(31) A: Dewi iso   ngelangi   toh?
           Dewi can   AV.swim   PRT

      B: iyo, **iso**
          yes   can
          A: 'Dewi can swim, right?' B: 'Yes, [she] can.' (21may2012.084)

2.2.2   *'Subject-auxiliary' answers distinguishes high vs. low auxiliaries*

The above examples suggest that there are no syntactic constraints in types of answers to yes-no questions in Paciran Javanese. However, there appears to be a syntactic restriction with 'subject-auxiliary' type of answers in Paciran Javanese, where the subject and auxiliary are overt and the VP is elided, (32). Specifically, this type of answer is limited

to only low auxiliaries. This fact is notable as it patterns exactly with VP-topicalization as discussed above: subject-auxiliary answers also distinguish high vs. low auxiliaries.

(32) A: Dewi iso   ngelangi toh?
         Dewi can   AV.swim   PRT

     B: Iyo, Dewi **iso**
         yes Dewi can
         A: 'Dewi can swim, right?' B: 'Yes, Dewi can.' (21may2012.083)

For instance, low auxiliaries *tau* 'EXP.PERF', (33), *oleh* 'allow', (34), and *iso* 'can' ((32) above) can all license VP-ellipsis in answers to yes-no questions.[73]

(33) A: mbak Nunung tau   lungo reng Jakarta toh?
         Miss Nunung EXP.PERF   go   at   Jakarta PRT

     B: ? iyo, Nunung **tau**
         yes   Nunung EXP.PERF
         A: 'Miss Nunung once went to Jakarta, right?' B: 'Yes, Nunung once has.'
         (21may2012.105)

(34) A: Salsa oleh   tuku rok   anyar toh?
         Salsa allow buy   dress new   PRT

     B: ? iyo, Salsa **oleh**
         yes   Salsa allow
         A: 'Salsa is allowed to buy a new dress, right?' B: 'Yes, Salsa is allowed.'
         (21may2012.096)

The high auxiliaries, however, cannot occur as a 'subject-auxiliary' answer to a yes-no question in Paciran Javanese. This fact is demonstrated in (35)-(38) with *wes* 'PERF', *lagek* 'PROG', *ape* 'FUT', *kudu* 'deontic.must' respectively.

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[73] Some of the subject-auxiliary answers with low auxiliaries are judged to be slightly less acceptable by some speakers. I assume this grammatical judgment reflects the comparison to other answer-types: that is, although this type of answer is grammatically possible, it is preferrable to not pronounce the external argument in Javanese. What is important is that the subject-auxiliary answers with low auxiliaries sharply differ in their grammaticality when compared to those with high auxiliaries.

(35) A: Pak   Singgih   wes   mangan   toh?
          Mr.   Singgih   PERF   AV.eat   PRT

     B: * iyo,   Pak   Singgih   **wes**
          yes   Mr.   Singgih   PERF
          A: 'Has Mr. Singgih already eaten?' B: ('Mr. Singgih has.') (21may2012.070)

(36) A: Bu   Nana   lagek   masak   toh?
          Mrs. Nana   PROG   cook   PRT

     B: * iyo,   bu   Nana   **lagek**
          yes   Mrs. Nana   PROG
          A: 'Mrs. Nana is cooking, right?' B: ('Yes, Mrs. Nana is.') (21may2012.099)

(37) A: mbak   Mayu   ape   nikah   toh?
          Miss   Mayu   FUT   AV.marry   PRT

     B: * iyo,   Mayu   **ape**
          yes   Mayu   FUT
          A: 'Will Miss Mayu marry?' B: ('Yes, Mayu will.') (21may2012.075)

(38) A: cak   Ali   kudu   mbayar   dendo toh?
          Mr.   Ali   DEONT.must   AV.pay   fine   PRT

     B: * iyo,   cak   Ali   **kudu**
          yes   Mr.   Ali   DEONT.must
          A: 'Ali has to pay the fine, right?' B: ('Yes, Ali has to.') (21may2012.088)

In summary, the above examples show a second type of construction where TAM auxiliaries are partitioned into the class of low auxiliaries *tau* 'EXP.PERF', *oleh* 'allow' and *iso* 'can' on one hand and the class of high auxiliaries *wes* 'PERF', *lagek* 'PROG', *ape* 'FUT', *kudu* 'deontic.must' on the other hand.

2.2.3   *Summary of properties of answers to yes-no questions in Paciran Javanese*

The types of answers to yes-no questions in Paciran Javanese are outlined in Table 3.

Table 3. Types of answers to a yes-no question in Paciran Javanese

TYPE OF ANSWER TO A YES-NO QUESTION		GRAMMATICAL
'full sentence'	(Yes,) S (Aux) VP	✓
'external arg elided'	(Yes,) ~~S~~ (Aux) VP	✓
'internal arg elided'	(Yes,) S (Aux) V ~~O~~	✓
'VP elided' ('Subj-Aux')	(Yes,) S (Aux) ~~VP~~	only licensed by moveable aux
'Auxiliary only'	(Yes,) ~~S~~ Aux ~~VP~~	✓ (except *ape* 'fut')
'full sentence elided'	Yes/No, ~~S (Aux) VP~~	✓

To summarize, it appears that there are a number of different constituents or heads of the spine can serve as an answer-type in Paciran Javanese.[74] One type of answer, 'subject-auxiliary answers', however, observes a syntactic constraint in that it is only grammatical with low auxiliaries. Strikingly, this restriction corresponds to the same subset of TAM auxiliaries that can license VP-topicalization. I now turn to discussing the properties of a third construction that shows this same partition – auxiliary fronting in yes-no questions.

2.3 Auxiliary fronting in yes-no questions in Paciran Javanese

Remarkably, a third construction in Paciran Javanese distinguishes the same subset of auxiliaries: auxiliary fronting in yes-no questions. This pattern is shown here in Table 4:

Table 4. Interaction of auxiliary TAM markers in Paciran Javanese
with Subject-auxiliary inversion, VP-topicalization and Subj-Aux Answers to questions

TAM auxiliary marker	License VP-topicalization	License Subj-Aux Answers	Front in Y/N questions
kudu 'deontic.must'	✗	✗	✗
wes 'PERF'	✗	✗	✗
lagek 'PROG, just'	✗	✗	✗
ape 'FUT'	✗	✗	✗
tau 'EXP.PERF'	✓	✓	✓
oleh 'allow'	✓	✓	✓
iso 'can'	✓	✓	✓

In the following sub-sections, I discuss the basic properties of auxiliary fronting or subject-auxiliary inversion[75] in yes-no questions in this dialect of Javanese. I show first that this construction partitions the same subset of TAM auxiliaries in §2.3.1,

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[74] There may be additional types, such as answering with only a DP (e.g. an internal or external argument), but this was not explored in the current research.
[75] I am using the terms 'auxiliary fronting' or 'subject-auxiliary inversion' without any preconceived analysis (e.g. X-movement vs. XP-movement). A syntactic analysis of this construction is given below.

corresponding to a set of structurally high auxiliaries vs. a set of low ones. Other properties of this construction in Paciran Javanese are that (i) higher auxiliaries (from either set) block movement of a lower one (§2.3.2), (ii) only the highest auxiliary can front (§2.3.3), and (iii) a maximum of one auxiliary can front (§2.3.4).

Auxiliary fronting is only one way to form yes-no questions in Javanese. There are also additional strategies, distinct from auxiliary fronting, which I briefly discuss here before focusing on the properties of auxiliary fronting. The four main strategies include intonation, auxiliary fronting, with the particle *opo*, or with the particle *toh*, demonstrated in (39)-(43) respectively. Javanese can also use combinations therein to form yes-no questions. I discuss only the four main strategies here. The first strategy is essentially a clause that has the same word order as in a declarative but that has a different intonational pattern.

(39) pak Khoim iso ngomong boso   inggris?   **INTONATION**
      Mr. Khoim can AV.talk   language English
      'Does Pak Khoim speak English?' (27Feb11.003)

The second strategy, auxiliary fronting, as mentioned and which is detailed below, can only occur with the set of what I identify to be low auxiliaries.

(40) **oleh**   aku mangan sego goreng   iki?   **AUXILIARY FRONTING**
      allow 1SG AV.eat   rice fried   DEM
      'may I eat that fried rice?' (18june2011.007)

The third strategy involves the addition of the particle *opo*.[76] This particle canonically occurs sentence-initially as exemplified in (41). It can also occur between the subject and the predicate, as given in (42), but it cannot occur anywhere else in the clause in this dialect.[77] This syntactic freedom only regarding the external argument points towards the topic-like nature of the external argument in Javanese.

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[76] What is interesting with this particle is that in wh-argument questions, *opo* means 'what'. The relation between these two forms (whether they are the same marker or different and just homophonous) must be further investigated.

[77] *opo* can occur elsewhere in the clause, often followed with *ora* 'NEG', in the standard dialect of Javanese as spoken in Yogyakarta. It is often reduced to the form *'pora'*. This form does not occur in Paciran Javanese, where the form of negation is more often *gak* than *ora*, and the question particle that occurs with negation is *toh*, not *opo*.

(41)   **opo** mbak Nunung ape masak kuwe?   **WITH THE PARTICLE** *opo*
        what Miss Nunung FUT cook cake
        'Will Nunung bake a cake?' (14Feb11.011)

(42)   (**opo**) sampeyan (**opo**) tau   (*opo*) ketemu (*opo*) pacar-mu
        what 2SG   what EXP.PERF what KE-meet what boy/girlfriend-your

        (*opo*) nok segoro (*opo*)?
         what at ocean what
        'Did you ever meet your boyfriend at the ocean?'

The fourth strategy to form a yes-no question in Paciran Javanese also involves a particle. The particle *toh* typically occurs sentence-finally and can optionally occur with the negation *gak*, as in (43).

(43)   Titis kepingin iso jahit **toh** (**gak**)?   **WITH THE PARTICLE** *toh*
        Titis KE-want can sew PRT NEG
        'Does Titis want to be able to sew or not?' (8april2011.047)

This particle can also occur after any other constituent, and it appears that the different syntactic positions indicate narrow focus on that item.[78] The example in (44) shows *toh* can occur after the verb, the direct object, or after a PP adjunct. Only one particle *toh* can appear per clause. For *toh* to indicate focus on the external argument, it must be followed by the relative clause marker *sing* as shown by the contrast in (44) and (45). Finally, the particle *toh* can occur after only a subset of TAM auxiliaries, as suggested by the difference in grammaticality in (46) with *iso* 'can' compared to (44) with *wes* 'PERF'.

(44)   mbak Tutus (*toh) wes (*toh) tuku (**toh**) semongko   (**toh**) nok pasar (**toh**)?
        Miss Tutus PRT PERF PRT buy PRT watermelon PRT at market PRT
        'Did Miss Tutus already BUY watermelon at the market?'
        'Did Miss Tutus already buy WATERMELON at the market?'
        'Did Miss Tutus already buy watermelon at the market?'

(45)   mbak Tutus **toh** sing wes tuku semongko   nok pasar?
        Miss Tutus PRT REL PERF buy watermelon at market
        'Did Miss TUTUS already buy watermelon at the market?'

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[78] It is not known at this point if sentence-final *toh* can also indicate narrow focus from this position, but it seems from preliminary fieldwork that it serves only as a clause-typing particle to indicate that clause is a yes-no question.

(46)   opo Pak Muftah iso **toh** nyonggoh watu sing gedhe?
       what Mr. Muftah can PRT AV.lift   rock REL big
       'CAN Mr. Muftah lift the big rock?'

I have found that these different strategies to form a yes-no question in Paciran Javanese can co-occur, albeit with some restrictions. One co-occurrence restriction is that *opo* cannot co-occur with sentence-final *toh*. However, this restriction is lifted when *toh* is located in a non-sentence-final position.[79]

(47) a. * **opo** bapak-mu   tau   gelem sinau boso   inggris **toh**?
         what father-your EXP.PERF willing study   language English PRT
         ('Is your father ever willing to study English?') (15dec11T.036)

     b.   Offered:
          opo bapakmu   tau   gelem **toh** sinau boso   inggris?
          what father-your EXP.PERF willing PRT study language English
          'Is your father ever willing to study English?' (15dec11T.037)

The strategies that can co-occur are the following: *opo* + auxiliary fronting, *toh* + auxiliary fronting (where *toh* occurs after the auxiliary), and *opo* + *toh* + auxiliary fronting (where *toh* occurs after the auxiliary).[80] As it appears that the properties of these strategies are similar, I discuss them together in §5.2 and show that the properties of these strategies suggest that the fronted element can be an XP.

In sum, these different strategies show that forming a yes-no question in Javanese is a rich area for research that must be fully investigated in the future. Now, I focus on one strategy; namely auxiliary fronting and its interaction with the two classes of TAM auxiliaries in Paciran Javanese.

2.3.1   Two classes of auxiliaries: moveable vs. non-moveable

In Paciran Javanese, the low auxiliaries *tau* 'EXP.PERF', *oleh* 'allow', *iso* 'can' can undergo subject-auxiliary inversion, as was noted in Chapter 2. The ability to front is

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[79] The ungrammaticality of *opo* plus sentence-final *toh* suggests that they may have the same function, such as clause-typing the clause as a yes-no question, and therefore cannot co-occur. A possible parallel could be drawn with the ungrammaticality of using two yes-no question strategies such as ...*right*? and auxiliary fronting in English, (i). I thank Michael Wagner for pointing this out to me.
      (i) ***Will** you see the show tomorrow night, **right**?
[80] Further research must be undertaken to know if *toh* + auxiliary fronting can co-occur, but where *toh* can appear in a different position other than following the fronted auxiliary.

shown in (48) with *tau* 'EXP.PERF'. Compare the declarative sentence in (48)a where the surface word order is subject > auxiliary to the yes-no question in (48)b where the surface linear word order is now inverted auxiliary > subject.

(48) a. cak Khuluq **tau** bel-ajar nok Kanada
      Mr. Khuluq EXP.PERF BEL-learn at Canada
      'Khuluq once studied in Canada.' (28Feb11.063)

    b. **tau** cak Khuluq bel-ajar nok Kanada?
      EXP.PERF Mr. Khuluq BEL-learn at Canada
      'Did Mr. Khuluq once study in Canada?' (28Feb11.066)
      (≠'Mr. Khuluq once studied in Canada.') (28Feb11.064)

Note that subject-auxiliary inversion in Javanese is unambiguously a yes-no question, as shown by the ungrammaticality of (48)b as a declarative sentence. In fact, no auxiliary TAM marker in Javanese can occur sentence-initially (or in other words, undergo subject-auxiliary inversion) in a declarative sentence, as shown in detail in Chapter 2.

    Examples with the other low auxiliaries *iso* 'can' and *oleh* 'allow' are given in (49) and (50) respectively. For each of these auxiliaries, it is grammatical to form a yes-no question via auxiliary fronting.

(49) a. cak Kholiq **iso** gotong sepeda ontel
      Mr. kholiq can gotong bike pedal?
      'Kholiq can lift a bicycle.' (28Feb11.082)

    b. **iso** cak Kholiq gotong sepeda?
      can Mr. Kholiq gotong bike
      'Can Kholiq lift a bike?' (28Feb11.083)

(50) a. …awakmu **oleh** dolan-an
      …2SG allow play-AN
      '…You are allowed to go play' (May26_11_S1_Nung, 4:46)

    b. **oleh** aku cicipi iwak panggang?
      allow 1SG try fish grilled
      'May I try the grilled fish?' (14.02.2011)

Not all auxiliaries, however, can undergo subject-auxiliary inversion in Javanese. Those that cannot comprise the set of high auxiliaries, as we have seen with VP-topicalization

and subject-auxiliary answers. These auxiliaries include *wes* 'PERF', *ape* 'FUT', *kudu* 'deontic.must', *lagek* 'PROG', exemplified in (51)-(54).

(51) a. murid-e **wes** ngerti boso inggris
student-DEF PERF know language English
'The student already knows English.' (14Feb11.001)

b. * **wes** murid-e ngerti boso inggris?
PERF student-DEF know language English
('Does the student already understand English?') (14Feb11.002)

(52) a. awak-mu **lagek tas** ketemu misanan-ku
body-your PROG moment.ago meet cousin-my
'You just met my cousin.' (14Feb11.081)

b. * **lagek tas** awakmu ketemu misanan-ku?
PROG moment.ago 2SG meet cousin-my
('Did you just meet my cousin?') (14Feb11.083)

(53) a. Context: *Judge ngomong*: (The judge says:)
Gayus **kudu** mbayar dendo
Gayus DEONT.must AV.pay fine
'Gayus has to pay a fine.' (15april2011.056)

b. Context: Gayus takok adjudikator (Gayus asks the adjudicator...)
* **kudu** aku mbayar dendo?
DEONT.must 1SG AV.pay fine
('Must I pay a fine?') (14Feb11.060)

(54) a. ...wong pance **ape** nikah
...person certainly FUT marry
'…She certainly will marry' (Feb19-11-Bzkemantenan, 17:28)

b. * **ape** mbak Nunung masak nastar?
FUT Miss Nunung cook cookies
('Will mbak Nunung bake cookies?') (14Feb11.010)

I have also included *durung* 'not.yet' in (55); this TAM marker also cannot front to form a yes-no question. I suggest that *durung* is the negative counterpart of *wes*; under this view, that *durung* cannot front is not surprising as *wes* also cannot (see (51) above).

(55) a. mbak Jozi **durung** ngethik skripsi-ne
Miss Jozi not.yet AV.type thesis-DEF
'Jozi hasn't typed up her thesis yet.' (14Feb11.005)

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b. * **durung** mbak   Jozi ngethik skripsi-ne?
    not.yet Miss   Jozi AV.type thesis-DEF
    ('Hasn't Jozi typed up her thesis yet?') (14Feb11.006)

Auxiliaries in Javanese can thus be divided into two types: low, moveable and high, non-moveable ones in subject-auxiliary inversion in yes-no questions. Note that in contrast to Javanese, all auxiliaries may undergo subject-auxiliary inversion in yes-no questions in English (cf. the translations in (53)b, (54)b, etc.).

While some auxiliaries in Paciran Javanese can front, main verbs can never front to form yes-no questions. In Chapter 2 above, recall that this distinction provided evidence for the difference in grammatical category between TAM auxiliaries and verbs; see §3.3.1 in Chapter 2 for more examples. The baseline declarative sentence is given in (56)a with *ngomong* 'speak' and fronting of this verb results in ungrammaticality, (56)b.

(56) a. Pak Khoim **ngomong**   boso   inggris
          Mr. Khoim AV.talk   language English
          'Pak Khoim speaks English.' (27Feb11.001)

      b. * **ngomong** pak   Khoim boso   inggris?
          AV.talk   Mr.   Khoim language English
          ('Does Pak Khoim speak English?' / * 'Speak Pak Khoim English?')
          (27Feb11.002)

Therefore, only low auxiliaries can front in yes-no questions in Paciran Javanese; high auxiliaries and main verbs cannot. I now turn to additional properties of this strategy to form a yes-no question in Javanese.

2.3.2 Higher auxiliaries block movement

Another property of auxiliary fronting in yes-no questions in Paciran Javanese is that in the case when a higher auxiliary co-occurs with one of the 'low' auxiliaries, subject-auxiliary inversion is blocked. This is shown with the markers *wes* 'PERF' and *iso* 'can' in (57)-(59). First, it is important to establish the baseline facts. As shown in Chapter 3, the aspectual marker *wes* 'PERF' is in a higher syntactic position than the modal *iso* 'can' and this order is fixed: *wes > iso*, (57).

(57) a. bayi-ne   **wes iso** melaku
         baby-DEF PERF can walk
         'the baby already can walk.' (28Feb11.013)

   b. * mas Waiq **iso   wes**   nggotong   sepeda montor
        Mr. Waiq can   PERF   AV.gotong bike   motor
        ('Waiq is already able to lift a motor bike.') (4may11.036)

The auxiliary *wes* 'PERF' cannot undergo auxiliary fronting, (58)a, and *iso* 'can' can, (58)b, in Paciran Javanese.

(58) a. * **wes** murid-e   ngerti boso   inggris?
         PERF student-DEF know language English
         ('Does the student already understand English?') (14Feb11.002)

   b. **iso** Bebi   melaku sa'-iki?
        can   Bebi   walk   SA-that
        'Can Bebi walk now?' (18june2011.013)

Despite the fact that *iso* 'can' is a low, moveable auxiliary, when it occurs with the higher, non-moveable auxiliary *wes* 'PERF', an attempt to front *iso* 'can' results in ungrammaticality, (59). Assuming the fixed base order of *wes > iso* is the underlying order for movement, the observation is that the higher, non-moveable auxiliary *wes* blocks movement of the lower, moveable one *iso*.

(59) * **iso**$_i$ bayi-ne   wes   t$_i$ melaku?
       can   baby-DEF   already   walk
       ('Can the baby already walk?') (28Feb11.014)

An additional example is given with *oleh*, in (60).

(60) a. Salsa **wes   oleh** nyopir sepeda-ne cak Adi?
         Salsa PERF allow AV.drive bike-DEF Mr. Adi
         'Can Salsa already drive Adi's motorbike?' (28Feb11.031)

   b. * **oleh**$_i$ Salsa   **wes** t$_i$ nyopir sepeda-ne cak Adi?
        allow Salsa   PERF   AV.drive bike-DEF Mr. Adi
        ('Can Salsa already drive Adi's motorbike?') (28Feb11.033)

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To sum up, the data in this section shows that higher, non-moveable auxiliaries block movement of low, moveable ones in subject-auxiliary inversion in yes-no questions in Paciran Javanese.[81]

2.3.3 *Only the highest auxiliary may front*

A further property of fronting in yes-no questions in Paciran Javanese concerns the case when there are two successive low auxiliaries. In such cases, only the highest 'low' auxiliary can front. This is illustrated with *tau* 'EXP.PERF' and *iso* 'can'. The auxiliaries *tau* and *iso* are both of the set of low auxiliaries, which are moveable, (61):

(61) a. **iso** mbak Risma sa'-iki jahit rok?
          can Miss Risma SA-that sew dress
          'Can Risma sew a dress now?' (28Feb11.036)

    b. **tau**   awakmu mangan rajungan?
          EXP.PERF 2SG   AV.eat crab
          'Have you ever eaten crab?' (18june2011.019)

And their order is fixed: *tau* 'EXP.PERF' > *iso* 'can', shown in (62).

(62) a. Ria **tau**   **iso** njoged   tapi sa'-iki gak iso soal-e
          Ria EXP.PERF can AV.dance but SA-that NEG can because-NE

        wes tuwo
          PERF old
          'Ria once could dance but now she can't because she's old.' (4may11tau.001)

    b. * Ria **iso** **tau**   njoged   tapi sa'-iki gak iso soal-e
          Ria can EXP.PERF AV.dance but SA-that NEG can because-NE

        wes tuwo
          PERF old
          ('Ria once could dance but now she can't because she's old.') (4may11tau.002)

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[81] Note that while higher auxiliaries block movement of a lower, moveable one, TAM adverbs do **not** block movement. As shown in (i), the higher adverb *koyoke* 'seem' does not block movement of the low auxiliary *iso* 'can'. The fact that there is no intervention effect highlights that these two groups of TAM markers (auxiliaries vs. adverbs) are not of the same type. Thank you to Andres Salanova for bringing up this point.
(i)   Context: At a theatre program, there is a kitchen scene and Bu Maula is the actress (e.g *soale dia buka warung*; because she opened a food stall)
       iso$_i$ Bu Maula **koyok-e** t_i gawe sego goreng?
       can Mrs. Maula seem-ne   make rice fried
       'Can Bu Maula seem to make fried rice?' (28Feb11.010)

In forming a yes-no question by subject-auxiliary inversion, only the highest auxiliary of the two low, moveable ones can front (*tau* 'EXP.PERF'), given the fixed order of *tau* > *iso*. This is exemplified in (64)a. It is ungrammatical to front the lower auxiliary *iso* 'can', as shown in (64)b.

(63)   bu   Risa   **tau**   **iso** melayu sampek rong puloh menit   toh?
           Mrs. Risa EXP.PERF can   run   until   2   10   minute PRT
           'Risa once could run up to 20 minutes right?' (15dec11T.001)

(64) a.   **tau**   bu   Risa **iso** melayu sampek rong puloh menit?
           EXP.PERF Mrs. Risa can   run   until   2   10   minute
           'Once could Risa run up to 20 minutes?' (15dec11T.004)

      b. * **iso** bu   Risa **tau**   melayu sampek rong puloh menit?
           can   Mrs. Risa EXP.PERF run   until   2   10   minute
           ('could Risa once run up to 20 mintues?') (15dec11T.006)

Combining the data in this section that higher *non-moveable* auxiliaries from the set of 'high' auxiliaries block fronting with the above fact that higher *moveable* auxiliaries from the set of 'low' auxiliaries also block fronting, a broader generalization is apparent: higher auxiliaries block lower, moveable ones from subject-auxiliary inversion. It does not matter whether the higher auxiliary is from the set of high or low auxiliaries in Paciran Javanese.

2.3.4 *Only one auxiliary may front*

A final property of auxiliary fronting in Paciran Javanese concerns the number of auxiliaries that can front. In this dialect of Javanese, multiple auxiliaries cannot front.[82] This property holds regardless of their individual ability to front. For example, even when both auxiliaries are low, moveable ones as with *tau* 'EXP.PERF' and *iso* 'can', it is ungrammatical for both to front, as shown in (65). Similarly, with a high, non-moveable auxiliary such as *wes* 'PERF' and a low, moveable one such as *iso* 'can', fronting both as in (66) in an attempt to form a yes-no question results in ungrammaticality.

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[82] In the dialect of Peranakan Javanese, Cole et al. (2008) report that multiple auxiliaries can front in yes-no questions but must keep their strict relative order.

(65) * **tau**   **iso** bu Risa melayu sampek rong puloh menit?
        EXP.PERF can Mrs. Risa run   until   2   10   minute
        ('Once could bu Risa run up to 20 minutes?') (15dec11T.011)

(66) * **wes**   **iso** bayi-ne   melaku?
        already can baby-DEF walk
        ('Can the baby already walk?') (28Feb11.015)

Consultants are very clear in their judgments for these constructions: only one auxiliary in Paciran Javanese can undergo subject-auxiliary inversion.[83]

2.3.5 *Summary of properties of auxiliary fronting in Paciran Javanese*

To summarize, the following properties hold for auxiliary fronting in deriving a yes-no question in the variety of Javanese spoken in Paciran. Only a subset of auxiliaries, which are structurally low, can undergo subject-auxiliary inversion. These are *tau* 'EXP.PERF', *oleh* 'deontic.may', *iso* 'can'. The auxiliaries that cannot undergo subject-auxiliary inversion are *wes* 'PERF', *lagek* 'PROG', *ape* 'FUT', *kudu* 'deontic.must'. Strikingly, this is the same partition of TAM auxiliaries found elsewhere with VP-topicalization and subject-auxiliary answers to yes-no questions. Other main properties of auxiliary fronting in yes-no questions in Paciran Javanese include the fact that only one auxiliary may front, it must be the highest auxiliary, and movement is blocked by higher (non-)moveable auxiliaries.

2.4   Summary of two classes of auxiliaries in Paciran Javanese

I have shown in the above sections that three different constructions partition the TAM auxiliary markers in the same manner; namely, VP-topicalization (§2.1), and subject-auxiliary answers to yes-no questions (§2.2), and auxiliary fronting in yes-no questions (§2.3). Considering that these three constructions are grouped together, the next step is to understand what they have in common with regards to their syntactic structure or their semantics. Before turning to the proposed analysis of these three constructions, I first introduce the relevant theoretical background on syntax in the next section, §3.

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[83] However, different forms of yes-no questions allow multiple auxiliaries to front; namely, when there is the addition of a particle, either *opo* or *toh*. Further, the addition of these particles allow a larger subset of auxiliaries to front.

3   Theoretical background on syntax 1

In this section, I introduce the relevant theoretical syntactic framework, first situating the syntax of Javanese in particular within the realm of A-type languages vs. B-type languages (Travis 2005, 2006, 2008) in §3.1. Second, I present the basic tools in §3.2 that are pertinent to all three syntactic constructions that partition TAM auxiliaries into the same two classes; VP-topicalization, subject-auxiliary answers, auxiliary fronting in yes-no questions. Later in the chapter in §5.3 below, I outline further specific theoretical background relating to only auxiliary fronting in yes-no questions, as I propose this construction requires additional tools.

3.1   Javanese syntax situated within A-type vs. B-type languages

In this section, I locate Javanese to be at the cross-roads between an A-type language and a B-type language, parallel to Indonesian (Travis 2008). I first introduce the X/XP macro-parameter proposed in Travis (2005, 2006) that serves to distinguish A-type and B-type languages. I then situate Javanese within this parameter. The fact that Javanese has both A-type and B-type language properties is important to acknowledge, as I argue below that the derivation for VP-topicalization/subject-auxiliary answers is exemplary of an A-type language property and the derivation for auxiliary fronting is yes-no questions is exemplary of a B-type language property.

Based within Minimalist theory (Chomsky 1995) where movement is feature-driven, Travis (2005, 2006) puts forward an X/XP macro-parameter which states that languages differ in which level of a projection limb vs. spinal features target. More specifically, given the limb feature D and the spinal feature V housed in the inflectional domain, two types of languages arise: (i) 'A-type' languages, such as English or French, in which the D feature targets DPs and the V feature targets Vs and (ii) 'B-type' languages such as Malagasy or Tagalog in which these features target the opposite category level. In B-type languages, the D feature targets Ds and the V feature targets VPs. The different types of movements that arise from this parameter are summarized in Table 5, where the D feature is a 'limb feature' and V is a 'spinal feature'.

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Table 5. X/XP Parameter

Feature	Target	A-type languages	B-type languages
D	Limb	XP (spec-to-spec)	X (head (out of a spec)-to-head)
V	Spine	X (head-to-head)	XP ('roll-up' (spine-to-spec))

The derivation for an A-type language such as French is given in Tree 1 (replicated from Travis 2008:1594), where the uninterpretable feature D targets the highest DP, triggering spec-to-spec XP movement, and the uninterpretable feature V targets the highest v^0, triggering head-movement.

Tree 1. A-type languages:
D feature triggers XP-movement, V feature triggers X^0-movement
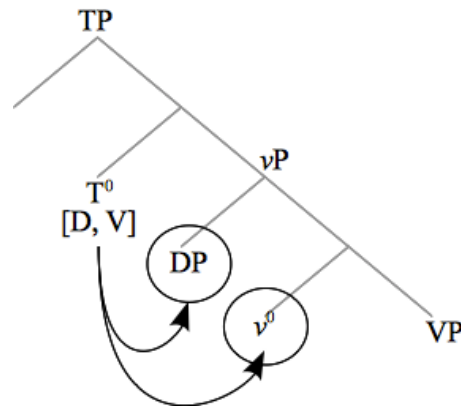
This derivation is contrasted to that of a B-type language such as Malagasy in Tree 2 below (replicated from Travis 2008:1595). In this derivation, the uninterpretable feature D targets an X^0, triggering head-movement of D^0 out of a limb, and the uninterpretable feature V targets an XP, triggering spinal phrasal movement (roll-up). See Travis (2005, 2006) for details on this derivation based on data from Malagasy.[84][85]

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[84] The reader will note that the limb and spine features [V,D] are not housed in the same head as they are in the tree for English. This is because complications arise due to language particular issues (see Travis 2005, 2006) on Malagasy. The important point here is that the systems are different: in A-type languages, spine features target heads and in B-type languages, spine features target XPs (and limb features do the reverse).
[85] Note also that the circled DP in Spec,YP in Tree 2 is not assumed to move there, but based generated. See Travis (2005) for the proposal that voice morphology is like clitic left dislocation in Malagasy

Tree 2. B-type languages:
D feature triggers X^0-movement, V feature triggers XP-movement
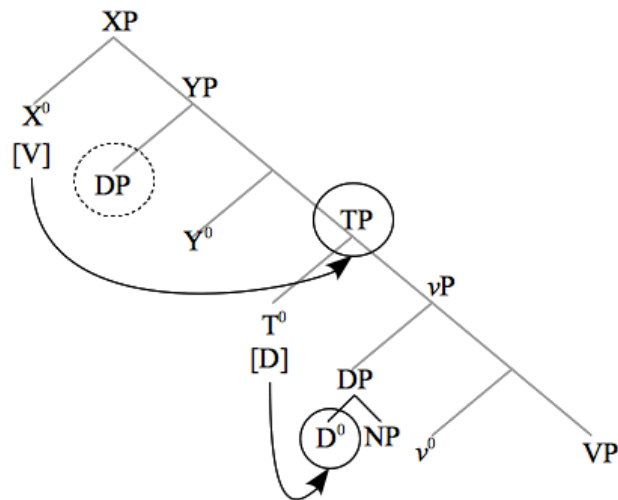
The X/XP parameter is based on 11 properties which clearly distinguish Indo-European languages like English or French and Austronesian languages like Malagasy. These properties include (1) inventory of voice morphology; (2) arguments use cleft strategy in *wh*-constructions; (3) subjects extract the most easily; (4) adjuncts use different mechanisms to extract; (5) non-demoted agents in passive; (6) anaphors in subject position; (7) predicate initial word order; (8) derived objects (in applicatives); (9) direct or inverse VP-internal orders (see Pearson 2000); (10) any object extraction; (11) by-phrases in passives (Travis 2008:1593).[86]

An example is shown with property (2), whereby arguments use the cleft strategy in *wh*-constructions. This phenomenon is found in B-type languages such as Malagasy, but not in A-type languages such as English. (67) shows that the strategy to form an object question is parallel to the strategy to form a (pseudo-)cleft in Malagasy. (68) shows that in English, wh-constructions are not formed via a cleft strategy.

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[86] Some properties could be grouped together – e.g. subject and object extraction (properties (3) and (10)), or types of passives (properties (5) and (11)). I keep them separated to show how Indonesian and Javanese is between A-type and B-type languages in Table 6 below.

(67) MALAGASY

    a.   Inona   no   sasan-dRabe   WH-CONSTRUCTION
        what   PRT   wash-N-Rabe
        'What is being washed by Rabe?'
        'The thing that is being washed by Rabe is what?'

    b.   Ny lamba no   sasan-dRabe   (PSEUDO-)CLEFT
        the clothes PRT   wash-N-Rabe
        'It is the clothes that are being washed by Rabe.'
        'What is being washed by Rabe are the clothes.' (Travis 2008:1586, (7))

(68) ENGLISH

    a.   What is Rabe washing?   WH-CONSTRUCTION
        ≠ The thing that Rabe is washing is what?

    b.   It is the clothes that Rabe is washing.   CLEFT CONSTRUCTION

The X/XP parameter (Travis 2005, 2006, 2008) explains this significant distinction. A-type languages like English have limb XP movement, not from the spine. The label of the feature may be [wh] (and not D), but what is crucial is that a limb moves. Conversely, in B-type languages like Malagasy, if an XP is moving, it must be an XP from along the spine which forces it to be a predicate. In this way, Malagasy forms wh-questions via a (pseudo-)cleft construction. This is one example of how this macro-parameter can capture major differences between languages like English and languages like Malagasy.

        Turning now to how Javanese fits into the A-type vs. B-type language parameter, it seems that this language is at the cross-roads of either language type, exactly like Indonesian as shown in Travis (2008). Specifically, Travis (2008) argues that Indonesian presents an interesting case study in light of the X/XP parameter as it has a number of conflicting properties between A-type and B-type languages. This conflict is revealed when looking at the full list of 11 properties: Indonesian shares properties 1-6 with A-type languages and properties 7-11 with B-type languages, as is outlined in Table 6 (adapted from Travis 2008:1593, (26)):

Table 6. Properties of A-type and B-type languages compared with Indonesian

Properties	A-type 'Malagasy'	Indonesian	B-type 'English'
1. Inventory of voice morphology	rich	rich	poor
2. Cleft strategy in argument wh-constructions	✓	✓	✗
3. Subjects extract most easily	✓	✓	✗
4. Adjuncts use different mechanism to extract	✓	✓	✗
5. Non-demoted agents in passive	✓	✓	✗
6. Anaphors in subject position	✓	✓	✗
7. Predicate initial	✓	✗	✗
8. Derived objects (in applicatives)	✗	✓	✓
9. Direct or inverse VP-internal orders	inverse	direct	direct
10. Any object extraction	✗	✓	✓
11. By-phrase passives	✗	✓	✓

Consider the following concrete examples with property (5) and (11) which concerns whether DPs move or not. B-type languages, such as Malagasy where the D feature targets X^0, only have passives which have a non-demoted agent (property 5), as in (69)a. A-type languages do not have this passive, shown by the ungrammaticality in (69)b. Instead, A-type languages in which the D feature targets XPs have by-phrase passives (property 11), as shown in (70) with English. Conversely, B-type language do not have by-phrase passives; the agent cannot be introduced as an oblique in (69)a.

(69) NON-DEMOTED AGENT IN PASSIVE (PROPERTY 5)
    a.   No vakin-**dRabe** io   boky   io   MALAGASY
           PST read-**N-Rabe** this   book   this
           'That book was read by Rabe.' (Travis 2008:1585, (4))

    b. * That book was Rabe/me/you read.   ENGLISH

(70) BY-PHRASE PASSIVE (PROPERTY 11)
    That book was read **by Rabe/me/you**.   ENGLISH

Travis (2008) points out that Indonesian has properties of both an A-type and a B-type language as it has *both* types of passives. These two types are illustrated in (71) and (72) below for Indonesian, where both the non-demoted agent passive (the subjectival passive) as well as the by-phrase passive are grammatical.[87, 88]

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[87] See further arguments in Chung (1976), Conners (2001), Cole and Hermon (2005) that the agent in Indonesian is non-demoted in a non-demoted agent passive (or subjectival passive).

(71) NON-DEMOTED AGENT IN PASSIVE (PROPERTY 5):
  Buku itu **saya/kamu/dia** baca   INDONESIAN
  book that 1SG/2SG/3SG   read
  'That book was read by me/you/him.' (Travis 2008:1585, (3))

(72) BY-PHRASE PASSIVE (PROPERTY 11):
  surat ini di-tulis **oleh sekretaris**   INDONESIAN
  letter this PASS-write by   secretary
  'This letter was written by the secretary.' (Sneddon 2010:257)

Investigating these properties in Javanese, it is known that this language behaves like Indonesian in that it also possesses both the non-demoted agent passive and the by-phrase passive (Horne 1961, Robson 1992). Examples of the non-demoted agent passive are illustrated in (73)a with the first person and (73)b with the second person, both from recorded speech in Paciran Javanese.

(73) NON-DEMOTED AGENT IN PASSIVE (PROPERTY 5):   PACIRAN JAVANESE
  a. jeneng-e wong   tuo, engko apan jibrat,   he eh yu...
      name-DEF person old, later when pee.in.bed, yes   sister...

      najis yo **tak   dusi**
      filth yes 1SG.CL bathe
      Translation offered: he's just an old man, later when he's had an accident in bed, yes, sister, becoming dirty, then I give him a bath' (Feb19-11-BZkemantenan; 2:42-2:48)

  b. nang engko nek aku reng kanada....
      to   later if 1SG to   Canada....

      ngomong boso   inggris lak **pok   guyu**.... lah yo....
      AV.speak language English PRT 2SG-CL laugh   PRT yes
      'Later if I go to Canada [and I] speak English, you [will] laugh .'
      (Lit. '... [my] speaking English [is] laughed at by you.')
      (ELAN_May1_11_IJ_Haris2; 12:20-12:26)

Another example of the non-demoted agent passive in Paciran Javanese is given in (74) from elicitation. This example shows clearly the agent is non-demoted, as it appears

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[88] Furthermore, Travis (2008) points out that the non-demoted agent passive allows a nominative anaphor (property 6) while the by-phrase passive does not in Indonesian, providing further evidence that the non-demoted agent passive acts fully as a 'B-type language' while the by-phrase passive acts fully as an 'A-type language'.

below the lowest TAM marker *iso*, following arguments from Chung (1976), Cole and Hermon (2005), Sneddon (2010) on Indonesian.

(74) mejo-ne   iso **tak** /**pok**   gotong
      table-DEF can 1SG.CL/2SG.CL gotong
      'I can lift the table / Offered: 'You can lift the table.' (15nov11.001, 002)

Paciran Javanese also has the by-phrase passive, exemplified in (75) whereby the verb has the prefix *di(k)*- and the demoted agent is introduced by *karo* 'with, by'.[89] Just as in English, the by-phrase is optional in Javanese, shown in (76) from recorded speech.

(75) BY-PHRASE PASSIVE (PROPERTY 11):
      sego-ne di-pangan **karo** Fina   PACIRAN JAVANESE
      rice-DEF PASS-eat   with Fina
      'The rice was eaten by Fina.' (5june12_001)

(76) dadi   dek-ne   sek dik gaji...
      become 3SG-NE   still PASS salary...
      Translation offered: 'so she gets salary [from the boutique].'
      (Lit. So she is salaried [by the boutique].')
      (Feb19-11-BZkemantenan; 18:36-18:38)

Beyond properties 5 and 11 concerning different types of passive constructions, Javanese behaves just like Indonesian with respect to all other properties. For example, Javanese also uses the cleft strategy for argument wh-constructions (property 2) while adjuncts use a different mechanism to extract (property 4). This pattern is an example of another language that is in conflict with the proposed X/XP parameter, in flux of being an A-type and a B-type language. The main issue that arises for languages like Indonesian and Javanese is how to deal with the conflict between A-type and B-type language properties.

For Indonesian, in order to reconcile this fluctuation with respect to the X/XP parameter, Travis (2008) suggests that the syntactic domains of CP, IP and vP/VP can each be separate domains where the X/XP parameter is employed. She suggests the A-type vs. B-type language properties in Indonesian are relative to these different syntactic domains as illustrated in Tree 3 below.

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[89] In Javanese, just as in Indonesian, the 'by' preposition (*karo* in Javanese, *oleh* in Indonesian) is optional. However, this passive still seems to have a number of English properties such as disallowing nominative anaphors (Arka and Manning 2006, Travis 2008).

Tree 3. A-type vs. B-type language properties are relative to syntactic domains
(adapted from Travis 2008:1600, (37))

CP

CP Domain:
    ALWAYS B
        - *wh*-cleft

Spec

C⁰

IP

DP

I⁰

IP Domain:
    SOMETIMES B
        - non-demoted agent/nominative anaphor
    SOMETIMES A
        - by-phrase/*nominative anaphor

*v*P

DP

*v*⁰

VP

***v*P/VP Domain:**
    ALWAYS A
        - derived objects
        - *direct* VP
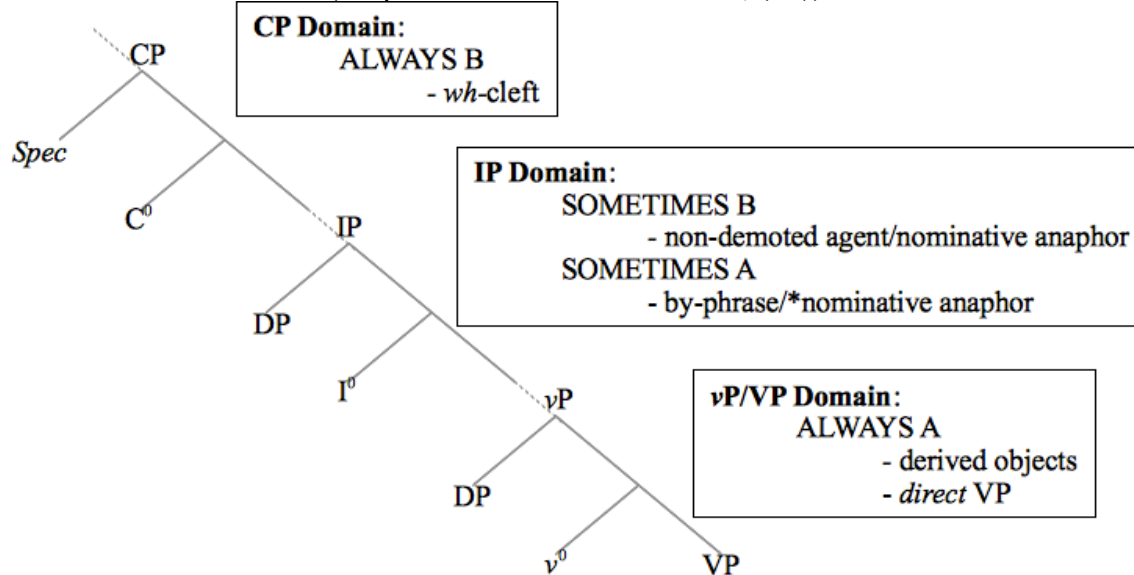
Specifically, Travis (2008) suggests that each domain behaves differently in Indonesian: the *v*P/VP domain is always set as an A-type language, the IP domain can fluctuate between the two, and the CP domain is always set as a B-type language.[90]

I suggest that Javanese syntax is also relative to these syntactic domains as proposed for Indonesian in Travis (2008), given that Paciran Javanese shares the same 11 properties with Indonesian, as outlined in Table 5 above. However, I suggest that the CP domain also allows A-type properties in Javanese.

Having situated Javanese syntax within the X/XP parameter, the research on the syntax of TAM markers in this dissertation appears to underline such variation between the A-type and B-type language properties. I show in particular that the CP domain in Javanese seems to allow A-type language properties in addition to B-type. In particular, what I want to add to this picture of fluctuation are two points: (i) VP-topicalization/subject-auxiliary answers constructions are another property indicative of A-type language properties in that it involves spec-to-spec XP-movement and (ii) auxiliary fronting in Paciran Javanese is indicative of B-type language properties in that

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[90] The variation across syntactic domains points towards language change in progress in Indonesian. It is noticeable that the change seems to be happening up the spine (similar to grammaticalization processes, e.g. Bybee et al. 1994). That is, A-type properties in the vP domain seem to be extended to the IP domain. We might expect next that they are extended to the CP domain, as I suggest for Javanese. What is important to note is that the properties seem to be gradual as extended up the spine, and not something like A-B-A.

the derivation involves roll-up movement (specifically, remnant XP-movement) and not a special type of head-movement as proposed in Cole et al. (2008). These derivations are illustrated below in §4 and §5.4. First, however, I introduce some basic syntactic tools.

3.2 Syntactic domains in Paciran Javanese

The main point in this section concerns the structural distinction between the two types of auxiliaries in Paciran Javanese. As shown in Chapter 3, there is a strict relative order imposed among TAM auxiliaries in Paciran Javanese. Strikingly, we have seen that the two classes of auxiliaries can be divided according to their strict relative order with 'high' auxiliaries *wes, lagek, kudu, ape* on one side and 'low' auxiliaries *tau, oleh, iso* on the other side. This structural distinction is summarized in Table 1, repeated here:

Table 1. Two classes of auxiliary TAM markers in Paciran Javanese

HIGH AUXILIARIES		LOW AUXILIARIES	
wes	*kudu*	*tau*	*oleh*
'PERF'	'deontic.must'	'EXP.PERF'	'deontic.may'
lagek	*ape*		*iso*
'PROG'	'FUT'		'can'

In the proposed analysis, I capitalize on this structure distinction as a crucial element that relates all three syntactic constructions that partition TAM auxiliaries in Paciran Javanese.[91] Specifically, I suggest that there are two separate syntactic domains.

That high and low auxiliaries are in separate syntactic domains is suggested for instance by the distinct properties of auxiliary fronting in yes-no questions in Paciran Javanese. For example, in the 'high auxiliary domain', auxiliaries cannot front, while in the 'low auxiliary domain', auxiliaries can. Although v/V^0 cannot front, similar to auxiliaries in the high auxiliary domain, I argue that this does not constitute a separate syntactic domain. Instead, I propose that the different properties of low auxiliaries and v/V^0s are due to their distinct grammatical category and not because of their different syntactic height. I argue that these two domains are separated by a maximal projection (which I call MP) which is always present in the syntax. I suggest this position is an intermediate comp-like position in that it supplies a landing site for movement. These

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[91] Note that I suggest below in §5.3 that a featural distinction between the two types of auxiliaries is still necessary in the derivation of yes-no questions.

domains are exemplified in Tree 4 below, where the low auxiliary domain is dominated by an intermediate clausal projection, MP.

Tree 4. Two syntactic domains of auxiliaries in Javanese
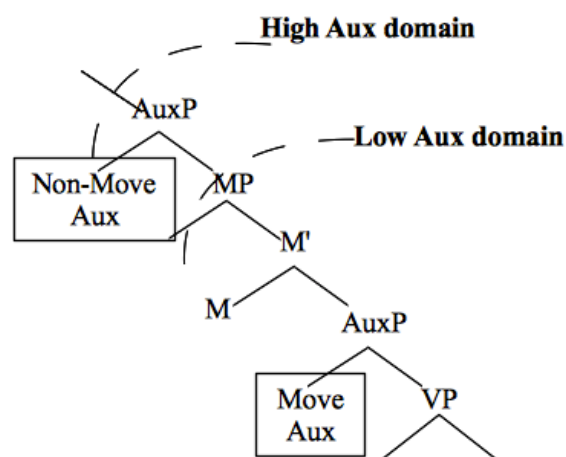
I propose that the intermediate complementizer-like position MP constitutes a phase of the extended vP domain (in the sense of Grimshaw 1991, 2000). Following general syntactic principles regarding the properties of phases, I assume the Phase Impenetrability Condition (PIC, Chomsky 2001). The PIC is spelled out in (77) where HP = [α [H β]]. The domain of H is defined as β, and the edge of H is α.

(77)   **Phase Impenetrability Condition** (PIC) (Chomsky 2001):
        In phase α with head H, the domain of H is not accessible to operations outside α, only H and its edge are accessible to such operations.

Thus, for anything within the domain of M in Tree 3 above to be accessible to an operation outside of M, the item must move to M or the specifier of MP to be able to extract.

        Before turning to the proposed analysis for VP-topicalization and subject-auxiliary answers, I want to first discuss the proposal of MP as a comp-like position and as a phase in light of cross-linguistic work on these two areas. Consider first MP as a comp-like maximal projection. This proposal is similar to proposals such as Belletti (2004) in which a comp-like domain is argued to exist above vP including Topic, Focus, and Fin(ite) phrases, parallel to the split CP domain as proposed by Rizzi (1997).

Additionally, a clause-medial focus/topic projection above *v*P has been argued to hold as a landing site for different word orders in focus constructions such as in Hungarian (Kiss 1987, 1995; Farkas 1986; Horvath 1995), Malayalam (Jayaseelan 2001), Chadic (Tuller 1992), Atayalic languages (Aldridge 2004), archaic Chinese (Aldridge 2010). While it is unknown at this point what the exact 'label' of this maximal projection is, it is important to note that a clause-medial A'-position above *v*P seems to be available across many languages.

Secondly, I propose that MP is a phase in Javanese. The main question that arises concerns the location of MP and its nature as a phase. Specifically, it is widely accepted that *v*P is a phase (e.g. Chomsky 1986, 2000). Many researchers have found cross-linguistic evidence for the successive-cyclic movement through the specifier of *v*P, such as in Tagalog (Rackowski and Richards 2005). We could then consider that MP is the '*v*P' phase in Javanese. That is, items that appear to pass through the edge of actual *v*P are in fact passing through the edge of MP in Javanese. This may seem to be quite high given that MP > *low*AuxP > *low*NegP > *v*P in Paciran Javanese. Yet it is not always clear how far up the spine '*v*P' may be considered to be, as work on *v*P phases may not always show the interaction with negation or other auxiliaries. In work on archaic Chinese, Aldridge (2010) proposes that there is a clause-medial *v*P phase for wh-object focus movement and strikingly, this projection is above NegP. In work on scope reconstruction, Fox (1999) concludes that there must be a position between the subject and the object for reconstruction. Fox (1999) suggests that this landing site could be adjunction to VP, but it could potentially be anywhere between the subject and the object. Therefore, the location of MP above both low TAM auxiliaries and NegP as a phase seems to be compatible with such findings. However, I remain agnostic in my proposal on the exact label of MP and whether there is only one low phase (MP) or two (MP and *v*P); more work needs to be done in general in the syntactic area above *v*P and its interaction with phases.

In the following section, I propose an analysis for the derivation of VP-topicalization (§4.1) and subject-auxiliary answers (§4.2). In the derivation of both constructions, I exploit the fact that there is a structural distinction between high and low auxiliaries.

4   Derivation of VP-topicalization and subject-auxiliary answers

In this section, I propose a syntactic derivation for two of the constructions that distinguish high vs. low TAM auxiliaries in Paciran Javanese: VP-topicalization and subject-auxiliary answers to yes-no questions. I argue that the structural distinction between high and low auxiliaries is crucial to our understanding of both these derivations. In particular, the two classes of auxiliaries in Paciran Javanese in the proposed derivation are mediated by a maximal projection, MP. These two syntactic constructions are presented together because, I argue, VP-topicalization and subject-auxiliary answers have the same basic derivation. Specifically, I propose that they differ only in the fact that the topicalized VP is overt in VP-topicalization, but phonologically deleted in subject-auxiliary answers. I now turn to the details of each derivation: VP-topicalization in §4.1 and subject-auxiliary answers in §4.2.

4.1   Derivation of VP-topicalization

In the case of VP-topicalization, I appeal to the structural distinction between the high auxiliary domain and the low auxiliary domain. Specifically, MP is always present and dominates the low auxiliary domain. As outlined in the above section on the relevant theoretical background on syntax, §3, I suggest that MP is an intermediate comp-like projection. The proposal that this is a phase edge in Javanese becomes particularly important in deriving VP-topicalization.

Consider the following example with a low auxiliary in Paciran Javanese such as *oleh* 'allow' in (78), whose derivation is demonstrated in Tree 5 below. With a low auxiliary, due to the PIC, in order for the VP to be accessible to further operations, VP must raise to the specifier position of the intermediate comp-like projection, MP.[92] Once TopicP has Merged (after the TopicP that hosts the subject), VP then continues to raise from Spec,MP to satisfy a V feature from Top^0, as outlined in Tree 5 below.

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[92] I use 'VP' here for convenience, but as I have shown above concerning the properties of VP-topicalization, technically it is vP that raises.

(78)   Context: *Opo mbak Jozina oleh nganggo celono reng ngaji?* (Can Jozina wear
       pants to Holy Qur'an?)
       nganggo   celono reng ngaji, Jozi **oleh**.
       AV.wear   pants to   *ngaji*, Jozi allow
       'What Jozi is allowed to do is wear pants to Holy Qur'an.' (7.03.2011)

Tree 5. VP-topicalization with a low auxiliary
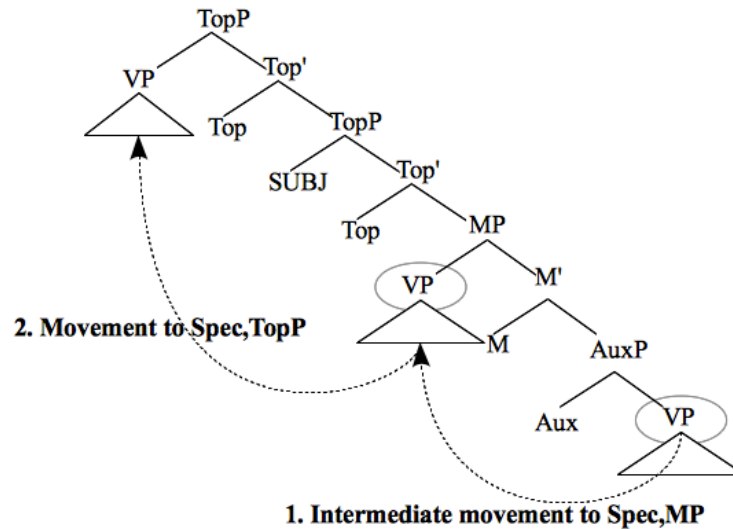
The above derivation in Tree 5 illustrates the spec-to-spec movement of VP from
Spec,MP to Spec,TopP. This type of movement is suggested to be exemplary of A-type
language properties in the proposed X/XP parameter (Travis 2005, 2006).

       With a high auxiliary such as the future marker *ape* in (79) below, VP-
topicalization is not possible because of locality constraints. I assume that MP is always
present as part of the universal spine as an intermediate comp-like position at the edge of
the extended vP domain, despite the fact there is no low auxiliary. I suggest that MP
marks a phase edge, and therefore any extraction from this lower phase must occur
through this projection. However, VP-topicalization is ungrammatical with a high
auxiliary because without the presence of a lower auxiliary, VP movement will violate
the anti-locality principle whereby complements cannot move to the specifier of the
projections that selects it (Abels 2003). This proposal is outlined in Tree 6 below.

(79) Context: *Opo Bu Zumaroh ape masak iwak botok?* (Will Bu Zumaroh make grilled fish?)

    * Masak   iwak   botok, Bu   Zumaroh **ape**
      cook   fish   botok, Mrs. Zumaroh FUT
      ('Cook grilled fish in banana leaves, Bu Zumaroh will.') (7.03.2011)

Tree 6. *VP-topicalization with a high auxiliary
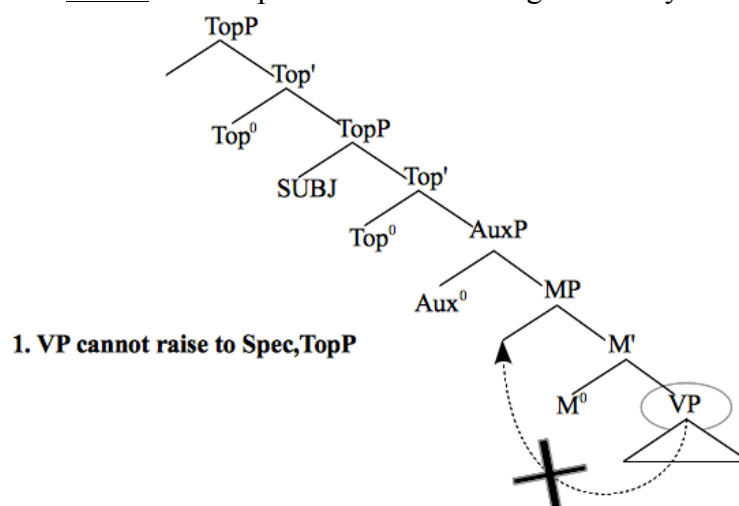
On this view[93], the fact that VP-topicalization can only occur with low auxiliaries and not with high ones is purely a result of the structural relationship between VP and the phase edge, MP. It does not have to do with the semantic properties of low auxiliaries or a special syntactic feature. For instance, we do not have to resort to any notions of licensing in the sense of properly governing a trace as under a Government and Binding framework (Chomsky 1981).

Instead, under this analysis, VP-topicalization is 'licensed' under the structural guise of a locality constraint following (Abels 2003). The locality requirement is that the VP must be low enough to be able to raise to the specifier of the MP phase edge. This analysis predicts that as long as there is at least one low auxiliary, movement to the specifier of MP for further extraction is possible. This prediction is compatible with the properties of VP-topicalization, as presented in §2.1 above: high auxiliaries do not block

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[93] Note that this view is different from Cinque (1999) in that it assumes that if a lexical item is not present, then the syntactic projection is also absent. However, I assume that MP is always present as it is an integral part of the structure of the clause.

movement as long as there is a low auxiliary present, and more than one low auxiliary can be present. These facts are easily accounted for under this analysis.

4.2   Derivation of subject-auxiliary answers to yes-no questions

In this section, I turn to the derivation of subject-auxiliary answers to yes-no questions, an additional construction that I have found to partition the TAM auxiliaries in Paciran Javanese into the same two classes. I argue that this construction has a near-identical derivation to that of VP-topicalization. Specifically, I propose that subject-auxiliary answers involve VP-topicalization followed by phonological deletion of the VP. Thus, in a topic-comment construction, only the comment is uttered as the answer to a yes-no question.

For subject-auxiliary answers with a low auxiliary, this derivation is possible given the anti-locality constraint that a complement of a head cannot raise to the specifier of that same head (Abels 2003). In this case, shown in Tree 7 below, the VP is low enough to move to the edge of the phase in the specifier of MP before then raising further to a high TopicP (as shown above with VP-topicalization). The topicalized VP then undergoes deletion and only the subject plus the low auxiliary is overt, illustrated in Tree 7 for an answer as in (80).

(80) A: sampeyan tau   ke-temu pacar-mu   nok segoro toh   gak?
           2SG   EXP.PERF   KE-meet girl/boyfriend-your   at   ocean   PRT   NEG

      B: iyo, aku   **tau**
           yes   1SG   EXP.PERF
           A: 'Have you ever met your girl/boyfriend at the ocean or not?' B: 'Yes, I
           have.' (6june2012)

Tree 7. Subject-auxiliary answer with a low auxiliary
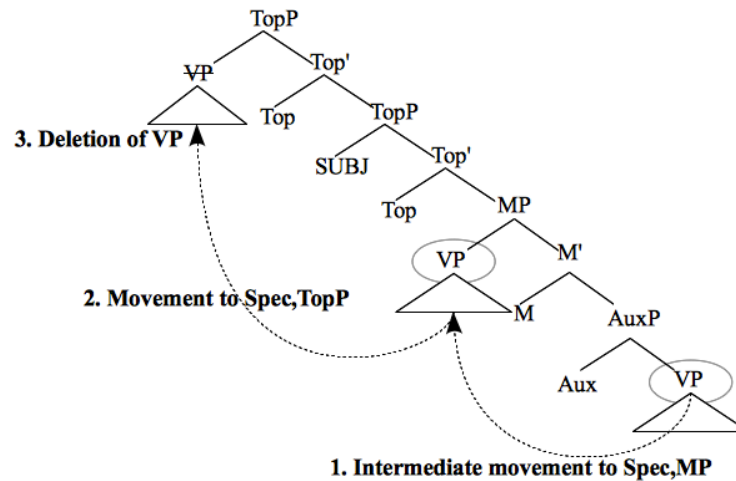
Parallel to the derivation of VP-topicalization with high auxiliaries, subject-auxiliary answers with only a high auxiliary are likewise ungrammatical, as in (81). The ungrammaticality, I argue, is due to the same principle as with VP-topicalization: the VP cannot escape the phase because it is not in a syntactic configuration to do so as the complement of the head of the MP phase. Following Abels (2003), movement of a complement to the specifier of the head that selects it is not possible. This anti-locality principle forbids this structure as a possible derivation, exemplified in Tree 8 below.

(81) A: mbak Mayu ape   nikah   toh?
         Miss   Mayu FUT   AV.marry   PRT

     B: * iyo, Mayu **ape**
        yes   Mayu FUT
        A: 'Will Miss Mayu marry?' B: ('Yes, Mayu will.') (21may2012.075)

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Tree 8. * Subject-auxiliary answer with a high auxiliary
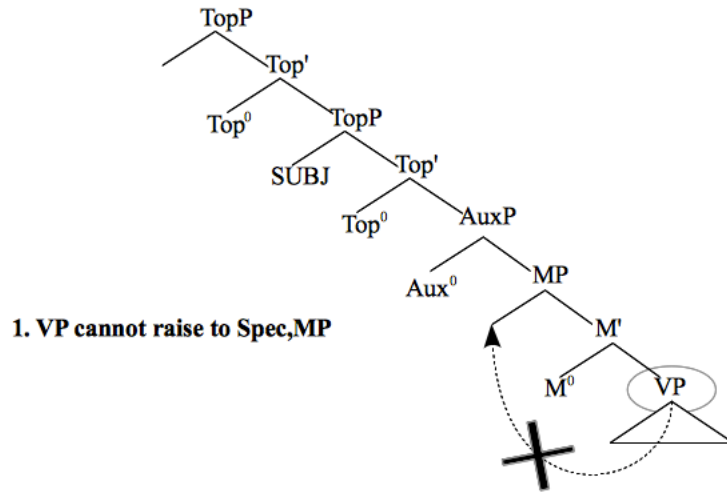
To summarize this section, I have suggested that a second construction that partitions TAM auxiliaries into two classes, subject-auxiliary answers, can be derived in the same manner as VP-topicalization but with the additional step that the topicalized VP is deleted at PF. In assuming this near-identical derivation, I therefore expect that the same predictions would hold. That is, I would expect that subject-auxiliary answers are grammatical as long as there is a low auxiliary; there could be two successive low ones or a sequence of a high plus a low auxiliary. This prediction is borne out: examples (82) with *wes* 'PERF' > *iso* 'can' and (83) with *wes* 'PERF' > *tau* 'EXP.PERF' both show that it is grammatical to have a subject-auxiliary type answer with a high plus a low auxiliary.

(82) A: wes iso toh Bebi ngomong?
         PERF can PRT Bebi AV.speak

     B: Iyo, Bebi **wes iso**.
         yes   Bebi PERF can
         A: 'Can Bebi already speak?' B: 'Yes, Bebi already can.' (6may2012)

(83) A: opo wes tau   toh mbak Halima ke-temu SBY?
         PRT PERF EXP.PERF PRT Miss Halima KE-meet SBY

     B: Iyo, mbak Halima **wes tau**.
         yes   Miss Halima PERF EXP.PERF
         A: 'Has Miss Halima ever met SBY?' B: 'Yes, Miss Halima once has.'
         (6may2012)

In sum, just as with the derivation of VP-topicalization, the derivation for subject-auxiliary answers to yes-no questions also crucially relies on the presence of MP, which I have suggested to be an intermediate clausal projection and a phase edge in Javanese. It does not rely on a specific characterization of low vs. high auxiliaries in terms of syntactic or semantic features.[94]

5 Derivation of auxiliary fronting in yes-no questions

Before turning to my proposal for the derivation of auxiliary fronting in yes-no questions, the third syntactic construction that partitions the set of TAM auxiliaries into high and low auxiliaries, there are two points that I want to discuss. First, in §5.1 I look into a head-movement account for auxiliary fronting in yes-no questions, as proposed in Cole et al. (2008) for the dialect of Peranakan Javanese, as a possible alternative to an XP-movement account that I propose. However, there are a number of properties of Javanese that I bring to the table. Each points towards an XP analysis. Among these properties, for instance, I bring to light evidence from other strategies of forming yes-no questions, namely auxiliary fronting with particle *opo* or *toh*, that shows the fronted element can be phrasal (XP) and not an X^0. Additionally, the feature analysis I propose within a XP-remnant movement account lends itself easily to the distinction between fronting one vs. multiple auxiliaries as seen between, for example, the dialects of Paciran Javanese and Peranakan Javanese (Cole et al. 2008). The combination of these factors all lean towards an XP-remnant movement analysis.

In §5.3, I introduce additional theoretical syntactic background that is required for an XP-movement account of auxiliary fronting in yes-no questions. Specifically, I discuss the use of syntactic features and XP-remnant movement. Finally, in §5.4 I present my analysis for auxiliary fronting in yes-no questions in Paciran Javanese. While further research is necessary to fine-tune this analysis, I argue that a main advantage of the XP-remnant movement analysis is that relates to the status of Javanese as between an A-type and a B-type language.

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[94] In the derivation of auxiliary fronting, I suggest that features are necessary to distinguish low vs. high auxiliaries, but the exact label of this feature is not identified. In terms of selectional restrictions of the external argument or complement restrictions, I show in §5.5 below that there does not seem to be any independant evidence for semantic or syntactic specific features, although further research is necessary to better understand their semantics.

5.1 A head-movement account?

A head-movement account appears to straightforwardly capture the properties of yes-no questions in Paciran Javanese. In this construction for Paciran Javanese as shown in §2.3 above, only one auxiliary may front, it must be the highest auxiliary, and movement is blocked by higher (non-)moveable auxiliaries. Recall that the auxiliaries that cannot undergo subject-auxiliary inversion are *wes* 'PERF', *lagek* 'PROG', *ape* 'FUT', *kudu* 'deontic.must'; these are structurally high auxiliaries. A subset of structurally low auxiliaries can undergo subject-auxiliary inversion. These are *tau* 'EXP.PERF', *oleh* 'deontic.may', *iso* 'can'.

In terms of an X^0-movement account, I have suggested in Chapter 3 that the auxiliaries are heads and not located in a specifier position of a maximal projection; their syntactic position is therefore compliant to a head-movement account. For instance, X^0-movement restricts movement of only a head which could intuitively explain why auxiliary-fronting is limited to one lexical item in Paciran Javanese. Further, X^0-movement is local (e.g. Head Movement Constraint (Travis 1984); 'Attract Closest' (Richards 2001)). This would restrict movement of the auxiliaries to the highest moveable auxiliary and provide a natural explanation of why movement of a lower auxiliary is blocked in the case of the presence of a higher auxiliary.

These facts can be illustrated with the English data with the auxiliaries *has, been,* where subject-auxiliary inversion is widely accepted to be derived via X^0-movement. Specifically, X^0-movement restricts movement of only one head, *has* (cf. (84)b, c) and this head must be the highest (cf. (84)b, d); movement of a lower auxiliary is blocked by the presence of a higher one.

(84) a. Francis **has been** eating poutine lately.
    b. **Has** Francis **been** eating poutine lately?
    c. * **Has been** Francis eating poutine lately?
    d. * **Been** Francis **has** eating poutine lately?

A sketch of an X^0-movement account is given in Tree 9 below, where the auxiliary (in Aux^0) moves to T^0. The complex head then raises again to C^0. The surface word order is then [auxiliary-subject....], resulting in subject-auxiliary inversion.

Tree 9. Head-movement account
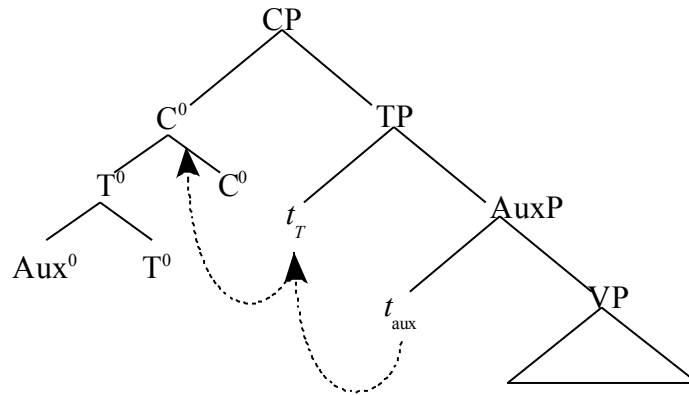
The properties outlined above seem to indicate that an X^0-movement analysis is on the right track; this is indeed what Cole et al. (2008) propose for the Peranakan dialect of Javanese, spoken by ethnic Chinese in Semarang, Central Java, on the basis of this type of yes-no question. However, applying a head-movement account to this phenomenon in Javanese is not such a trivial matter. In particular, there are two properties different from English that must be accounted for in Javanese. One, while all auxiliaries in English are moveable, only a subset of auxiliaries in Paciran Javanese is moveable: *tau* 'EXP.PERF', *iso* 'can', *oleh* 'allow'. How can these two types of auxiliaries be distinguished under an X^0-movement analysis? The second point is related to the structural position of the moveable auxiliaries in Javanese; namely, the moveable ones are the ones that are low in the structure. This fact is already curious as under a head-movement account, we would intuitively expect the opposite to hold: that the moveable ones are structurally high, while the non-moveable ones are structurally low, given syntactic principles such as superiority effects.

The differences between Javanese and English can be captured via syntactic features under the general assumption within a Minimalist framework that all movement is driven by features (e.g. Chomsky 1995). Cole et al. (2008) propose such an account for Peranakan Javanese; I review their account here as one example of how the distinction between moveable auxiliaries and non-moveable ones is encapsulated, although I do not adopt their proposal here.[95] Under their account, this distinction is based on "symbiotic

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[95] Here, I focus only on the analysis by Cole et al. (2008) of how moveable vs. non-moveable auxiliaries are proposed to differ. Cole et al. (2008) further develop this head-movement analysis to account for multiple auxiliary fronting in Peranakan Javanese by positing an optional feature [+multiple] that indicates

attraction" whereby there are two uninterpretable features on separate heads that must be satisfied.[96]

In a head-movement account in Cole et al. (2008), the tension between blocking and movement in the case of a yes-no question in Javanese is played out as follows. The probe C^0 has an optional uninterpretable feature [uA] that must be checked by a goal [+V]. It can be checked by either a high auxiliary or a low auxiliary, which are assumed to both have the feature [+V], as they are of the same grammatical category (Cole et al. 2008:22). The low, moveable auxiliary differs from the high, non-moveable one in that the low auxiliary has a second feature, an uninterpretable [uF] that must be satisfied by C^0, but is not itself required by C^0. Therefore, "…movement occurs only when the featural needs of both heads are satisfied" under symbiotic attraction (Cole et al. 2008:22). An analogy can be demonstrated with how nominative case is assigned: there are two uninterpretable features on separate heads, one on T and one on D, both of which must be satisfied (see e.g. Adger 2003). I have sketched Cole et al.'s (2008) proposal in Tree 10:

Tree 10. Symbiotic attraction (Cole et al. 2008)
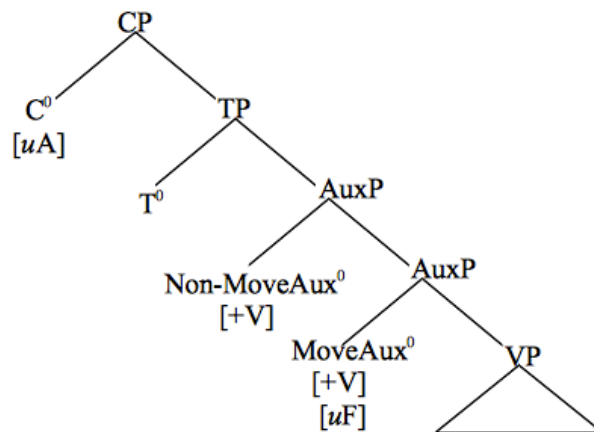
The featural differences therefore underlie the distinction between low and high auxiliaries in Javanese. Cole et al. (2008:31, (22)) argue that these featural distinctions

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tucking-in à la Richards (2001) but for X^0. The dialect of Paciran Javanese does not allow multiple auxiliaries to front in yes-no questions without the overt presence of a question particle. I do not review Cole et al.'s tucking-in proposal here.

account for the blocking (Head Movement Constraint) effects via the Minimality Link Condition (Richards 2001), spelled out in (85).

(85) <u>Minimal Link Condition (MLC):</u>
      α can raise to target K only if there is no legitimate operation Move β targeting K, where β is closer to K.

Thus a moveable auxiliary cannot raise to the target C^0 in the presence of a higher non-moveable auxiliary because the non-moveable auxiliary is a legitimate goal: it also satisfies C^0 by virtue of its categorial features ([+V]) and is closer to the target C^0. However, in Cole et al.'s (2008) system, the high auxiliary does not itself move because it is not motivated by any feature. Only the low auxiliary can move, driven via Agree of the uninterpretable feature [uF] on the low Aux^0 with C^0 and then Attract. It is not clear from their account what feature on C^0 values [uF]. Note that the low auxiliary can also stay in situ, an option whose implementation in this framework Cole et al. (2008) do not discuss.

In sum, Cole et al. (2008) present one way that a head-movement account can be implemented. As discussed above, this account relies solely on features to distinguish high, non-moveable auxiliaries from low, moveable auxiliaries. While this account can capture the data, it is construction-specific, and would not easily extend to account for VP-topicalization or subject-auxiliary answers, the other two syntactic constructions that partition the set of TAM auxiliaries in the same manner. Further, a head-movement analysis misses the intricacy of Javanese syntax as being in flux within syntactic domains between an A-type language and a B-type language along the X/XP parameter (Travis 2005, 2006). Also in terms of situating Javanese syntax, historically, Old Javanese is reported to have VSO word order (Zoetmulder 1974, Hunter 1999, Oglobin 2005). Within the Austronesian family, the many languages that are V-initial are argued to be derived via XP-movement: for example, Niuean (Massam and Smallwood 1997; Massam 2000, 2001; Oda 2005), Malagasy (Pearson 2001, 2005; Rackowski and Travis 2000; Travis 2005; Potsdam 2007), Tagalog (Rackowski 1998) Seediq (Aldridge 2004; Holmer 2005), Toba Batak (Cole and Hermon 2008), etc. See Potsdam (2009) for an overview of these types. These factors suggest that an account of auxiliary fronting in yes-no questions via phrasal movement is not untenable for Javanese.

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Therefore, in §5.4, I propose an alternative derivation that involves XP-movement. Importantly, I show that this derivation syntactically relates to the other two constructions that observe this same partition. First, however, I would like to present additional data from a different type of yes-no question that provides evidence that the fronted element can be an XP and not an X^0 in Paciran Javanese. Although this is a different strategy, it shows that it is possible for an XP to front in yes-no questions in Paciran Javanese.

5.2   Evidence that the fronted element can be an XP in Paciran Javanese

In this section, I show that the strategy of forming a yes-no question in Paciran Javanese with the particle *opo* or *toh* combined with auxiliary fronting suggests that the fronted element must be phrasal and not a head. With this strategy, (i) multiple auxiliaries can front and (ii) an auxiliary plus an adverb can front in Paciran Javanese. This is distinct from the strategy of plain auxiliary fronting in this dialect, where only one low auxiliary can front. Although the derivation of this yes-no question construction is not yet understood nor its exact relation to plain auxiliary fronting, the point I want to make is that the data on auxiliary fronting with *opo* or *toh* shows that it is not impossible to front an auxiliary XP in Paciran Javanese. It may be that the syntax or semantics underlying plain auxiliary fronting compared to auxiliary fronting with *opo* or *toh* is different, but the fact that auxiliary XP fronting occurs in the strategy with question particles tells us that XP-remnant for plain auxiliary fronting is a possible syntactic derivation in this dialect. I will discuss additional factors that also point towards an XP-movement analysis in §5.3 and §5.4 below.

These different strategies in forming yes-no questions discussed in this section have not been documented or recognized before in the literature on Javanese syntax.[97] In what follows, I present both co-occurrence strategies (fronting with either particle *opo* or *toh*) together because it appears that their properties are identical.

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[97] In work on auxiliary fronting in yes-no questions in Peranakan Javanese, Cole et al. (2008) analyze yes-no questions with and without the particle *apa* the same way. In their view, the only difference is whether *apa* is present in the head of a recursive CP or not. The yes-no question particle *toh* or identifying other strategies of forming a yes-no question is not discussed in their paper on Peranakan Javanese. Given that the properties with or without a question particle are shown to be distinct in Paciran Javanese, we might expect to find distinctions as well in other dialects such as in Peranakan Javanese.

In terms of their properties, just as with the strategy of auxiliary fronting by itself, the co-occurrence of auxiliary fronting plus the question particle *opo* or *toh* partitions the set of TAM auxiliaries into two groups. However, what is striking is that with the addition of a question particle, there are fewer restrictions as to what can front or not. The first property concerns which TAM auxiliaries can front or not and the second property concerns the size of the fronted element.

Turning to the first property, while the low auxiliaries *tau, oleh, iso* can all front with the particle *opo* or *toh*, additionally high auxiliaries *lagek* and *kudu* are able to front, which are non-moveable without such particles. The high auxiliaries *wes, ape*, however, remain non-moveable even with these particles. This partition is given in Table 7 here (cf. Table 1 above), where **bold** indicates that the auxiliaries can front with the particle *toh* or *opo*, and <u>underline</u> indicates that these auxiliaries cannot front even with these particles.

Table 7. Two classes of auxiliary TAM markers in Paciran Javanese

HIGH AUXILIARIES		LOW AUXILIARIES	
<u>*wes*</u> 'PERF'	**kudu** 'deontic.must'	*tau* 'EXP.PERF'	*oleh* 'deontic.may'
lagek 'PROG'	<u>*ape*</u> 'FUT'		**iso** 'can'

It is clear that the structural distinction between high and low auxiliaries that is prominent with plain auxiliary fronting in yes-no questions, VP-topicalization and subject-auxiliary answers is not met with these co-occurrence strategies. The following examples illustrate this different grouping.[98] First, as expected, the low auxiliaries like *tau* 'EXP.PERF', (86)a, and *oleh* 'allow', (86)b, can still front with the addition of a question particle, either *opo* or *toh*.

(86) a. **opo tau** bu Risa melayu sampek rong puloh menit?
   what EXP.PERF Mrs. Risa run until 2 10 minute
   'Did Risa once run up to 20 minutes?' (15dec11T.008)

   b. **oleh toh** aku jakok tulung?
   allow PRT 1SG request help
   'May I ask for your help?' (14Feb11.022)

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[98] The fact that the partition between high and low auxiliaries is not a clear structural distinction given the TAM auxiliary fronting with particles *opo* or *toh* suggests that there could be semantic factors that play a role in what can front or not; this is a point for further research.

Secondly, with the addition of a question particle, auxiliaries *lagek* 'PROG, just' and *kudu* 'deontic.must' can now front to form a yes-no question. This is demonstrated with *lagek* in (87)a with *opo* and in (87)b with *toh*. Note that the inceptive aspect with *lagek* is prominent. There does not seem to be any difference in whether the particle is *opo* or *toh*.

(87) a. Context offered: *kapan Siti dolan karo Dewi? wes suwi toh?* (When is Siti playing with Dewi? Has it been long?)
opo lagek Siti dolan karo Dewi?
what just   Siti visit   with Dewi
'Is Siti just playing with Dewi?' (15dec11T.097)

b. A: aku ke-temu misanan-mu.
1SG KE-meet cousin-your

B: **Lagek tas toh**   awakmu ketemu   misanan-ku?
just   justPRT 2SG   KE-meet cousin-my
A: 'I met your cousin.' B: 'Did you JUST meet my cousin?'

Third and finally, the non-moveable auxiliaries *wes* 'PERF' and *ape* 'FUT' remain non-moveable with the addition of a question particle. This is shown by the ungrammaticality in (88)a, where *wes* is fronted with *opo* and in (88)b, where *wes* is fronted with *toh*.

(88) a. * **opo wes** Sri   melaku?
what PERF Sri   walk
('Is Sri already walking?') (15dec11T.072)

b. * **wes toh** Heru   alon-alon mangan soto?
PERF PRT Heru   slowly   AV.eat   soto
('Had Heru eaten soup slowly?') (8dec11T.004)

The data by itself as presented above on the co-occurrence of auxiliary fronting and the use of a particle (*opo* or *toh*) could also be compatible with a head-movement account. However, the following data on the size of the fronted element suggests that XP-movement is involved instead for this type of yes-no question.

For the dialect of Javanese spoken in Paciran, the presence of a question particle (*opo* or *toh*) allows multiple auxiliaries to front, providing that they respect the strict relative order established in Chapter 3. Recall that auxiliary fronting by itself only allow

maximum one auxiliary to front in Paciran Javanese, as shown above in §2.3.4.[99] For example, two moveable auxiliaries such as *tau* 'EXP.PERF' and *oleh* 'allow' can both front with the particle *opo*, (89)a, or with *toh*, as in (90)a. Note that these auxiliaries must occur in their strict relative order in the fronted position; deviation from this order results in ungrammaticality, as in (89)b and (90)b. Similarly, without the addition of these particles, these questions would be ungrammatical, as shown above for the properties of plain auxiliary fronting in §2.3.

(89) a. **opo tau   oleh** Yeni reng Jakarta?
         what EXP.PERF allow Yeni at   Jakarta
         'Was Yeni once allowed to go to Jakarta?' (15dec11T.030)

     b. * **opo oleh   tau**   Yeni reng Jakarta?
          what allow EXP.PERF Yeni at   Jakarta
          ('Was Yeni once allowed to go to Jakarta?') (15dec11T.031)

(90) a. **tau   oleh   toh** Yeni reng Jakarta?
         EXP.PERF allow PRT   Yeni at   Jakarta
         'Was Yeni once allowed to go to Jakarta?' (15dec11T.027)

     b. * **oleh   tau   toh** Yeni reng Jakarta?
          allow EXP.PERF PRT   Yeni at   Jakarta
          ('Was Yeni once allowed to go to Jakarta?') (15dec11T.029)

Multiple auxiliaries of the sequence 'non-moveable' and 'moveable' can also front with the occurrence of either the particle *opo* or *toh*, such as with *wes* 'PERF' > *iso* 'can' in (91)a, or with *ape* 'FUT' > *iso* 'can' in (92)a. Again, an order other than the strict relative order in the fronted position is ungrammatical. This data is striking, as we saw above in (88) that the single auxiliary *wes* or *ape* cannot front with a question particle *opo* or *toh*.

(91) a. **opo wes iso** Sri melaku?
         what PERF can   Sri walk
         'Can Sri already walk?' (15dec11T.074)

     b. * **opo iso wes** Sri melaku?
          what can PERF Sri walk
          ('Can Sri already walk?') (15dec11T.075)

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[99] Other dialects, such as Peranakan Javanese, can have one, two or three auxiliaries fronting as shown in Cole et al. (2008) in plain auxiliary fronting. As mentioned earlier, Cole et al. (2008) analyze multiple auxiliary fronting as multiple head-movement via tucking in (à la Richards 2001).

(92) a. **ape iso toh** Hamida nggendhong Ayu?
 FUT can PRT Hamida AV.carry.on.hip beautiful
 'Is Hamida going to be able to carry Ayu?' (15dec11T.080 (offered))

 b. * **iso ape toh** Hamida nggendhong Ayu?
 can FUT PRT Hamida AV.carry.on.hip beautiful
 ('Is Hamida going to be able to carry Ayu?') (15dec11T.081 (offered))

Finally, (93) provides an example of fronting with the sequence of *wes* 'PERF' > *kudu* 'want'. With the addition of a question particle, *kudu* can now front. This sequence is similar to the above sequence whereby a non-moveable auxiliary followed by a moveable auxiliary has fronted, and must keep the relative order of the auxiliaries constant.

(93) a. **opo wes kudu** mbak Arik ndelok Ramayana?
 what PERF want Miss Arik AV.see Ramayana
 'Does Arik want to see the Ramayana ballet?' (15dec11T.176)

 b. * **opo kudu wes** mbak Arik ndelok Ramayana?
 what DEONT.must PERF Miss Arik AV.see Ramayana
 ('Does Arik have to see the Ramayana ballet?') (15dec11T.178)

(94) **wes kudu toh** mbak Arik ndelok Ramayana?
 PERF DEONT.must PRT Miss Arik AV.see Ramayana
 'Does Arik want to see the Ramayana ballet?' (15dec11T.172)

The fact that multiple auxiliaries can front with *opo* or *toh* strongly suggests that XP-movement is involved in the derivation and not X^0-movement. Specifically, this derivation would involve XP-remnant movement as only the auxiliaries with the particle is fronted, and not the VP as well.

One generalization here is that the lower auxiliary must be 'moveable' under the partition set out by yes-no questions with the presence of a particle *opo* or *toh*. This partition only includes *kudu* 'deontic.must', *lagek* 'PROG, just', *tau* 'EXP.PERF', *oleh* 'allow', *iso* 'can'.[100] While the mechanisms of this construction is not yet understood, this data lends itself easily to an XP-remnant movement analysis as the higher auxiliary (whether moveable like *tau* or non-moveable like *wes*) would simply be pied-piped along

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[100] This generalization would then predict that the sequence *wes* 'PERF' > *ape* 'FUT' would not be able to be fronted together, even with the occurrence of either the *opo* or *toh* particle. This prediction can be easily tested in future research on Javanese.

in the XP constituent. Under an XP-remnant movement analysis, it is no longer unexpected that normally non-moveable auxiliaries like *wes, ape* can front with low, moveable ones. Alternatively, an X^0-movement analysis would require tucking in (cf. Cole et al. 2008 for Peranakan Javanese) and it would be less clear why normally non-moveable auxiliaries like *wes* could then front.

In addition to multiple auxiliaries fronting, further evidence that the fronted element is an XP and not composed of a complex head for this type of yes-no question is shown by the fact that adverbs can also front alongside auxiliaries in Paciran Javanese with *opo* or *toh*.[101] This is exemplified in (95) with the auxiliary *iso* 'can' and the manner adverb *alon-alon* 'slowly'. These elements can front together in either order, just as these elements can appear in either order in a declarative clause. The presence of the particle *toh* is obligatory in (95); without the particle these yes-no questions are ungrammatical. In terms of an analysis with multiple head-movement (heads tucking in), it is not clear how this analysis would explain the apparent movement of adverbs.

(95) a. **iso alon-alon   toh** Bambang mangan sop?
         can slowly   PRT Bambang AV.eat   soup
         'Can Bambang slowly eat soup?' (8dec11T.035)

     b. **alon-alon iso   toh** Bambang mangan sop?
         slowly   can PRT Bambang AV.eat   soup
         'Can Bambang slowly eat soup?' (8dec11T.036)

In summary, properties of auxiliary fronting with a question particle *opo* or *toh* provide evidence that the fronted element is an XP for this strategy to form a yes-no question in Javanese. Specifically, something more than a single auxiliary may front with the occurrence of a question particle. What may front includes not only multiple auxiliaries, but also a combination of a TAM auxiliary plus an adverb in Paciran Javanese. That other grammatical categories such as an adverb besides an auxiliary may front strongly

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[101] In Cole et al. (2008), examples of fronted multiple auxiliaries are only given in yes-no question constructions without *apa* in Peranakan Javanese. It remains to be seen if this is paralled in yes-no questions with *apa*. Additionally, fronted XPs that are composed of a TAM auxiliary plus an adverb are only given in yes-no questions with *apa* in (i). It is not shown whether it is also grammatical to fronted this type of XP without the question particle *apa*.

(i)   *Apa*   **alon-alon *gelem*** Budi ngepruk bale ?   PERANAKAN JAVANESE
         Q   slowly   want Budi hit   ball
         'Does he want to hit the ball slowly?' (Cole et al. 2008:25, (95))

suggests that the fronted element must be an XP here. Further, the fact that multiple auxiliaries fronting must keep their strict relative order is also suggestive that an XP constituent moves, as it would maintain their order. Despite the additional restriction on fronting multiple auxiliaries (that is, the lower auxiliary must be a moveable one, which are all auxiliaries except *wes* 'PERF' and *ape* 'FUT' in yes-no questions with the particle *opo* or *toh*), the fact that *wes* or *ape* can front if they are the higher auxiliary also is suggestive of phrasal movement: the higher auxiliary is simply pied-piped. Therefore, all these properties point towards an analysis with XP-movement for this strategy. Importantly, although this data raises many questions and requires much more attention, it shows that auxiliary fronting via XP-remnant movement is attested in this dialect.

In the next section, I discuss the syntax of XP-remnant movement as well as the use of features before turning to the derivation I propose for plain auxiliary fronting in §5.4 for Paciran Javanese, where I present further arguments that are suggestive of a phrasal movement analysis.

5.3 Theoretical background on syntax 2

Before spelling out an XP-movement analysis, I want to make clear two additional syntactic mechanisms that are at play in the derivation I propose for plain auxiliary fronting in yes-no questions: (i) syntactic features that also distinguish high vs. low auxiliaries and (ii) XP-remnant movement. This analysis follows the same basic outline that that was proposed above in §3 for the derivation of VP-topicalization and subject-auxiliary answers. In particular, all three derivations are alike in that there is a structural distinction between the domain of high and low auxiliaries via MP, which constitutes a phase. Furthermore, the analysis based on phrasal movement for auxiliary fronting embodies the intricacy of Javanese syntax as being between an A-type language and B-type language. An XP-remnant analysis for yes-no questions is exemplary of a B-type language. As mentioned earlier, if the analysis were to embody A-type language properties, we might expect that all auxiliaries can front and not only the low ones.

Turning to the first additional tool, I argue that auxiliary fronting in yes-no questions requires two distinctions between high and low auxiliaries: (i) an intermediate comp-like projection MP constituting a phase edge at the edge of the low auxiliary

domain just as illustrated with the other constructions and additionally, (ii) distinct syntactic features.[102] In terms of the distinct features, I propose that low auxiliaries can have two features: a feature identifying the grammatical category, [Aux], and an optional feature, [F], representing the ability to front. High auxiliaries, however, are only identified by their grammatical category feature, [Aux]. These two distinctions, outlined in Tree 10 below, serve to differentiate the two types of auxiliaries in Javanese.

Tree 10. Features concerning auxiliary fronting in yes-no questions in Javanese
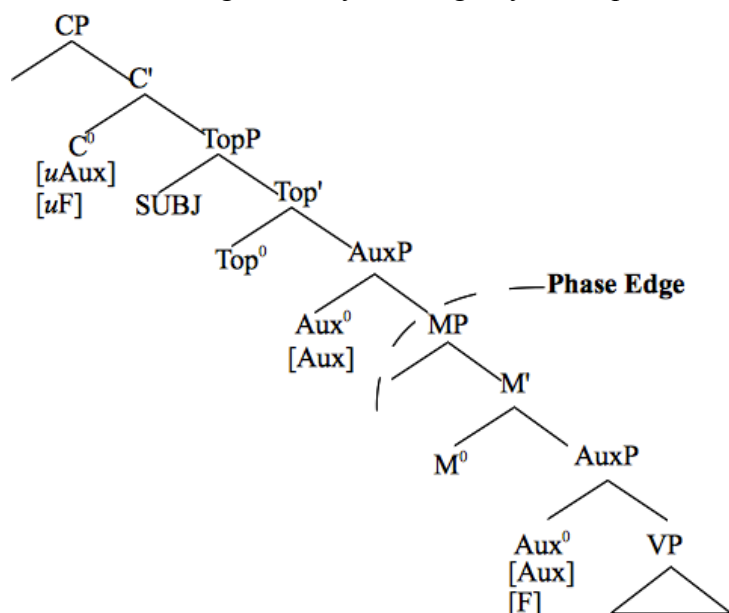
Concerning the features of the Interrogative C^0 in Javanese, I propose that it has two uninterpretable features, [uAux] and [uF] as illustrated in Tree 10 above. These two features must be checked by the same head. In effect, the Interrogative C^0 probe searches for a goal that is both an auxiliary and one that can be fronted. This probe cannot be satisfied by a high auxiliary because the uninterpretable feature [uF] would remain unchecked. Further, this probe searches only for an auxiliary and any not other element of a different grammatical category such as a verb. As such, only a low auxiliary will satisfy both features of the Interrogative C^0 probe at once.[103]

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[102] I am hopeful that these features will be able to be better identified as noted in §5.5 or that the distinction between these two classes of auxiliaries will be purely structural for fronting in yes-no questions as well.
[103] Note that I do not follow Cole et al. (2008) in having two uninterpretable features on two separate heads, one on the interrogative C^0 and one on the low auxiliary Aux^0. Allowing for this mechanism (which they refer to as 'symbiotic attraction') would then raise questions on how the feature on Aux^0 could be extended

A final mechanism which I adopt in this analysis is XP-remnant movement, which is a type of movement representative of B-type languages. I argue that the fronted element is an XP that appears on the spine. However, it does not move with its 'dependent' i.e. complement (a vP/VP). Therefore, the complement must first extract or 'prepose' before XP-remnant movement occurs. In the approach to remnant movement in Koopman and Szabolcsi (2000) for Hungarian, for instance, verbs must leave their dependants behind. Dependants include both arguments and adjuncts. Koopman and Szabolcsi (2000:39) generalize that all arguments and adjuncts (not only DP and CP, but also PP, AP, AdvP) move to a Licensing Phrase (LP(xp)) '...motivated by case and other feature-checking reasons' (Koopman and Szabolcsi 2000:43). I assume that the lower auxiliary in Javanese selects for another lower auxiliary (AuxP) or a vP/VP; it cannot stand alone (without a felicitous context such as in an answer). As such, AuxP or vP/VP is its dependant. Therefore, before a lower auxiliary raises to Spec, CP, its dependant must extract. This preposing movement is further explained below in illustrating the derivation.

To summarize, I propose that auxiliary fronting in yes-no questions maintains the structural distinction between low and high auxiliaries, but it appears to also require an additional mechanism to distinguish their ability to front. I suggest that this can be implemented via syntactic features. I discuss the possible nature of this features below in §5.5. This construction is different from the derivation proposed for VP-topicalization and subject-auxiliary answers, which involved spec-to-spec movement, representative of A-type language properties. Instead, I propose auxiliary fronting involves XP-remnant movement; that is, spinal phrasal movement, which is indicative of B-type language properties. In the following section, I give concrete examples of this derivation.

5.4 Auxiliary fronting in yes-no questions as XP-movement

In this section, I offer an XP-remnant movement analysis for auxiliary fronting in yes-no questions in Paciran Javanese, taking into account that this is a possible derivation in

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to the other constructions such as VP-topicalization or even declarative clauses where the low auxiliaries do not move. One potential option for Cole et al.'s system could be to say that the uninterpretable feature on Aux[0] is optional. However, I show in the following section that the current analysis is advantageous as it can easily allow for dialectal variation in terms of how many auxiliaries can front in plain auxiliary fronting.

Javanese (as seen with auxiliary fronting with *opo* or *toh* in §5.2) and that it is appropriate given its position as an Austronesian language in flux between an A-type and B-type language (as also shown with Indonesian (Travis 2008) in §3.1 above). I will suggest below that this analysis lends itself easily to capture differences of the size of the fronted element between different dialects of Javanese.

An analysis must capture the properties as given in §2.3 above on auxiliary fronting in this dialect of Javanese. First, low auxiliaries can front while high ones cannot. An example of a low auxiliary fronted in a yes-no question is repeated in (96) with *oleh* 'allow'. Second, only one low auxiliary can front in Paciran Javanese and third, it must be the highest one in the low auxiliary domain.

(96) **oleh** aku cicipi iwak panggang?
       allow 1SG try   fish   grilled
       'May I try the grilled fish?' (14.02.2011)

The proposed analysis, in capturing these facts, is similar to the derivations of VP-topicalization and subject-auxiliary answers in structurally distinguishing high and low auxiliary domains via MP. As detailed above in §5.3, the current analysis differs from the derivations for VP-topicalization and subject-auxiliary answers in that high and low auxiliaries are also distinguished featurally. As well, a different movement is employed; instead of spec-to-spec movement indicative of A-type language properties, I propose that auxiliary fronting in yes-no questions involves XP-remnant movement, which is indicative of B-type language properties. In what follows, I show example derivations of this analysis for auxiliary-fronting in yes-no questions, first with low auxiliaries and then with high ones.

Consider first how this account plays out in the following example with two successive low auxiliaries in Paciran Javanese, as in (97) with *iso* 'can' > *tau* 'EXP.PERF'. It is important that the analysis accounts for the fact that only one low auxiliary can front, and that it is the highest one of the low, moveable group (*tau* 'EXP.PERF').

(97) **tau**$_i$ bu Risa t$_i$ **iso** melayu sampek rong puloh menit?
       EXP.PERF Mrs. Risa   can   run   until   2   10   minute
       'Once could Risa run up to 20 minutes?' (15dec11T.004)

A first XP-movement analysis for (97), which I reject based on the PIC violation as further described below, is the following. The Interrogative C^0, which bears the feature bundle [uAux] and [uF], Merges and Agrees with the features of [Aux] and [F] on the highest low Aux^0. Once the uninterpretable features on Interrogative C^0 head are satisfied, there is no need for additional low auxiliaries to front. Therefore, the lower auxiliary AuxP preposes along with VP to the specifier of MP, thereby leaving the higher AuxP-remnant to raise to Spec, CP via attraction with C^0. The preposing movement of the lower AuxP to Spec, MP follows Abels' (2003) anti-locality requirement, as it is not the complement of its own projection. This first analysis, ultimately rejected, is illustrated in Tree 11 below.

Tree 11. Two moveable auxiliaries: A first attempt, PIC violation
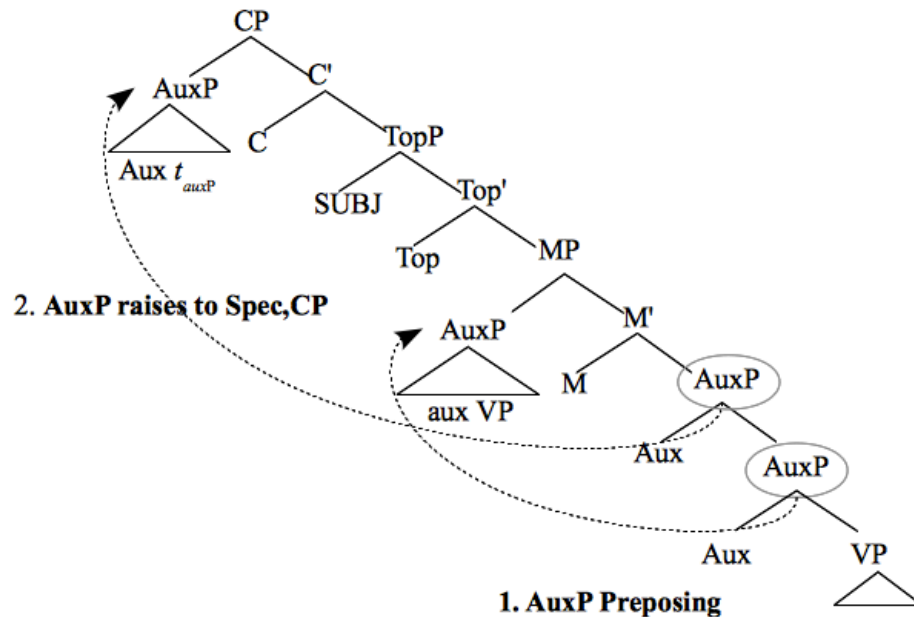
However, the reader will note that movement of the higher AuxP-remnant to the specifier of CP violates the PIC (Phase Impenetrability Condition, Chomsky 2000) under my proposal that MP is a phase. The question that arises is: how can the AuxP-remnant escape the MP phase?[104] As a complement to the phase MP, the AuxP-remnant should not be visible for any movement operations according to the PIC. This is an issue that pertains to the nature of remnant movement in general, not only to this particular analysis

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[104] Thank you to Maire Noonan for discussing the details of possible solutions to this issue.

here. In general, XP-remnant movement and phases are not often considered together; Koopman and Szabolcsi (2000), for instance, do not discuss how extraction of arguments or adjuncts interact with phases. However, this does not mean that XP-remnant movement and phases are mutually exclusive; Javanese appears to be a language that embraces these two mechanisms.

The solution I propose is to use the specifier of MP as the escape hatch of the phase just as proposed for VP-topicalization and subject-auxiliary answers in §4 above.[105] With this proposal, as shown in Tree 12 below, since MP is a phase, the low AuxP would move first to the specifier of MP to then be available for a second successive movement to the specifier of CP to satisfy the feature bundle on C^0. The preposed element must now move to a position below MP (since the specifier of MP is used as an intermediate landing site). Koopman and Szabolsci (2000) have already proposed that preposed elements move to a Licensing Phrase (LP); I suggest that the preposed vP or lower AuxP moves to such a position, shown in Tree 12, for auxiliary fronting in Paciran Javanese such as with (97) above. Note that the preposed movement follows the anti-locality requirements of Abels (2003).

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[105] Another possible solution is to allow successive cyclic movement of the AuxP-remnant, first to an outer specifier of MP before further movement to Spec, CP. Movement to an outer specifier would allow the AuxP-remnant to be visible for higher probes for further operations such as additional movement and would avoid a PIC violation. However, such a movement would violate the locality principles as outlined in Abels (2003): movement of the AuxP-remnant to an outer specifier of the phase edge of MP is movement of a complement of a head to its own specifier. Due to this locality violation, I do not consider this solution further.

To avoid the locality violation, we might consider that the AuxP-remnant moves to a maximal projection directly above MP which is also considered as an escape hatch. This is compatible with the proposal by Jayaseelan (2010) whereby FocP at the edge of the vP periphery is an additional escape hatch. On this view, MP would have multiple functions, serving as an intermediate landing site as with VP-topicalization or subject-auxiliary answers or as a landing site for a preposed element as with auxiliary fronting in yes-no questions. Further research is necessary to compare this analysis with the one proposed above, illustrated in Tree 12.

Tree 12. Two moveable auxiliaries: A solution to a PIC violation
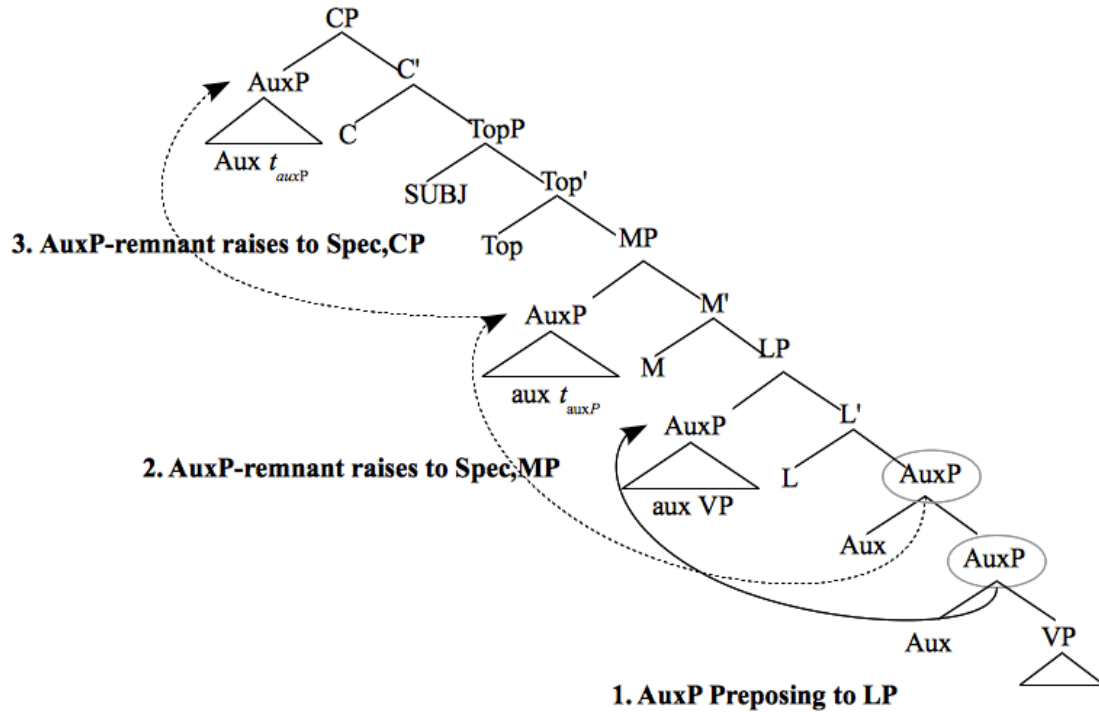
On this view, the nature of MP is consistent as an escape hatch across all three syntactic derivations for VP-topicalization, subject-auxiliary answers, as well as auxiliary fronting for yes-no questions. This proposal also solves the problem of violating the PIC since the AuxP moves first to specifier, MP to escape the phase. The next step for future research would be to better understand the availability and nature of Licensing Phrases within the context of XP-remnant movement and phases in general, as this derivation necessitates the LP maximal projection as the landing site of the preposed element below the phase.

Before discussing this derivation with one low auxiliary, I want to first outline how the current feature system allows for variation across Javanese dialects; that is, variation on how many auxiliaries can front in yes-no questions. As mentioned, movement of only one auxiliary in the dialect of Paciran Javanese is accounted for by the fact that the uninterpretable [uAux] and [uF] feature bundle on C^0 only needs to be checked once. Once these features Agree with the features of one low auxiliary, no other auxiliaries need to Agree because these features on Interrogative C^0 are no longer

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active.[106] General syntactic properties such as superiority effects under 'Attract Closest' (Richards 2001) account for the fact that the highest one fronts.

An advantage of this featural system as well as XP-remnant movement is that it leaves open the possibility for dialectal differences in how many auxiliaries may front as observed between Paciran Javanese and Peranakan Javanese. In Paciran Javanese, the preposed XP is always the closest XP that can prepose to Spec, MP according to locality requirements (Abels 2003). This captures the fact that only the highest low auxiliary fronts in this dialect. In Peranakan Javanese, Cole et al. (2008) report that this dialect allows for the fronting of either one or all auxiliaries (two or three), shown in (98) with fronting two auxiliaries *pernah* 'PERF' and *isa* 'can'.

(98) **Pernah isa** Tono nyetir montor?   PERANAKAN JAVANESE
      PERF   can Tono drive car
      'Has Tono ever been able to drive a car?' (Cole et al. 2008, 29, (112a))

In the current analysis, when the uninterpretable feature bundle on C^0 are satisfied, nothing precludes additional lower auxiliaries from fronting as they can in Peranakan Javanese. In Paciran Javanese, I assume that the highest XP dependent always moves to LP; in other words, the first XP that can move to LP always does so in this dialect. Therefore, the current proposal with this feature system and XP-remnant movement would allow for natural extensions to account for such dialectal differences.

Turning now to the case of only one low auxiliary as in (99), the derivation of auxiliary fronting in a yes-no question proceeds the same as described above in Tree 12, as it is guided by the same principles. In this derivation with only one low auxiliary, note that it is the *v*P that preposes (instead of an AuxP as in the case with two auxiliaries in (97) above) to an LP below MP. This is the first XP that can prepose given locality requirements (Abels 2003), which I argue is the case for the dialect spoken in Paciran. The derivation for one low auxiliary is given in Tree 13 below.

(99) **oleh** aku cicipi iwak   panggang?
      allow 1SG try   fish   grilled
      'May I try the grilled fish?' (14.02.2011)

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[106] Recall that this is different from 'symbiotic attraction' as proposed in Cole et al. (2008).

Tree 13. One moveable auxiliary
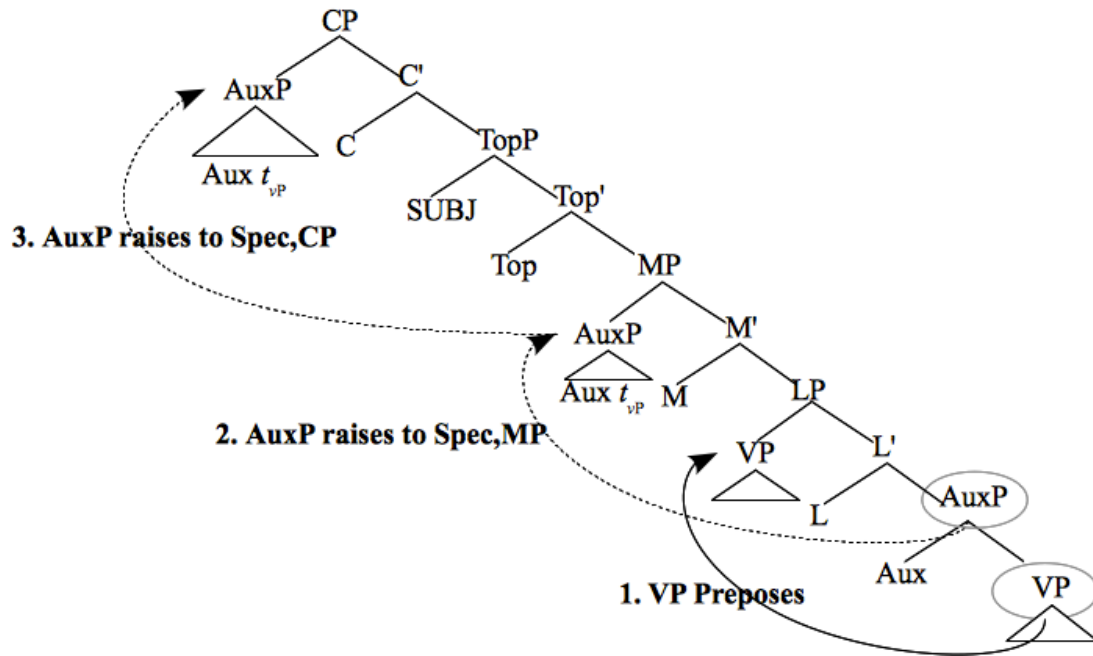
In the above derivations in Trees 12 and 13, I have concentrated on what happens with low, moveable auxiliaries. I now focus on the derivation with high, non-moveable auxiliaries. An analysis must capture the fact that high auxiliaries can never front in Javanese.

Consider the case with one high auxiliary such as in (100) with the future marker *ape* in Paciran Javanese. As mentioned above, the two uninterpretable features [*u*Aux] and [*u*F] of the Interrogative C^0, as a bundle, must be checked *by only one goal*. The syntactic nature of a high auxiliary only has the feature [Aux], identifying its grammatical category. Since it is not sufficient to satisfy the features of C^0, this accounts for the fact that high auxiliaries can never front in Javanese. This mechanism also rules out the possibility that a high auxiliary can move to check the [*u*Aux] feature and PF checks the [*u*F] feature on C^0 – both uninterpretable features on C^0, as a feature bundle, are required to be checked as a bundle and not one-by-one. Therefore, in the case with only a high, non-moveable auxiliary, I assume that both of the uninterpretable features on C^0 for yes-no questions get checked at PF.

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(100)* **ape** mbak Nunung masak nastar?
  FUT Miss Nunung cook cookies
  ('Will mbak Nunung bake cookies?') (14.02.2011)

Tree 14. One non-moveable auxiliary
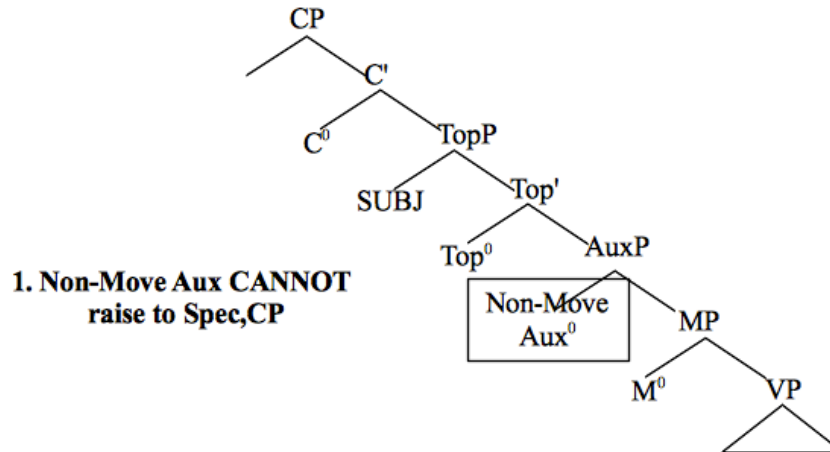
Finally, in the case of a high auxiliary followed by a low one as in *wes > iso* in (101), any analysis must account for the fact that auxiliary fronting of the low, moveable one is blocked. This fact is straightforwardly accounted for in the proposed analysis via Relativized Minimality (Rizzi 1990). Specifically, the Interrogative C^0 bears the uninterpretable feature [uAux] and [uF] and searches for a goal of one head bearing both these features. Although these features can be checked by the low auxiliary, an attempt to front this auxiliary causes the derivation to crash. This is because a goal (the high auxiliary *wes*) bearing only the feature [Aux] acts as an intervenor. In other words, although the high auxiliary cannot be a goal to check both features of C^0, it can act as an intervenor because it bears one of the same features, namely [Aux]. This derivation is illustrated in Tree 15 below.

(101)* **iso**$_i$ bayi-ne **wes** t$_i$ melaku?
  can baby-DEF already   walk
  ('Can the baby already walk?') (28Feb11.014)

Tree 15. One non-moveable and one moveable auxiliary
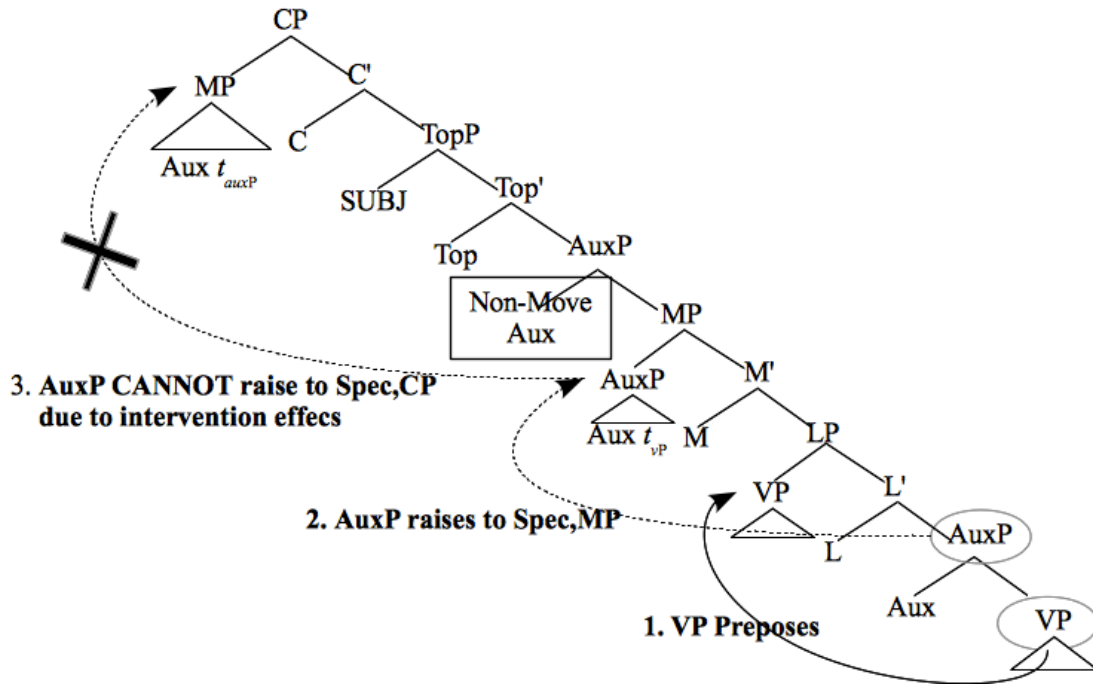
Note that this intervention effect via Relativized Minimality is conditioned in this case to the presence of the same category feature [Aux] only when [Aux] is along the spine. Movement of a lower Aux is not blocked in the case when AuxP has preposed and [Aux] is thus within an XP in specifier position (e.g. a limb position), as in Tree 12 above. I assume that probes can distinguish between elements in a limb position vs. along the spine.

To briefly summarize this section, I have proposed an alternative analysis to X^0-movement for auxiliary fronting in yes-no questions in Paciran Javanese: XP-remnant movement, a movement indicative of B-type language properties and appropriate to Javanese syntax. This analysis combines elements that are shared across the three different syntactic constructions that all partition the set of TAM auxiliaries into the same two groups with elements that are unique to auxiliary fronting in yes-no questions. Specifically, MP syntactically unifies these constructions in structurally distinguishing the set of low and high auxiliaries and acting as an escape hatch in all three constructions in Paciran Javanese. Auxiliary fronting in yes-no questions, however, additionally employs the use of features to also distinguish the high and low auxiliaries. I now turn to discussing how such features could be spelled out in the next section.

5.5   Features: indicative of a distinction between high and low auxiliaries?

Given that the derivation of auxiliary fronting in yes-no questions in Paciran Javanese seems to require the use of features in addition to the structural distinction created by MP, in this section, I want to explore possible syntactic and semantic properties between these two sets that would be more transparent than the proposed [*u*F]. While a possible semantic difference may seem promising, I show that there appears to be no other syntactic properties that differentiate the two sets of TAM auxiliaries besides their structural placement (high vs. low).

Looking first at possible syntactic distinctions, I have found no syntactic properties that may have partitioned TAM auxiliaries in the same way as auxiliary fronting in yes-no questions, VP-topicalization or subject-auxiliary answers to questions. For instance, we might expect that low auxiliaries have different complementation properties than high ones (beyond their obvious difference in syntactic height). In their work on Peranakan Javanese, Cole et al. (2008:18) suggest that the low, moveable auxiliaries are lexical restructuring predicates while high, non-moveable ones are functional restructuring predicates in the sense of Wurmbrand (2001). However, I have not found any evidence for such a distinction in Paciran Javanese: all TAM auxiliaries in this dialect can select for a vP, NegP but none can select for a CP (with an overt complementizer) or a TP.

More specifically, the motivation behind proposing a distinction between lexical vs. functional restructuring predicates in Cole et al. (2008) is that they suggest that low moveable auxiliaries can select for a vP or a CP in Peranakan Javanese. They propose that it can select for a CP in the case when a low-moveable auxiliary precedes a high, non-moveable one. I have not found such variable word order to be attested in Paciran Javanese. Instead, the variable word orders with TAM auxiliaries in Paciran Javanese were found to be due to other structural or semantic reasons. For example, as shown in detail in Chapter 3, a structural distinction between constituent ('limb') and phrasal ('spine') modification was found to distinguish the variable word orders of *wes* ~ *mesthi*. In the case of a syntactic/semantic distinction, I found for instance that *kudu* interpreted as 'deontic.must' was associated with a high structural position as an auxiliary while *kudu* interpreted as 'want' was associated with a low position as a verb. This non-finding

in Paciran Javanese therefore gives no motivation for positing a specific feature in terms of their syntactic properties to distinguish the moveable from the non-moveable ones.[107]

In terms of semantic properties, I investigated possible selectional requirements on external arguments such as agentivity or animacy. The data is based on whether auxiliaries can occur with an inanimate external argument or occur with a weather predicate such as *udan* 'to rain'. It is also based on whether TAM auxiliaries can occur in an existential construction with *ono* 'there.is' (Badib 1980). For instance, *kudu* 'DEONT.must', *oleh* 'allow' and *gelem* 'willing' all cannot occur with a weather predicate, while all other TAM auxiliaries in Paciran Javanese can. These selectional restriction properties therefore do not partition TAM auxiliaries in the same two groups as the three constructions of auxiliary fronting in yes-no questions, VP-topicalization, and subject-auxiliary answers to yes-no questions.

One possible semantic distinction between the moveable vs. non-moveable TAM auxiliaries in Paciran Javanese could be related to their inherent quantificational force.[108] Specifically, I speculate that moveable auxiliaries all have existential quantificational force ($\exists$) while non-moveable auxiliaries all have universal force ($\forall$). The partition of the two groups is shown in Table 1, repeated here.

Table 1. The relative order of auxiliary TAM markers in Paciran Javanese

NON-MOVEABLE AUXILIARIES		MOVEABLE AUXILIARIES	
wes 'PERF'	*kudu* 'deontic.must'	***tau*** 'EXP.PERF'	***oleh*** 'deontic.may'
lagek 'PROG'	*ape* 'FUT'		***iso*** 'can'

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[107] One possible way of distinguishing non-moveable vs. moveable auxiliaries is to consider that auxiliary fronting is a syntactic reflex of a 'focus' feature in Paciran Javanese. That is, there may be cross-linguistic evidence that supports a distinction in terms of a focus feature. Specifically, Hyman and Watters (1984) show that a number of African languages spoken in Nigeria and/or Cameroon such as Hausa, Efik, Aghem, Gwari, Ejagam, KiRundi, ChiBemba make a grammatical distinction in the phonological form that a tense or aspect auxiliary has depending on focus. We could consider that the subset of moveable auxiliaries in Javanese (*tau, oleh, iso*) also has a grammatical reflex which can indicate assertive focus. This grammatical reflex is in its ability to front or not in yes-no questions. This is not to say that the non-moveable auxiliaries cannot be focused – they can, but via different means such as prosody. In other words, non-moveable auxiliaries can never be syntactically focused (in their ability to front) like the moveable ones can. In this way, a parallel is drawn from cross-linguistic evidence from African languages that there exists grammatical means that differentiate auxiliaries in terms of focus. However, further research is needed to better understand this parallel – for instance, it is not clear how focus can play a syntactic role as well as a prosodic role in Paciran Javanese.
[108] Thank you to Vera Hohaus, Michael Wagner for directing my attention to this point.

While further research is necessary to conclude whether this is on the right track or not, preliminary evidence suggests that it is so. I provide empirical evidence in Chapter 5 that the auxiliary modals *oleh* 'allow' and *iso* 'can' both have existential force. It seems plausible that *tau* 'EXP.PERF' is also associated with existential force given its translation as 'ever' or 'once'. Therefore, the class of moveable auxiliaries appears to be all grouped in terms of existential force.

The group of non-moveable auxiliaries may all have universal force. I show in Chapter 5 that the modal *kudu* 'deontic.must' can only have universal force. I preliminarily suggest that the future marker *ape* also has universal force, similar to a bare future as analyzed in Copley (2002). This leaves the auxiliary *wes* 'PERF' to be determined whether it also can be analyzed with universal quantificational force or not, which is not a trivial task. This semantic distribution seems to be a promising venue of research that would provide a clear-cut distinction between moveable and non-moveable TAM auxiliaries in addition to its structural distinction as high vs. low.

6   Conclusion

In summary, I have found that not only does auxiliary fronting in yes-no questions partition the set of TAM auxiliaries into two groups, high vs. low, but so do two other syntactic constructions in Paciran Javanese: VP-topicalization and subject-auxiliary answers. As Cole et al. (2008) originally noted this partition for one syntactic construction, auxiliary fronting in yes-no questions in the dialect of Peranakan Javanese, this is a significant finding for research on Javanese syntax as well as a better understanding the properties of each construction in general.

In addition to the identifying the main properties of these constructions, I believe my investigations into the syntactic derivation for each of these constructions has shed further light on the dual nature of Javanese syntax as having properties of both A-type and B-type languages according to the X/XP parameter (Travis 2005, 2006). In the analysis I have proposed above, I have argued that Javanese employs XP-remnant movement of AuxP, indicative of a B-type language, for auxiliary fronting in yes-no questions. For VP-topicalization and subject-auxiliary answers to yes-no questions, I

have argued for a derivation involving XP-movement (spec-to-spec movement) of *v*P to the CP domain, indicative of A-type language properties.

I have suggested that each of these three constructions is mediated by a 'comp-like' position, MP, which separates the high vs. low sets of TAM auxiliaries in Paciran Javanese. MP seems to serve as a hub for all three derivations: extraction occurs through MP via the Specifier position in VP-topicalization/subject-auxiliary answers or via the complement in auxiliary fronting in yes-no questions.

Finally, this analysis may provide evidence for where exactly an intermediate comp-like position can be found, although further work is necessary. In Javanese, this position seems quite high: higher than low, verbal negation and higher than low auxiliaries but lower than the subject position (TopP). However, evidence from archaic Chinese also shows that an intermediate focus position is also higher than verbal negation but lower than TP (Aldridge 2010).

Chapter 5.
The modal system in Paciran Javanese

1 Introduction

In this chapter, I provide a comprehensive description of the modal system in Paciran Javanese, established through empirical evidence from a number of fieldwork methodologies. Although research has been done on Standard Javanese (Ekowardono et al. 1999), to the best of my knowledge, the research in this chapter represents the first in-depth study on modality in East Javanese thus making an important contribution to the research on this topic within the Austronesian language family. In addition to contributing to how modality is expressed cross-linguistically, I also develop semantic fieldwork methodologies by introducing of a questionnaire on modality which targets modal force and different types of modality.

The modal markers that are discussed in this chapter are in Table 1, which also reflects their grammatical category as identified in Chapter 2 (adverb, auxiliary, verb) and their syntactic relative order as established in Chapter 3. Based on what I can conclude from my fieldwork, for some modal markers such as the evidential markers *jekene, koyoke, ketoke, watake, bonake,* I will only provide preliminary empirical support for their corresponding gloss, while for others, such as *kudu*, I provide extensive data from different methodologies to support its corresponding interpretation.

Table 1. Modal markers in Paciran Javanese

Grammatical Category	Modal marker	Gloss
Adverb	*jekene*	'direct evidential'
	koyoke	
	ketoke	
	watake	'indirect evidential'
	bonake	
	mesthine	'epistemic.should'
	kudune	'deontic.should'
	mesthi	'epistemic.must'
	paleng	'maybe'
Auxiliary	*kudu*	'deontic.must, circ.must, teleo.must'
	ape	'Fᴜᴛ'
	oleh	'deontic.may'
	iso	'can'
Verb	*kudu*	'want'

Establishing the modal system concerns how the modal space is carved up in Javanese in light of two dimensions of modality; namely, the modal force and modal flavour. The MODAL FORCE concerns the type of quantificational force a modal conveys, ranging from pure possibility (i.e. existential force) to pure necessity (i.e. universal force). For instance, modals in English that express pure possibility force are *may, can* while *must, have to*, etc. express pure necessity force. Other modals express shadings in between pure necessity and pure possibility such as 'weak necessity' force, such as *ought to, should* in English. Evidence that these modals have a weaker force than pure necessity is shown by the fact that a sequence such as in (1)a is not contradictory (while (1)b is):

(1)　a.　　You ought to do the dishes but you don't have to.
　　　b.　# You must/have to do the dishes but you don't have to.

<div align="right">(von Fintel and Iatridou 2008:117, (3),(4))</div>

MODAL FLAVOUR concerns the type of modality, such as *deontic* or *epistemic* modality. Deontic modality is a semantic category which is compatible with a body of rules or regulations and epistemic modality is one which is compatible with the evidence available. Other types of modality include *circumstantial* modality, a category compatible with some facts about the world; *bouletic* modality, a category compatible with someone's desires or wishes; and *teleological* modality, a category compatible with

someone's goals. The following example in (2) from Kratzer (1977) with the English necessity modal *must* illustrates deontic, epistemic and circumstantial types of modality respectively:

(2) a. The Maori children *must* learn the names of their ancestors. (DEONTIC)
     b. The ancestors of the Maoris *must* have arrived from Tahiti.   (EPISTEMIC)
     c. If you *must* sneeze, at least use your handkerchief.   (CIRCUMSTANTIAL)

(Kratzer 1977:338, (2)-(3))

While research on Javanese has identified a number of particular modal markers such as in Tengger Javanese (Conners 2008), Peranakan Javanese (Cole et al. 2008), Yogyakarta Javanese (Robson 1992), the relations of each modal to the two dimensions of modal force and modal flavour that make up the entire modal system are still unclear. To this end, in this chapter, I show how Paciran Javanese modals as identified in Table 1 carve up the modal space according to the two dimensions.

I propose that the modal system is as given in Table 2: there are two necessity modals, *mesthi* and *kudu* which differ in modal flavour. The modal *mesthi* is interpreted as epistemic while *kudu* can be interpreted as any non-epistemic type of modality. There are also two weak necessity modals, *mesthine* and *kudune*, (cf. *should, ought* in English in (1) above) which are derived from the necessity modals plus the suffix *–(n)e*. All possibility modals each allow only one modal flavour: *paleng* as epistemic, *oleh* as deontic, *iso* as circumstantial.[109][110]

Table 2. Paciran Javanese modal system (Vander Klok 2008, Fieldwork 2011)

		MODAL FLAVOUR				
		EPISTEMIC	ROOT			
		EPISTEMIC	DEONTIC	TELEOLOGICAL	CIRCUMSTANTIAL	BOULETIC
MODAL FORCE	NECESSITY	*mesthi*	*kudu*			
	WEAK NECESSITY	*mesthine*	*kudune*			-
	POSSIBILITY	*paleng*	*oleh*	-	*iso*	-

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[109] The dashes in this table mean that, to the best of my knowledge, Paciran Javanese does not have a lexical item that allows for that particular modal meaning. The dashes do not represent that there does not exist such a lexical item in another language.

[110] As noted briefly in Chapter 3, there is another possibility epistemic modal, *mungkin*. While it is used in Paciran Javanese by mainly younger speakers, it is a borrowing from Indonesian suggesting that there is a change-in-progress. Research on *mungkin* was not included in the current study; further investigation would be necessary to fully understand its lexical specification in Paciran Javanese.

In this chapter, I first present in §2 the fieldwork methodologies used to gather the data on modality, which include elicitation, questionnaires, natural conversation recordings, and storyboards (www.totemfieldstoryboards.org). Through these tools, I establish the modal system of Paciran Javanese, focusing on the necessity and possibility modals in §3 and the weak necessity modals in §4.

2   Semantic Fieldwork Methods

In this section, I will present the techniques that I used for gathering semantic data; in particular, on modality expressions in Paciran Javanese. I have described in Chapter 1 the overall methodology used for data collection in this thesis and the focus there was on techniques for syntactic fieldwork. Some of the methods used to gather data on the semantics of modals are distinct from syntactic fieldwork. To collect semantic data, I have drawn from additional methods such as recorded interviews and conversations, elicitation, storyboards, as well as two questionnaires on modality. I describe each of these methods in turn.

2.1   Interviews and conversations

In describing the methodology I have used for collecting syntactic data in Chapter 1, I have already presented the use of recorded interviews and conversations as a fieldwork tool; I repeat some information here. In general, a database of natural conversation can be useful in understanding (i) the frequency of the item/phenomenon being studied in the dialect, (ii) possible socio-economic variables that impact the use of the item, (iii) the type of sentences the item occurs in and the frequency of these syntactic constructions, (iv) the type of contexts the item occurs in, etc. Extracting syntactic data from natural conversation often involves investigating the order of constituents or a particular syntactic construction. Extracting semantic data from conversation additionally may involve the co-text, the previous and following sentences, and the (non-linguistic) context, the situation in which the sentence is uttered.

As such, conversations or interviews provide a natural context for collecting semantic data since the co-text or context is not contrived in any way (as it might be in elicitation). For example, it is important to have the co-text or contextual information to

understand the flavour of modals as it is rarely explicitly expressed (e.g. one does not always utter '*In view of the school rules...*'). However, when trying to understand the limits of the semantics of a specific item, using natural conversation can prove difficult when the context is not controlled or constrained explicitly. This is where types of elicitation are useful because negative evidence can be obtained. For semantic fieldwork, I have used three types of methods that can fall under the category of 'direct elicitation' as all involve grammatical/felicity judgments and/or translation: elicitation, storyboards, and questionnaires. I discuss each of these in turn.

2.2 Elicitation

In terms of elicitation, I follow the semantic fieldwork guidelines in Matthewson (2004). Specifically, as mentioned in Chapter 1, kinds of judgments (which I describe below) obtained about a target sentence in a given context are viewed as a *result* in determining the semantics of a particular item, while translations (in either direction) and consultant's comments are viewed as *clues*. It is important to set the target sentence in a discourse context that is culturally appropriate and similarly, to give the discourse context first, and then introduce the target sentence. In obtaining a semantic judgment, the target sentence must also be grammatical in terms of its syntax.

Matthewson (2004) specifies the difference between a truth-value and a felicity judgment (assuming that the sentence is grammatical). A truth-value judgment concerns whether the target sentence is true or false and a felicity judgment concerns whether the target sentence is appropriate or not given the context. An example illustrates this in (3):

(3)   Situation: There are two cats in the room, and they are both asleep.
          a.   The cats are awake.   FALSE
          b.   The cat is asleep.   INFELICITOUS   (Matthewson 2004:401, (51))

Knowing this difference is crucial to understand negative evidence from semantic elicitation. That is, if a target sentence is accepted in a given context, that target sentence can be assumed to be true. However, if it is not accepted, it is important to understand if it was because it is *false* or *infelicitous* in the given context, as exemplified in (3) above. For this reason, follow-up in elicitation sessions is key to obtain clues from consultants' comments – consultants could offer a different context, change the target sentence, or

offer a translation into a meta-language.[111] The relevancy and perspective of these clues is then important to consider.

In Paciran, I worked intensively with two/three language consultants individually, and also conducted group elicitation sessions with groups of two to five consultants (as mentioned in Chapter 1).

2.3 Storyboards

Concerning storyboards (totemfieldstoryboards.org) [112], the fieldworker first tells a story based on a set of slides in the meta-language to the language consultant and then the consultant retells the same story in the object language using the set of slides. Storyboards are designed to see if certain semantic distinctions are grammatically distinguished in the object language. These semantic distinctions may or may not be grammatically distinguished in the meta-language. For example, while *must* can be used in an epistemic context or a deontic context in English (if it was used as the meta-language), in St'át'imcets, a language spoken in British Columbia, two different lexical item would be used (Rullmann et al. 2008).

This technique is not a translation exercise; the consultant is free to elaborate or minimize the story that the fieldworker previously told. The goal of storyboards is to gather authentic speech with as little influence from the meta-language as possible (totemfieldstoryboards.org). In my view, the major advantage of storyboards is that asking for judgments in follow-up can be straightforward because both the fieldworker and the consultant can easily refer to the given context. Despite the advantage of working with pictures and obtaining a narration without interruption in the meta-language (and therefore possible influence), the consultant still must have a high level of knowledge of the meta-language. That is, the slides play a large role in setting the story, but the pre-determined vocabulary that goes with the slides in the meta-language is also necessary in order to target specific semantic distinctions. For storyboards, I used English (and not

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[111]I use 'meta-language' here in the sense of "a language known by both linguist and consultant that is not the object language" (Mathewson 2004:379).

[112] Totem Field Storyboards Project group (totemfieldstoryboards.org) aims to create storyboards in order to investigate a number of different language phenomena including how languages express modality, counterfactuals, focus, list intonation, number, etc.

Indonesian) as the meta-language. Considering this requirement, I was able to run the storyboards with five consultants, all women between the age of 18 and 30, in Paciran.

In this project, I used three different storyboards on modality from Totem Field Storyboards: 'On the Lam', 'Chore Girl' and 'Sick Girl' (TFS Working Group 2011). The story 'On the Lam' targets circumstantial and epistemic types of modality, and 'Chore Girl' and 'Sick Girl' target possibility circumstantial as well as possibility and necessity deontic modality. To illustrate, the following example is taken from the storyboard entitled 'Chore Girl', highlighting the distinction between two flavours of modality, deontic vs. circumstantial. In particular, slide #18 with *allowed to* targets a possibility deontic modal (i.e. in view of Mary's mother's rules) while slide #19 with *can* targets a possibility circumstantial modal (i.e. in view of Mary's physical abilities).

Figure 1. 'Chore Girl', Slide #18 (TFS Working Group 2011)

English text for previous slide (slide 17):
At 4pm her friends come over again and ask if she can come out to play.

English text for this slide (#18):
*Mary says 'Well my mother said I'm **allowed to**,'*

Figure 2. 'Chore Girl', Slide #19, (TFS Working Group 2011)

English text for this slide (#19):
*'... but I broke my leg, so I **can't**.*

These slides easily target the distinction between a deontic flavour (e.g. *allow* for slide 18) and a circumstantial flavour (e.g. *can* for slide 19). In the retelling the story, the point is then to see how these flavours are expressed in the object language, whether they are the same lexical items or different. We can also consider what syntactic constructions are used for different modals as well. Storyboards proved to be an advantageous tool for this research on the modal system in Paciran Javanese and numerous results from this method are given in §3.

2.4   Questionnaire

The questionnaire on modality is inspired by Dahl's (1985) questionnaire used to elicit forms of tense and aspect in a given language. The aim of creating this questionnaire is to fill the gap to also include modality.

The main goal of the questionnaire is to gather robust felicity judgments that are representative of this dialect and is not meant as an experiment. Specifically, I wanted to ensure that the judgments I had gathered in individual elicitation sessions were echoed in a small sample of other speakers in Paciran. Thus, this questionnaire provides credence that I am not analyzing someone's idiolect, but of the dialect as a whole.

In the following subsections, I discuss the stimuli (§2.4.1) and the procedure (§2.4.2) of this questionnaire. The stimuli and procedure is generally the same for each way that I implemented the questionnaire (a semi-forced choice task and a felicity judgment task). I note where the implementation differs in terms of the methodology below.

2.4.1   Stimuli

For each implementation of the questionnaire on modality, the stimuli are the same. Specifically, the questions on modality all involve the same controlled context and (at least) one target sentence. Some controlled contexts were taken and adapted from examples in the literature (e.g. Rullmann et al. 2008, von Fintel and Iatridou 2008, von Fintel and Gillies 2007, 2012) and the rest were created. The contexts are designed to

bring out possible distinctions in either the modal force or the modal flavour, targeting only one cross-section of modal flavour and modal force.

For instance, consider a context that targets a necessity epistemic reading. Keeping the modal flavour constant, I could then ask about an item that seems to have a *possibility* epistemic interpretation to see if the same modal also can be interpreted as a necessity modal, effectively targeting only the quantificational force of the modal. The same principle can be applied to check if an item can be interpreted with a certain modal flavour, in this case keeping the modal force constant. To give one example, the context in (4) adapted from von Fintel and Gillies (2007) controls for a necessity epistemic interpretation (e.g. *must*). [113]

(4)   The math teacher says: The ball is in A or in B or in C. It is not in A. It is not in
        B. So,...   (context adapted from von Fintel and Gillies (2007))
        a. it must be in C.
        b. it may be in C.

        *Guru matematika ngomong: "Bale ono nek kothak A utowo kothak B utowo
        kothak C. Nek kothak A, gak ono. Nek kothak B, gak ono. Dadi,...*
        a. bale mesthi neng C
        b. bale paleng neng C

In the semi-forced choice questionnaire, there were two target sentences for each context in which the modal expression was varied. For the example above, which targets a necessity epistemic interpretation, the two target sentences are one with the modal *mesthi* and one with *paleng*. These modals are hypothesized to differ in modal force, *mesthi* as a necessity modal and *paleng* as a possibility modal. In this implementation of the questionnaire, participants were asked to choose the target sentence that best fit the context, and could choose either one of the two options, both options, none, and/or offer an alternative. The two target sentences were randomly ordered.

The felicity judgment task questionnaire was broken into two versions of the previous type of questionnaire. Specifically, version A had the same discourse contexts

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[113] In the example in (4), one might wonder what happens with underinformative, but true statements, similar to the statement 'The cat is asleep' in the context in (3) above. Literally speaking, if the ball must be in C, it is possible (in fact necessary) that it be in C. In my interpretation of the data, I assume that speakers follow Grice's (1975) Maxim of Quantity, where one tries to be as informative as possible. Therefore, I assume that speakers will not choose an underinformative sentence and if they do for some reason, I assume that the fact that the sentence is underinformative will come up in follow-up elicitation.

and only the (a) target sentence (e.g. *bale mesthi neng C* in (4) above). Version B had the same discourse contexts and only the (b) target sentences (e.g. *bale paleng neng C* in (4) above). Participants were asked to rate the one target sentence from 1 to 5 (where 1 = *cocok 100%* 'fits 100%' and 5 = *gak cocok blas* 'does not fit at all') given the discourse context.

In terms of the general outline of the questionnaire, there are a total of 41 questions (33 on modality and 8 fillers). For all examples in the questionnaire, the participant only has the context and target sentences in Javanese; I have included the English in (4) above. The contexts were translated from English to Paciran Javanese by my main consultant. To ensure that certain aspects of the context that were controlled for in English were also controlled in Javanese, I ran pilot tests with five people and made changes accordingly.

2.4.2 Procedure

There were two ways I implemented this questionnaire: as a semi-forced choice and as a felicity judgment task. The general procedure for both types of questionnaires was the same. After asking the participants about meta-data information (e.g. gender, age, socio-economic status), my research assistant or I would go over the general outline and the instructions for the questionnaire. We would then go through four practice examples together, where we ensured that the participant could read and instructed them how to advance to the next slide (most participants do not own a computer). The goals of the four practice examples were to underline that (i) there was no 'right' or 'wrong' answer and (ii) that the participant was evaluating the sentence given only the discourse context provided. Once the participant felt comfortable about the task, they were left alone (although my research assistant or I were always at hand in case they needed further instructions) to complete the questionnaire. There were no time constraints. Participants usually took about a half hour to an hour to finish and none were excluded from analysis because of time issues. Both types of the questionnaire were run on PowerPoint via Record Narration and participants had a separate answer sheet where they indicated their response on paper.

Concerning the semi-forced choice questionnaire, I ran a total of fifteen participants, all from Paciran who had not lived elsewhere for an extended period of time (more than three years). Of these participants, there were four men (22-45 years old) and eleven women (19-51 years old). The average age of the participants was 31.6 years old. There was no control for education; some had not completed grade school while others had completed a B.A.

Concerning the felicity task judgment questionnaire, as outlined in the section above on the procedure this questionnaire was split into two versions of the semi-forced choice questionnaire, version A (all option (a) of the semi-forced choice one) and version B (all option (b) of the semi-forced choice one). In the procedure for this questionnaire, the four practice examples specifically attempted to 'set' the participants rating range for felicitous and infelicitous examples. For each version, I ran ten participants who were all from Paciran. For version A, there were six women and four men and for version B, five women and five men. The age range was from 17 to 50 years old, with an average age of 31.7 for both versions. All participants were renumerated for their time.

2.4.3 Questionnaire as a semantic fieldwork tool

The two different implementations of the questionnaire each had separate goals. The goal of the semi-force choice task is to obtain felicity judgments on whether a certain modal expression in Paciran Javanese can have the same modal force or the same modal flavour as what the context targets for. In terms of the felicity judgment task, the goal is to obtain a relative rating as well as verify the responses given in the semi-forced choice questionnaire. For example, if all participants chose (a) for a given context, then in version A, I would expect that the target sentence would receive a rating near 1 (that it completely 'fits' given the context), while in version B, I would expect a rating near 5 (that it 'does not fit' given the context).

Another way this questionnaire could be implemented is as a fill-in-the blank task. This type of implementation could be useful to first identify modal expressions in a given language if the inventory has not yet been identified. The researcher would have to have knowledge, however, of the general syntax of modal expressions/constructions to be able to create the fill-in-the-blank sentences. For example, one would have to have a

prediction where modal expressions would be syntactically located, such as auxiliaries, located between the subject and the predicate in an SVO language.

3 Paciran Javanese modal system

Based on the results from different fieldwork tools including interviews, recorded natural conversations, direct elicitation, storyboards and a questionnaire on modality as described above, in this section I show that the modal expressions in Paciran Javanese carve up the modal space as demonstrated in Table 2 (repeated from above).

Table 2. Paciran Javanese modal system (Vander Klok 2008, Fieldwork 2011)

		MODAL FLAVOUR				
		EPISTEMIC	ROOT			
		EPISTEMIC	DEONTIC	TELEOLOGICAL	CIRCUMSTANTIAL	BOULETIC
MODAL FORCE	NECESSITY	*mesthi*	*kudu*			
	WEAK NECESSITY	*mesthine*	*kudune*			-
	POSSIBILITY	*paleng*	*oleh*	-	*iso*	-

In the following sub-sections, I focus on the possibility and necessity modals. In §3.1, I compare the epistemic modals *mesthi, paleng*, and in §3.2, I turn to the root modals *kudu, oleh, iso*. I determine that all modals except for *kudu* in Paciran Javanese keep both their modal force (necessity or possibility) and their type of modality (epistemic, deontic, or circumstantial) constant.[114] Concerning *epistemic* modals, I am referring to the type of modality that is based on a body of available evidence. With respect to *root* modals, I refer to all the non-epistemic types of modality. These include deontic (based on a body of rules and regulations), pure circumstantial (based on abilities), teleological modality (based on one's goals) and bouletic modality (based on one's wishes or desires).

Following this section on possibility and necessity modals, I discuss in §4 the weak necessity modals, *mesthine* and *kudune*, with respect to the type of modality that they have as well as noting that they share the same suffix as evidential markers such as *koyoke, ketoke, jekene, bonake, watake*.

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[114] I will gloss *kudu* in this section as *'kudu'* in order to be agnostic about the type of modality. Following this section, I resume to the gloss of *kudu* interpreted as a deontic, circumstantial, teological modal as 'DEONT.must' and *kudu* interpreted as a bouletic modal as 'want'.

3.1 Epistemic Modals in Paciran Javanese

The modals *mesthi* and *paleng* appear to each lexically specify for only one 'cross-section' of the modal system in Paciran Javanese: *mesthi* is a necessity epistemic modal and *paleng* seems to be a possibility epistemic modal. First, in comparing *mesthi* and *paleng*, I suggest that they differ from each other in modal force, although a possible alternative is mentioned. I then demonstrate that these modals can only be interpreted as epistemic, showing that the type of modality is also constrained.

3.1.1 Investigating modal force for epistemic modals

In this section, I explore the modal force for epistemic modals *mesthi, paleng* in Paciran Javanese. I show that storyboard and direct elicitation results suggest that *mesthi* and *paleng* differ in modal force. However, conflicting results arise from the questionnaire on modality, as these results seem to show that *paleng* can have universal force as well as existential force. I suggest that these results are a reflection of the distinction between *mesthi* and *paleng*: *mesthi* can only be used in contexts where the speaker is absolutely certain there are no other possibilities, while *paleng* is used whenever there is a possibility. I sketch a proposal for these modals at the end of this section.

For the difference in modal force, consider the distinction made between *mesthi* and *paleng* in the following storyboard scenario from 'On the Lam' (TFS 2011).

(5)   Context: 'Jono and Siti can't be hiding in the box', says the policeman. 'It's too small. And they can't be hiding under the bed. It's too low. ...

   a.   ....**mesthi**   nek   ngguri-ne   selambu
         EPIST.must   at   behind-DEF   curtain
         '...[they] must be behind the curtain.'

   b.   trus.... ooooh... **paleng**   nek   ngguri-ne   selambu
         then.... ooooh... maybe   at   behind-DEF   curtain
         '...then maybe behind the curtain.' (May31_11_S2_T)

Mesthi is suggested to be only appropriate as a universal modal. In (5), for example, *mesthi* can only be used if the speaker knows that there is no other alternative hiding place besides behind the curtain: *gak ono liyane* [...] *gak ngerti kan onok cendelone nek kono* 'there is no different [place] ... [you] don't know that there is the window there'. If

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the speaker suspects there is an additional possible hiding place, then *mesthi* is not felicitous, and *paleng* is most appropriate instead, as in (5)b. With *paleng*, the language consultant explains that *berarti ada yang lain lagi* 'it means that there is another different [place]' of where Jono and Siti might be hiding. This suggests that *paleng* is an existential modal.

A number of results from the questionnaire on modality seem to reflect this distinction between *mesthi* and *paleng*: specifically, it appears that *mesthi* is felicitous when the speaker is absolutely certain. If there is any point of uncertainty or possibility, *paleng* seems to be more appropriate. In the results of the questionnaire, this gives the appearance that *paleng* can be used as a necessity modal as well as a possibility modal. In particular, in a context targeting necessity, hypothesized to target only *mesthi,* either both sentences with *mesthi* and *paleng* are given as appropriate responses or those with only *paleng*. But in a context targeting possibility, hypothesized to target only sentences with *paleng*, in effect, only those with *paleng* are given as the appropriate response. I will suggest an avenue of research at the end of this section that may capture these differences between *mesthi* and *paleng* in Paciran Javanese that does not have to do with a difference in their modal force. However, this analysis is ultimately left for future research.

Consider the context in (6) (repeated from (4) above), where the context targets a necessity epistemic reading. While 7/15 participants chose the target sentence with *mesthi* in (6)a to fit this context the best, 5/15 participants chose the target sentence with *paleng* in (6)b and 3/15 participants chose both as equally appropriate for this context. These results are striking in comparison to English, as it would be completely infelicitous to say 'the ball might/may be in C' in this context. Results from the felicity judgment task reflects that both *mesthi* and *paleng* are felicitous in this context: the target sentence with *mesthi* received an average rating of 1.3 and that with *paleng* received an average rating of 1 where 1 = *cocok 100%* 'fits 100%' and 5 = *gak cocok blas* 'does not fit at all'.

(6)   Context: (Adapted from von Fintel & Gillies 2007) *Guru matematika ngomong: "Bale ono nek kothak A utowo kothak B utowo kothak C. Nek kothak A, gak ono. Nek kothak B, gak ono. Dadi,...* (The math teacher says: The ball is in A or in B or in C. It is not in A. It is not in B. So,…)

    a.   bal-e   **mesthi**   neng C
            ball-DEF EPIST.must in   C
            'The ball must be in C.' (10/15 responses)

    b.   bal-e   **paleng** neng C
            ball-DEF maybe   in   C
            'The ball might be in C.' (8/15 responses)

Consider further the context in (7), which also targets a necessity epistemic reading. In this case, however, the results are overwhelmingly for the target sentence with *paleng*, hypothesized to be a possibility epistemic modal with 15/15 responses.

(7)   Context: *Mas Hakim nyeluk kucinge. Kucinge gak gelem moro. Mas Hakim nggoleki kucinge nek pawon tapi gak ono, nek ruang tamu gak ono, nek jeding gak ono, nek kamare adikne gak ono. Mas Hakim nggoleki nek omahe pisang engkas, tapi Mas Hakim gak nemo'no kucing nek endi-endi nek njero omahe. Mas Hakim mikir...*
(Mas Hakim is calling for his cat. The cat is not coming. Mas Hakim looks for the cat in the kitchen, but the cat is not there. Then he looks in the living room, and in the bathroom, and in his sister's bedroom. The cat is not in any of those rooms. He looks all over the house again, but the cat is nowhere to be found in the house. Mas Hakim thinks...)

    a.   kucing iku **mesthi**   wes ucul   teko   omah-e
            cat   DEM EPIST.must PERF escape come.from house-DEF
            'The cat must have escaped from the house.' (0/15 responses)

    b.   kucing iku **paleng** wes ucul   teko   omah-e
            cat   DEM maybe   PERF escape come.from house-DEF
            'The cat might have escaped from the house.' (15/15 responses)

In the above context, given that Hakim has looked everywhere in the house for the cat, it strongly suggests that the cat is not in the house. The possibility that the cat is still in the house is not overtly stated, but if we question Hakim's investigating abilities, this could be the case. I hypothesize that Javanese speakers can only use *mesthi* when it is absolutely certain that there is no possibility that the cat is not in the house.

Note that it is not the case that *mesthi* is infelicitous in the above context since in the felicity judgment task implementation of this questionnaire, the sentence in (7)a has an average rating of 1.6, where 1 = *cocok 100%* 'fits 100%' and 5 = *gak cocok blas* 'does not fit at all'. Similarly, *paleng* is also equally felicitous with this context, with an average rating of 1.3.

We can compare the above context with the following context in (8). This context targets a possibility epistemic reading (instead of a necessity reading) and has a target sentence with *mesthi,* hypothesized to be have universal force and one with *paleng,* hypothesized to have existential force. This context has a similar design to (7) above, but *overtly* leaves open that there is a possibility, for example, that Dewi didn't look in one place for her necklace but looked everywhere else.

(8)   Context: *Dewi ewoh nggoleki kalunge. Dewi gak yakin kalunge iku ilang temenan toh mek lali ndeleh, soale Dewi gak eling nek endi terakhir ndeleh kalunge. Dewi wis nggoleki nek nduwure lemari, nek dhuwure tv, nek njero tase, tapi isek durung ketemu. Engko sek! Dewi durung nggoleki nek lemarine adikne….*
(Dewi is looking for her necklace. She's not sure if she lost it or if it is still somewhere in the house because she doesn't remember the last time that she wore the necklace. She looks in her wardrobe and on top of the wardrobe. It's not there. She looks on top of the tv. It's not there. She looks in her backpack; it's not there. Wait! She didn't check her sister's wardrobe yet…)

   a.   kalung-e   Dewi **paleng** ilang
        necklace-DEF   Dewi   maybe   lost
        'Dewi's necklace might be lost.' (14/15 responses)

   b.   kalung-e   Dewi **mesthi**   ilang
        necklace-DEF   Dewi   EPIST.must lost
        'Dewi's necklace must be lost.' (1/15 responses)

The results from the semi-forced choice task of the questionnaire are as expected, with a strong majority of responses for the target sentence with *paleng* (14/15 participants). Only one response is given for the target sentence with *mesthi*. These results for a context targeting possibility contrast sharply with the contexts above that target necessity force, where *paleng* seems on the surface to allow both possibility and necessity force.

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One participant also gave an answer in addition to choosing (8)a with *paleng* with *durung mesthi* 'not yet certain', showing an additional way to express possibility epistemic modality in Paciran Javanese.

(9) kalung-e   Dewi **durung mesthi**   ilang
     necklace-DEF Dewi not.yet   EPIST.must   lost
     'Dewi's necklace is not yet certainly lost.'

The results from the questionnaire on modality therefore concretely shows that the distinction in force between *mesthi* and *paleng* can be muddied when there is any possibility available in the context (either stated overtly as in (8), or not, as in (6) and (7)). Specifically, there is a tendency to choose *mesthi* only in the case when it is absolutely certain that the speaker will not be wrong.[115]

While the questionnaire results are less clear in showing that the modals *mesthi* and *paleng* differ in quantificational force, a test following Rullmann, Matthewson, and Davis (2008) provides further evidence that *paleng* may be an existential modal and *mesthi* may be a universal modal. This test is based on the predictions of the logical schemas in (10), in which the second proposition asserts that the first proposition is perhaps false.

(10)   a. $\Diamond P \wedge \Diamond \neg P$ CONTINGENCY
       b. $\Box P \wedge \Diamond \neg P$ CONTRADICTION

This test predicts that only an existential quantifier gives non-contradictory results. In (11) from elicitation, *paleng* is acceptable. This judgment provides strong evidence that the modal *paleng* can only be an existential modal.

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[115] The tendency to use *mesthi* only when absolutely certain also appears to be a reflection of Javanese cultural values. That is, there is a strong emphasis on saying the right thing but also on not invoking shame. Therefore, by preferring to use *paleng* instead of *mesthi*, one errs on the cautious side in order to be right. Using *mesthi* could end up being wrong, which could then invoke shame. In Javanese culture, it does not seem correct to say there is a strong emphasis on being right versus wrong – in some cases, it is better to give a wrong answer than to admit that you do not know the answer and therefore bring shame upon oneself. For example, in asking for directions, it might be more appropriate for a Javanese person to give a wrong answer in front of their friend and save themselves from shame than to admit that they do not know and be shamed.

(11) Context: *Gak ono bu Zum nek omah, jeke*. (Bu Zum is not at the house, it seems.)
paleng bu Zum lagek turu awan, **paleng** bu Zum gak
maybe Mrs. Zumaroh PROG sleep noon maybe Mrs. Zumaroh NEG

lagek turu awan
PROG sleep noon
'Maybe Bu Zum is taking a nap; maybe she's not taking a nap.'
(5may11paleng.003)

In contrast, elicitation results from this test with *mesthi* are contradictory, as shown in (12) where *muleh* 'go.home' is taken to be the negation of *nginep* 'to stay over', showing that *mesthi* may not have the same force as *paleng* in Paciran Javanese.

(12) Context: *Sampeyan weroh Titin nek omahe mbak Devi. Sampeyan ngomong:*
(You know that Titin is at Devi's house. You say:)

  # **mesthi** Titin ape nginep utowo **mesthi** Titin ape muleh
EPIST.must Titin FUT AV.stay.over or EPIST.must Titin FUT go.home
('Certainly Titin will sleep over or certainly Titin will go home.') (REF)

To summarize, results from storyboards as well as direct elicitation suggest that *paleng* and *mesthi* differ in modal force. Results from the questionnaire on modality at first glance seem to show that *paleng* can have universal force as well as existential force. However, these results are shown to be a reflection of the distinction between *mesthi* and *paleng*: *mesthi* can only be used in contexts where it is absolutely certain, while *paleng* is used whenever there is a possibility.

For this reason, I would like to sketch an alternative analysis for the difference between *paleng* and *mesthi* in Paciran Javanese that is not related to a difference in modal force. Specifically, the results as described above also seem compatible with *mesthi* and *paleng* both having possibility force, but *mesthi* has an extra condition of exhaustivity. In other words, *mesthi* would be interpreted as '*the only possibility that...*', while *paleng* is interpreted as '*there is a possibility (among others) that...*'. It is the exhaustivity condition on *mesthi* that allows it to be translated as *must* in English, but underlyingly, it has a different force (possibility) than English *must* (necessity). Further, under this perspective of *paleng*, this possibility modal would be compatible with more remote possibilities than with *mesthi*, essentially allowing *paleng* to be felicitous in examples such as the 'ball' example above in (6). While this analysis seems compatible with the

results for *mesthi, paleng*, I leave the details for further research. For now, I suggest that *mesthi* has universal force and *paleng* has existential force.

3.1.2 Investigating modal flavour for epistemic modals

In terms of different types of modality, *mesthi* and *paleng* are only acceptable in epistemic contexts. As a universal modal, *mesthi* is compared to *kudu*, another universal modal (see §3.2 below) keeping the modal force constant. With the epistemic context in (13) (the same storyboard example as above but a different language consultant), *kudu* is not felicitous as a replacement for *mesthi* because *kudu* means "someone ordered them to". In explaining *mesthi*, the consultant says "[it is] like assumption...there is no one told them to do that...but...from their mind...from their thinking", suggesting that *mesthi* can only be epistemic.

(13)   EPISTEMIC context: 'They can't be hiding in the box', says the policeman. 'It's too small. And they can't be hiding under the bed. It's too low. ...' ('On the Lam')
cah loro iku **mesthi**   / **# kudu** sengidan nek ngguri-ne   selambu
child two DEM EPIST.must / *kudu*   hide   at   behind-DEF curtain
'They must be hiding behind the curtain!' (May26_11_S2_N)

With other types of modality, *mesthi* is not accepted as a deontic or a circumstantial modal. In a deontic context in the storyboard example in (14), the infelicity of *mesthi* demonstrates that it cannot be interpreted as a deontic modal. Instead, the modal *kudu* is felicitous, showing that it is compatible in a deontic context.

(14)   DEONTIC context: A while later, Mary gets better from her cold. Her friends come over and ask her to come play outside. Mary says: ('Sick Girl')
aku ra   iso   melu dolan-an sepuro-ne yo....
1SG NEG can   join visit-AN sorry-DEF yes....

PR-ku   uw-akeh   yo **kudu**/ **# mesthi**   tak   kerjak-no
homework-my   INT-many yes *kudu* /   EPIST.must 1SG.CL work-APPL
'Sorry, I can't come out to play. I have so much homework, I have to work on it!'
(May26_11_S2_N)

For a circumstantial context, results from the modal questionnaire in (15) show that *mesthi* is unacceptable, and cannot be interpreted as a circumstantial modal either. Instead, *kudu* is chosen as the most appropriate modal for this type of modality.[116]

(15) CIRCUMSTANTIAL context: *Awakmu nek perjalanan ape reng Yogya. Awakmu gak ono waktu gawe nguyoh suwene 6 jam, terus awakmu wis kebelet nguyoh. Awakmu ngirim sms nek koncomu*: (You are on the road to Yogya. You haven't had time to go pee for 6 hours, and you really need to go. You send a text to your friend:)
Aku **kudu** nguyoh
1SG *kudu* AV.pee
'I have to pee!' (15/15 for *kudu* vs. 0/15 for *mesthi*)

In elicitation, in asking about the same sentence as (15) but with *mesthi*, a different context is offered instead, where it is *kebiasan*, a habit, to go pee in the morning.[117]

(16) aku **mesthi** nguyoh nek isuk
1SG EPIST.must AV.pee at morning
'I certainly pee in the morning.' (28Feb11.110)

Given the examples above, it is a natural conclusion that *mesthi* is only a universal epistemic modal.

Similar to *mesthi*, the existential modal *paleng* seems to only be acceptable in epistemic contexts, as in (11) above. With regards to circumstantial modality, results from the modal questionnaire in (17) demonstrate that *paleng* cannot be circumstantial.

(17) CIRCUMSTANTIAL context: *Jozi iso carane nggawe dudoh menir. Sa'iki Jozi wes mbalek reng Kanada, terus de'e kepingin nggawe dudoh menir, tapi bahan-bahane igak dik dol nek Kanada. Dadi Jozi sedih soale Jozi kepingin nyudohno reng wong tuwone piye carane nggawe dudoh menir.* (Jozi knows how to make dudoh menir. Now she is back in Canada, and she wants to make dudoh menir, but the right kind of ingredients are not sold where she lives! So she's unhappy because she wanted to show her parents how to make dudoh menir.)
Jozi iso nggawe dudoh menir
Jozi can AV.make sauce *menir*
'Jozi can make dudoh menir.' (14/15 chose *iso*, 0/15 chose *paleng*, 1/15 both)

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[116] Recall that since the questionnaire allowed participants to choose both target sentences (or one, or none, or offer an alternative), the fact that no participant chose both the target sentence with *kudu* and the one with *mesthi* and no participant chose only the target sentence with *mesthi* shows that *mesthi* is unacceptable in the circumstantial context in (15).

[117] While *mesthi* is felicitous in habitual contexts, it is not a portmanteau of a modal plus a habitual aspect marker. For instance, it is felicitous to use *mesthi* in (13) above, where it is not a usual thing or everyday habit to hide behind a curtain from the police.

This evidence suggests that *paleng* can only be an existential epistemic modal. In sum, these modals are like the English modal *might* – *paleng* and *mesthi* specify for force, but they also specify for their type of modality as epistemic, showing that both dimensions are kept constant. I now turn to establishing how the non-epistemic or root modals in Paciran Javanese carve up the modal space with respect to these two dimensions.

3.2   Root Modals in Paciran Javanese

In Paciran Javanese the root modals are *kudu, oleh* and *iso*. I first demonstrate that like the epistemic modals, *kudu, oleh, iso* do not have variable force: *kudu* only has universal quantificational force, while *oleh, iso* both only have existential force. I then examine which types of modality these modals can be interpreted as, revealing that *kudu* can be ambiguous, while *iso* and *oleh* cannot. The modal *kudu* can be interpreted in deontic, circumstantial, teleological as well as bouletic contexts, while the modal *oleh* is shown to be an existential deontic modal and *iso*, an existential circumstantial modal.

3.2.1   Investigating modal force for root modals

Evidence that *kudu* unambiguously has universal force and *oleh* unambiguously has existential force is shown by the contrast between (18) and (19) from the modal questionnaire results. When the context is controlled for a universal reading as in (18), only *kudu* is chosen as an appropriate fit, but not *oleh*.

(18)   Context (adapted from Horne 1961): *Sa'karung beras biasane enthek 3 dino. Tapi isek sisoh 2 karung. Aku gak nduwe waktu gawe tuku nek pasar soale adoh. Dadi…* (One bag of rice is usually enough for 3 days. There is still 2 bags left. I don't have time to buy more rice at the market because it's far away. So....)
aku **kudu** nyukup-no   luweh-an beras   iki   gawe 6 dino
1SG *kudu* AV.enough-APPL more-AN uncooked.rice DEM make 6 day
'I have to make this rice last for 6 days.' (15/15 chose *kudu*, 0/15 chose *oleh*)

But in the context in (19), which is controlled for an existential reading, only *oleh* is considered acceptable, while *kudu* is not.[118]

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[118] One reason why one person may have chosen *kudu* in this context is that *kudu* is also compatible with a bouletic interpretation in this dialect, which seems to be an acceptable reading for the context in (19).

(19)   Context: *Miturut aturane nek rumah sakit, seng oleh nyambangi pasien iku mek*
        keluarga thok. Sampeyan nyambangi adik sampeyan, tapi wes gak wayahe jam
        nyambangi. Tapi sustere sing apik ngomong.. (According to the rules of the
        hospital, only family members are allowed to enter the patient's room during
        visiting hours. You came to visit your sister, but it was after visiting hours. But
        the really nice nurse says...)
        awakmu **oleh**   melbu
        2SG   allow   enter
        'You may come in.' (14/15 chose *oleh*, 1/15 chose *kudu*)

These results complement each other and strongly suggest that *kudu* and *oleh* do not have
variable force. The modal *iso* behaves the same way as *oleh* in that it is only acceptable in
contexts with existential force, and never in contexts with universal force. Note that these
results on root modals contrast with the results on epistemic modals from the
questionnaire. Specifically, target sentences with possibility root modals *iso* or *oleh* are
not chosen as appropriate sentences in a necessity context (compared to the possibility
epistemic modal *paleng*, which is).

        Further evidence that the root modals *kudu* and *oleh, iso* differ in quantificational
force is suggested by the test following Rullmann et al. (2008), which was instantiated
also with the epistemic modals. As mentioned above, this test is based on the predictions
of the logical schemas repeated here in (20), in which the second proposition asserts that
the first proposition is perhaps false.

(20)   a. $\Diamond P \wedge \Diamond \neg P$ CONTINGENCY
        b. $\Box P \wedge \Diamond \neg P$ CONTRADICTION

This test is instantiated in the questionnaire on modality as in (21), where taking the bag
inside is considered the negation of leaving the bag. In the semi-forced choice task,
participants were given two target sentences, one with *oleh,* hypothesized to have
existential force, and one with *kudu*, hypothesized to have universal force. Results
provide further evidence that these hypotheses appear to be correct: 12/15 participants
chose the target sentence with *oleh,* while 3/15 participants chose the one with *kudu*.[119]

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[119] Given this test, one might have expected all participants to choose only the target sentence *oleh* for this
context, showing that only *oleh* is felicitous and *kudu* is infelicitous. One reason I speculate why a few
participants chose *kudu* could be that *kudu* can also be interpreted as a bouletic modal (as shown in Chapter
3 as well as in the following section), giving an interpretation such as 'You want to leave your bag here, or
take it inside.'

(21)   Context: (from Rullmann et al. 2008:329) *Awakmu lungo interview terus sekretarise ngomong nek awakmu*: (You are going for a job interview and the receptionist outside the office tells you that....)

sampeyan	**oleh**	deleh-no	tas-e	sampeyan	nek	kene,
2SG	allow	leave-APPL	bag-DEF	2SG	at	here

utowo	sampeyan	gowo	melbu
or	2SG	bring	come.in

'You can leave your bag here, or you take it in.'
(12/15 chose *oleh*, 3/15 chose *kudu*)

The results from the rating task for (21), where 1 = *cocok 100%* 'fits 100%' and 5 = *gak cocok blas* 'does not fit at all', also provides evidence for the difference in quantificational force. The average rating for the target sentence with *oleh* is 1.9, while that with *kudu* is 3.1. Comparing these average ratings which were obtained independently of each other, this difference suggests that the target sentence with *oleh* is felicitous in this context, while the target sentence with *kudu* is not. As a consequence, *oleh* is best interpreted as having existential force and *kudu* as having universal force.

Similar to *oleh,* the modal *iso* is best interpreted as having existential force. Results from elicitation show that *iso* is felicitous in a sentence that replicates the test in (20) above.

(22)

awakmu	**iso**	nginep	nek	kene	utowo	awakmu	**iso**	muleh
2SG	can	AV.stay.over	at	here	or	2SG	can	AV.go-home

'You can sleep over here or you can go home.'

That *iso* is felicitous provides evidence that *iso* has existential force. Given this test, if *iso* had universal force, this sentence would otherwise be contradictory and judged as infelicitous.

To summarize, results from the questionnaire on modality as well as elicitation show that the modal *kudu* differs from *oleh, iso* in force: *kudu* is a necessity modal and *oleh, iso* are both possibility modals. In the next section, I focus on establishing which modal flavour(s) these non-epistemic modals permit.

3.2.2 Investigating modal flavour for root modals

Concerning the type of modality, I demonstrate that the necessity modal *kudu* allows all types of root modal flavours, while the possibility modals each only allow one modal flavour: *oleh* can only be interpreted as a deontic modal and *iso* only as a circumstantial modal. I first discuss the modal flavour for *kudu*, and then turn to the modals *oleh*, *iso*.

The necessity modal *kudu* can be considered as being simply a necessity non-epistemic modal. It can be interpreted according to the context as deontic (according to a body of certain rules or regulations), circumstantial (according to some facts about the world), teleological (according to one's goals or aims) or bouletic (according to one's desires or wishes), but never as epistemic (according to a body of available evidence). The following examples show the wide range of modal flavours of *kudu*.

First, *kudu* can be interpreted as having a deontic modal flavour, as noted above in examples (14), (18). Another example is given in (23) here from the storyboard 'Chore Girl' (TFS Working Group 2011).

(23)   DEONTIC context: Her mother says she can't go out to play until she has done her three chores. [...] At 2pm her friends come over again and ask if she can come out to play. Mary says... ('Chore Girl')
aku gak iso...   aku sek **kudu** nyapu   nyapu   sek   suwi
1SG NEG can.... 1SG still *kudu*   AV.sweep AV.sweep still   long
'I can't.... I still have to sweep for a while.' (S1-Fina)

Second, the necessity modal *kudu* can also be interpreted as a pure circumstantial modal as in (24) below, taken from results from the questionnaire on modality. In this context, 11/15 participants chose the target sentence with *kudu* as being the most appropriate, compared to 4/15 for that with the necessity epistemic modal *mesthi*. See also (15) above for an additional example from the questionnaire where 15/15 participants chose the target sentence with *kudu* over that with *mesthi*.

Results from the felicity judgment task of each of these target sentences independently corroborate the above results that *kudu* can be interpreted as having circumstantial modal flavour while *mesthi* does not allow this interpretation. Specifically, the average rating for the target sentence with *kudu* is 2.1 compared to that with *mesthi,*

4, where 1 = *cocok 100%* 'fits 100%' and 5 = *gak cocok blas* 'does not fit at all', suggesting that *kudu* is felicitous as a circumstantial modal but *mesthi* is not.

(24)   CIRCUMSTANTIAL context: *Biasane nek ono pengajian, kudune serius. Tapi bu Yeni keturon mbek lambene mangap.* (Normally at *ngaji* (holy Qu'ran reading), it is time to be serious. But then bu Yeni fell asleep with her mouth wide open.)
Bu   Siti   **kudu**   ngguyu
Mrs. Siti   *kudu*   AV.laugh
'Mrs. Siti had to laugh.'
(11/15 responses for *kudu*, 4/15 responses for *mesthi*)

Third, the modal *kudu* can also be interpreted as teleological shown in (25). This example is from pilot results of the modal questionnaire, which was done via elicitation and checked with four speakers. In elicitation, all four speakers independently chose the modal *kudu* as felicitous in this teleological context. These results show that *kudu* can have this type of modality.[120]

(25)   TELEOLOGICAL context: (adapted from von Fintel & Gillies 2007). *Sa'wise isya', wis gak ono angkutan umum utowo dokar. Trus, sing ono karek becak thok, nek sampeyan iso nemo'no.* (After maghrib, there are no 'travel' cars or horse-drawn carriages available. The only way is to travel by rickshaw, if you are lucky to find one.)
nek   gelem   muleh   mari   isya',   sampeyan   **kudu**   numpak becak
if   agree   AV.go.home   AV.finish *isya'*, 2SG   *kudu*   AV.ride pedicab
'When you want to go home after maghrib, you have to travel by becak.'
(Elicitation : 4/4 chose *kudu*, 0/4 chose *kudune*)

Finally, a fourth type of modality that *kudu* can be interpreted as is bouletic, according to one's wishes or desires. This is shown in (26) from elicitation. Additional empirical support for *kudu* as allowing a bouletic interpretation is given above in Chapter 3. There, I demonstrated that interactions with *tau* 'EXP.PERF' and negation revealed different modal flavours of *kudu*: low *kudu* is only interpreted as bouletic while high *kudu* is only interpreted as deontic, teleological, circumstantial (i.e. non-bouletic).

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[120] These results also show that either (i) *kudune* cannot be interpreted as teleological or (ii) *kudune* cannot be interpreted as a pure necessity modal. I will show in section 4 that it is the latter.

(26) BOULETIC context:
sa'-karep-e,   sampean **kudu** nginep   opo ora
SA-wish-DEF   2SG   *kudu*   AV.stay.overnight what NEG
'Up to you, you want to stay overnight or not.'
'Up to you, you have to stay overnight or not.' (10Apr11.088)

Therefore, the universal modal *kudu* can subsume all the root or non-epistemic interpretations, but cannot be interpreted as a universal epistemic modal, as shown in §3.2 above. Another example where *kudu* is not felicitous in an epistemic context is given in (27), taken from the questionnaire on modality. Instead *mesthi*, argued to be a universal epistemic modal, is felicitous in this context.[121]

(27) EPISTEMIC context: (from Rullmann et al 2008:321) You have a headache that won't go away, so you go to the doctor. All the tests show negative. So,
Sirahmu ngelu gak waras-waras. Terus awakmu reng dokter. Wes di prekso tapekne gak ono penyakit opo-opo. Dadi….
iku **mesthi**   / # **kudu** kake-an   pikir-an
DEM EPIST.must /   *kudu* KE-many-AN   think-AN
'It must just be from tension/stress.'
(12/15 chose *mesthi*, 0/15 chose *kudu*, 3/15 offered *paleng*)

Similarly, in an epistemic context such as (28), the consultant finds *kudu* unacceptable, and exclaims *sopo sing dik kongkon?* 'who was ordered?' because no one can order the rain to begin. Instead, the necessity epistemic modal *mesthi* is most appropriate.

(28) EPISTEMIC context: *iki mendung. biasane…* (It is cloudy. Usually...)
a. # **kudu** (ape)   udan
    kudu   FUT   rain (4mar11.073)

b. **mesthi**   ape udan
    EPIST.must   FUT rain
    'It must be going to rain.' (4mar11.071)

This felicity judgment clearly indicates that *kudu* cannot be an epistemic modal. Instead, *kudu* is best interpreted as a universal root modal.

Turning to the possibility modal *oleh,* I argue that this modal is best interpreted as only deontic. In other words, it seems that this modal lexically specifies for both modal

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[121] The results show that three participants also offered a sentence with *paleng* 'maybe', showing that it can be felicitous in a context that is targeting necessity modal force, similar to (5), (6), and (7) above.

force (only as possibility) and modal flavour (only as deontic). One example is given in (29) from the modal questionnaire. Results from the semi-forced choice task show that *oleh* is felicitous in a context targeting this cross-section of the modal system: 12/15 participants chose the target sentence with *oleh*, 1/15 participants chose that with *kudu*, and 2/15 participants gave no answer. See also (19) and (21) above for additional examples of *oleh* as a possibility deontic modal.

(29)   DEONTIC context: *Tas tasan nek WBL mek iso ditumpaki bocah-bocah sing umure sa'durunge 15 taun. Tutus umure 12 taun. Nek Tutus gak kepingin, gak usah numpak gak opo-opo soale iku gak wajib.* (The ferris wheel ride at WBL is only for children under 15 years old. Tutus is 12 years old. It is not obligatory for Tutus to go on the ride if she doesn't want to.)
Tutus **oleh** numpak 'tas tas-an' nek WBL
Tutus allow AV.ride bag-bag-AN at   WBL
'Tutus is allowed to ride the ferris wheel at WBL.'
(12/15 chose *oleh*, 1/15 chose *kudu*, 2/15 gave no answer)

Like *kudu,* the modal *oleh* is also not appropriate in epistemic contexts, shown in the modal questionnaire results in (30). These results show that all participants chose *paleng* over *oleh,* another existential modal. This choice provides strong evidence that *oleh* cannot be an epistemic modal, but *paleng* can.

(30)   EPISTEMIC context: *Wong tuwone Amin ngandani Amin: "Awakmu gak oleh dolan neng omahe koncomu nek Jakarta, soale adoh." Sampeyan krungu Amin ape lungo minggu ngarep, tapi sampeyan gak weroh ape lungo reng endi. Amin bocahe tambeng, Amin biasane ngelakoni opo-opo gak tau ngomong karo bapakne. Sampeyan mikir...* (Amin's parents told him that he is not allowed to go to see his friend in Jakarta because it is too far away. You heard that Amin is leaving Paciran next week, but you don't know where he will go. Amin is a daring type of guy that usually does things that he is not permitted to do. You think:)
Amin **paleng** reng Jakarta
Amin may   to   Jakarta
'Amin may go to Jakarta.' (15/15 chose *paleng*, 0/15 chose *oleh*)

Unlike *kudu,* the modal *oleh* is not appropriate as a possibility circumstantial modal. Instead, the results from the modal questionnaire in (31) indicate that only *iso* is compatible, which brings us to a discussion of the modal flavour of this possibility modal. Indeed, the interpretation of the modal *iso,* I argue, is restricted to circumstantial contexts.

(31) CIRCUMSTANTIAL context: *Miturut aturane, angkutan umum penumpange kudu 13 paling akeh. Tapekne supire gak ngurusi. Terus isek numpakno penumpang luweh teko 13 soale angkutane yo rondok gedhe.* (According to the law, the public vans are required to pick up at most 13 passengers. But the drivers don't care, and so they still take more than 13 people because the vans are bigger than you think.)

angkut-an   umum   **iso**   kamot wong   20
carriage-an   general   can   fit   people 20
'The public vans can fit 20 people.' (14/15 for *iso*, 0/15 for *oleh*, 1/15 no answer)

The storyboard example in (32) further illustrates the contrast between these two existential root modals, where *iso* can only be circumstantial and *oleh* can only be deontic. All five consultants offered the same pattern of modal forms in (32). When asked if *oleh* can be replaced by *iso*, this sentence in (32) becomes infelicitous. And vice versa, when asked if *iso* in (32) can be replaced by *oleh* in this sentence, it also becomes infelicitous. In follow-up, consultants offer comments like *oleh pertama itu permitnya tadi...trus yang ke dua itu kan....capability... ability ya....* '*oleh* the first one is permission, then the second one is capability'.[122]

(32) ibuk-ku   wes   **oleh**   aku metu **oleh**   dolan-an
mother-my   PERF   allow   1SG leave allow   visit-AN

tapi sikil-ku loro... aku... aku   mari   tibo, gak **iso**
but   foot-my sick   1SG   1SG   finish fall NEG   can
'My mother had allowed me to go, [I] may play, but my foot is sore;
I fell, so I can't.' (31.05.2011-T)

In sum, these examples indicate that in Paciran Javanese the existential modal *iso* lexically specifies only for circumstantial modality, while the existential modal *oleh* specifies only for deontic modality. I have demonstrated that the characterization of *kudu*, however, is different from other modal auxiliaries in Paciran Javanese in that *kudu* does not lexically specify for the type of modality, but only for its modal force.

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[122] In an unrelated elicitation session (15nov11), similar comments were given to explain the difference between *iso* and *oleh*: the modal *iso* was commented to be *durung mesthi 'oleh'* and *oleh* as *durung mesthi 'iso'*. In other words, it is not yet certain that *iso* can be interpreted as *oleh* and vice versa.

3.2.3 Summary of possibility and necessity modals in Paciran Javanese

To sum up, the empirical evidence I have presented explores how modal expressions lexically carve up the modal space in Paciran Javanese, focusing on epistemic and non-epistemic modals in Paciran Javanese that have pure possibility or pure necessity modal force. The results can be summarized as in Table 3.

Table 3. Paciran Javanese modal system of possibility and necessity modals
(Vander Klok 2008, Fieldwork 2011)

		MODAL FLAVOUR				
		EPISTEMIC	ROOT			
		EPISTEMIC	DEONTIC	TELEOLOGICAL	CIRCUMSTANTIAL	BOULETIC
MODAL	NECESSITY	*mesthi*	*kudu*			
FORCE	POSSIBILITY	*paleng*	*oleh*	-	*iso*	-

Focusing on epistemic modals, I provided evidence in §3.1 that the modals *mesthi, paleng* lexically specify for both dimensions and differ only in force: *mesthi* is best interpreted as a necessity epistemic modal and *paleng* as a possibility epistemic modal. However, examples which targeted necessity force unveiled a striking difference in Paciran Javanese: we would have expected only *mesthi* to be felicitous, but *paleng* was also felicitous, and sometimes even preferred. I suggested that this could be attributed to a different interpretation of *mesthi* whereby it is a possibility modal coupled with an exhaustivity condition, effectively allowing there to be only one possibility whereas *paleng* is interpreted as a simple possibility modal. While this seems to be on the right track, I leave this for future research to fully investigate the details of such an analysis.

In §3.2, I concentrated on non-epistemic modals *kudu, oleh, iso*. The modals *oleh, iso* appear to lexically specify for both dimensions as well: *oleh* is best interpreted as a possibility deontic modal and *iso* as a possibility circumstantial modal. The modal *kudu* differs in force from *oleh, iso* in allowing only necessity force. This modal does not lexically specify for modal flavour. It allows all non-epistemic types of modality: it can be interpreted as deontic, circumstantial, teleological, or bouletic, showing variation within the Javanese modal system.

In how the modal system is carved up in Paciran Javanese, it is striking that there is no overlap between epistemic and non-epistemic types of modality. Even for the modal

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kudu, which allows for different types of root modality, a distinction remains between epistemic and non-epistemic modality. This point is further discussed in Chapter 6. In the following section, I focus on weak necessity modals *mesthine, kudune*, and discuss the type of modality that these modal expressions can be interpreted as.

4   Modals with *–(n)e* in Paciran Javanese

In this section, I discuss the modals with the suffix *–(n)e* in Paciran Javanese with respect to two main dimensions of modality: modal force and modal flavour. I focus on the weak necessity modals *mesthine, kudune* in §4.1. In §4.2, I discuss on one hand the morphological similarity of these modals based on the root to the necessity modals *mesthi, kudu*, and on the other hand, the morphological similarity based on the suffix *-(n)e* to the evidential modals *ketoke, koyoke, jekene, watake, bonake*.

4.1   Weak necessity modals *mesthine, kudune*

The modals *mesthine, kudune* both appear to be weak necessity modals in terms of their modal force, but differ from each other in terms of the type of modality that they can be interpreted as. I first discuss their modal force in §4.1.1. In §4.1.2, I focus on their modal flavour. I show that *mesthine* seems to only allow epistemic modality, while *kudune* appears to allow both deontic and teleological types of modality.

4.1.1   Modal force of mesthine, kudune

The modals *mesthine, kudune* differ from pure necessity and pure possibility modals discussed above in §3 in their modal force. In this section, I show that *mesthine, kudune* both have 'weak necessity' force, similar to modals *should* or *ought* in English.

Clues that *kudune* has weak necessity force are suggested by comments such as *kudune* is *lebih 'soft',* more soft compared to *kudu* as in (33). Statements with *kudu* are sometimes referred to as a *perinta* 'law'.

(33)   sampeyan **kudu-ne**   wingi   marek-no   PR-e
        2SG   DEONT.must-NE yesterday AV.finish-APPL   homework-DEF
        'You should have finished your homework yesterday.' (23may11_2.069)

Another clue that *kudune* does not have pure necessity force is the type of verbs that can introduce a sentence with this modal compared to one with *kudu*. In (34), a sentence with the pure necessity modal *kudu* is best introduced with the verb *ngongkon* 'to order', while a sentence with *kudune* is cannot be felicitously introduced by this verb according to some speakers. Instead, the modal *kudune* is best introduced by a neutral verb such as *ngomong* 'to say', suggesting that *kudune* does not have pure necessity force, but something weaker.

(34) a. Context: *Ibune Mayu **ngongkon*** (Mayu's mother orders that…)
   Mayu **kudu**   nulis   skripsi
   Mayu DEONT.must AV.write   thesis
   'Mayu must write her thesis.' (25may11.004)

  b. Context: *Ibune Mayu **ngomong** / #**ngongkon*** (Mayu's mother says… /
   # Mayu's mother orders…)
   Mayu **kudu-ne**   ewoh nulis   skripsi tapi dolan-an terus
   Mayu DEONT.must-NE busy   AV.write thesis but   visit-AN then
   'Mayu ought to be writing her thesis, but just hangs out with her friends.'
   (25may11.005)

Furthermore, it is not redundant or contradictory to follow a sentence with *kudune* with a pure necessity modal of the same type of modality, *kudu* in Paciran Javanese, in a different sentence. Consider (35) below. A consultant comments that *"'kudune, kudu' sama nek konteks ini, tapi gurune lebih soft. Artine podho 'ngongkon', tapi 'kudu' lebih 'stressing'; 'kudune, kudu'* are the same in this context, but the teacher is softer. The meaning is the same in that someone is giving an order, but the ordering is more stressed with '*kudu*'."[123]

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[123] Note that it is not possible to replicate a test noted in von Fintel and Iatridou (2008) in Javanese. With this test, (i) is not a contradiction, suggesting that *ought* has weaker force while (ii) is a contradtion:
 (i) You ought to do the dishes but you don't have to.
 (ii) #You must/have to do the dishes but you don't have to. (von Fintel & Iatridou 2008:117, (3),(4))
In Javanese, this test is impossible because, as shown in Chapter 3, *NEG > kudu* only has the bouletic interpretation (not > want) and *kudu > NEG* only has the surface scope (i.e. *kudu* cannot restructure below negation to have a different semantic scope).

(35) murid-murid-e   **kudu-ne**   marek-no   tugas-e   sesok,
student-student-DEF   DEONT.must-NE   AV.finish-APPL   work-DEF   tomorrow

terus Mayu yo   **kudu**
then Mayu   yes   DEONT.must
'Students should finish their homework for tomorrow, and Mayu has to finish her homework.' (14june2011.002)

In the same sentence, however, the pure necessity modal *kudu* cannot be combined with *kudune*, hypothesized here to have weak necessity modal, as shown in (36). As suggested in Chapter 3, this can be understood under the assumption that the same event cannot be ascribed two different types of modal force under the same type of modality in Javanese.

(36)   Context: *Gurune ngongkon*: (The teacher orders:)
    * Dayu **kudune**   **kudu**   marek-no   PR-e   disek
    Dayu DEONT.must-DEF DEONT.must AV.finish-APPL homework-DEF before
    ('Dayu ought to have to finish her homework first.') (25may11.048)

Similar comments also arise with *mesthine*. In comparing (37) with *mesthi*, shown to be a pure necessity modal above in §3, to (38) with *mesthine*, the consultant comments that (37) with *mesthi* is "*lebih jakin,* more certain [compared to 'mesthine'], *tapi podho-podho gak ngerti Fina wes mudhun toh durung,* but for both, [the speaker] does not know [if] Fina has already gotten off or not yet." With *mesthine* in (38), the consultant adds that *sing ngomong masih ragi* 'the speaker still doubts' whether Fina has gotten off or not.

(37)   Fina **mesthi**   wes mudhun nek terminal   bis
    Fina EPIST.must PERF get.off   at   terminal   bus
    'Fina must have gotten off at the bus station.' (4may11NTZ.050)

(38)   Context offered: '*mergo wes dikasih jam .... jam 2 dari Surabaya, sa'iki wes jam 5. Mergo wes jam 5, mesthine mudhun*' (because [you] are already given the time; 2 o'clock from Surabaya, now it's already 5 o'clock. Because it's already 5 o'clock, [she] should have gotten off)
    Fina **mesthi-ne**   wes mudhun nek terminal bis
    Fina EPIST.must-DEF PERF get.off   at   terminal bus
    'Fina should already have gotten off at the bus station.' (4may11NTZ.051)

In sum, results from elicitation show that *mesthine, kudune* have weak necessity force, different from their counterparts *mesthi, kudu*, which were argued to have pure necessity

force in §3 above. The morphological relation of these modals will be further discussed below in §4.2 and §4.3.

4.1.2 Investigating the modal flavour of mesthine, kudune

In this section on modal flavour, I show that while *mesthine* appears to only allow for epistemic modality just like its pure necessity counterpart *mesthi*, the modal *kudune* seems to allow for deontic, teleological as well as circumstantial modal flavours, but not a bouletic interpretation. The weak necessity modal *kudune* therefore is different from its pure necessity counterpart *kudu* in only allowing a subset of the root modal flavours, while *kudu* includes bouletic modality.

The contrast between *mesthine* and *kudune* in terms of their modal flavour is highlighted in the following example from elicitation in (39). The sentence in (39)a relates to the rainy weather and can be considered epistemic, based on the available evidence. While this sentence is felicitous with *mesthine*, the same sentence is infelicitous with *kudune,* (39)b. The consultant explains that with *kudune,* this suggests that the speaker themselves is ordering the rain to be done.

(39) a. **mesthi-ne**   wes   terang   udan-e
       EPIST.must-NE   PERF   downpour rain-DEF
      'It should have finished downpouring.' (4may11NTZ.056)

   b. # **kudu-ne**   udan-e   wes   terang
      DEONT.must-NE   rain-DEF PERF   downpour
      ('It should be done downpouring.') (4may11NTZ.061)

The above example therefore shows two points: (i) *mesthine* is felicitous in an epistemic context (here commenting on the weather, based on the available evidence) and (ii) *kudune* is not and instead seems to have a deontic flavour.

An example from the questionnaire on modality confirms these two points. Here, the epistemic context is more transparent, as spelled out in (40). In the semi-forced choice task between a target sentence with *mesthine* and one with *kudune*, 11/15 participants chose the one with *mesthine* and 2/15 participants allowed both target sentences.[124]

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[124] Two participants gave an alternative answer. One was "*Biasane nek Yogya sa'iki wis udan,* Usually in Yogya now it has already rained', which highlights the habitual reading. The second was "*Paleng sa'iki nek Yogya udan*, maybe in Yogya now it's raining" with the modal *paleng* 'maybe'. This example highlights

(40)   EPISTEMIC context: *Awakmu gak manggon nek Yogya maneh, tapi sa'iki nek Malang. Awakmu ngerti bedone musim nek Yogya mbek nek Malang. Awakmu weroh nek Yogya wayahe udan, terus sa'ben sore, gelek ono udan nok kono. Sa'iki jam 3 sore. Dadi...*
(You are not living in Yogya anymore, but now in Malang. You are realizing how different it is with the weather in Malang, where you live right now. You know that in Yogya it's the rainy season now, and there's often rain every afternoon. Now it's 3pm, so...)
mesthi-ne   sa'-iki   udan nek   Yogya
EPIST.must-NE SA-that   rain at   Yogya
'It should be raining now in Yogya.'

The results from felicity judgment task, where 1 = *cocok 100%* 'fits 100%' and 5 = *gak cocok blas* 'does not fit at all', also appears to be in favour for *mesthine* in this context compared to *kudune*. The average rating out of 15 participants is 1.8 for the target sentence with *mesthine*, while that with *kudune* received an average rating of 3.2, suggesting that *mesthine* can be best interpreted in an epistemic context.

In sum, results from both elicitation and the questionnaire on modality show that *mesthine* only allows for epistemic modality. The above examples also show that *kudune* does not allow for epistemic modality and instead, clues from consultant's comments suggest that this modal allows for deontic modality. The following data confirm this point and show also that *kudune* allows for teleological modal flavour, based on someone's goals or aims, as well. However, I show that *kudune* does not allow for bouletic modal flavour; that is, based on someone's desires or wishes.

Additional empirical evidence from elicitation in (41) suggests that *kudune* allows for deontic type of modality, based on a certain body of rules or regulations, such as the general rules for hanging laundry or a mother's rules for her child's behaviour.

(41) a.   Context: *bu Maula ngomong....* (Mrs. Maula says…)
     Yeni **kudu-ne**   mepe klambi-ne   nek isuk,   ojo   nek
     Yeni DEONT.must-NE hang   clothes-DEF   at   morning don't at

     sore
     afternoon
     'Yeni should hang up her clothes in the morning, not in the afternoon.'
     (4may11NTZ.065)

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the tendency of Javanese speakers to only use a necessity modal when absolutely certain.

b. Context: *Ibune ngomong karo bocah* (Their mother says to the children…)
sampean **kudu-ne** ora mbengok-mbengok
2SG DEONT.must-NE not AV.shout-AV-shout
'You should not shout!' (10Apr11.067)

The modal *kudune* also appears to allow for teleological modal flavour, compatible with one's aims or goals. In the context given in (42) from the questionnaire on modality, the goal is to get to the Blimbing market, which is in the next village east. Given two target sentences, one with *kudune* and one with *mesthine* in the semi-forced choice task*,* 9/15 participants chose the target sentence with *kudune* while only 1/15 participants chose that with *mesthine*, and 1/15 participants chose both target sentences as equally appropriate for this context. These results suggest that *kudune* allows for a teleological flavour, while *mesthine* does not.

(42)   TELEOLOGICAL context: *Nek kudu reng pasar Blimbing, iso numpak macem-macem kendaraan. Awakmu iso numpak dokar, becak mesin, angkutan umum, utowo sepeda montor nek nduwe. Cak Patrus mbek Yu Dur mikir luwih enak reng pasar Blimbing numpak dokar. Soale, luwih nyantai terus murah pisan. Dadi, menurute Cak Patrus mbek Yu Dur…* (If you want to go to Blimbing market, you can get there by different ways. You can take a horse-drawn carriage, machine rickshaw, a public van, or a motorbike if you have one. Patrus and Dur think the best way to go to the Blimbing market is by horse-drawn carriage because it's more relaxing and the cheapest. So, according to Patrus and Dur's opinion…)

nek sampeyan reng pasar Blimbing, **kudu-ne** numpak
if 2SG to market Blimbing, *must-NE* ride

dokar
horse.drawn.carriage
'If you go to Blimbing market, you ought to take a horse-drawn carriage.'
(9/15 for *kudune*, 1/15 for *mesthine*, 1/15 both, 4/15 offered alternative sentence)

However, note that 4/15 participants offered an alternative answer; each independently converged on the same sentence with *enak'e* 'nice-NE'. Three participants gave the alternative '*Nek sampeyan reng pasar Blimbing,* **enak'e** *numpak dokar*' and one gave the alternative '*Nek sampeyan reng pasar Blimbing,* **kepenak'e** *numpak dokar*'. The fact that all four alternatives converged on the same construction with *enak'e* suggests that this is an additional way to express teleological type of modality besides with *kudune*.

An additional example from the questionnaire on modality also suggests that *kudune* can express teleological modality. In this example in (43), the target sentence

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with *kudune* is contrasted to that with *kudu*. Results from the semi-forced choice task show that 11/15 participants chose the target sentence with *kudune* while only 2/15 chose that with the root necessity modal *kudu* and 1/15 participants chose both. That the majority of responses is for the target sentence with *kudune* suggests that this modal allows teleological modal flavour.

(43)　TELEOLOGICAL context: (adapted from von Fintel & Iatridou 2008) *Ono telong coro tek iso reng Yogya teko Paciran: liwat Semarang, liwat Bojonegero, mbek liwat Suroboyo. Cak Khuluq ngomong sing paling enak iku liwat Bojonegero.* (There are three ways to get to Yogya: the Semarang Route, the Bojonegero route, and the Surabaya route. Cak Khuluq says that the Bojonegero route is the best.)

　　　a.　nek　sampeyan　reng　Yogya　teko　　　　Paciran,　**kudu-ne**　　　lewat
　　　　　if　　2SG　　　　to　　Yogya　come.from　Paciran,　DEONT.must-NE　path

　　　　　Bojonegero
　　　　　Bojonegero
　　　　　'If you go to Yogya, you ought to take the Bojonegero route.'
　　　　　(11/15 responses, 1/15 both)

　　　b.　nek　sampeyan　reng　Yogya　teko　　　　Paciran,　**kudu**　　　　　lewat
　　　　　if　　2SG　　　　to　　Yogya　come.from　Paciran,　DEONT.must　　　path

　　　　　Bojonegero
　　　　　Bojonegero
　　　　　'If you go to Yogya, you have to take the Bojonegero route.'
　　　　　'If you go to Yogya, you want to take the Bojonegero route.'
　　　　　(2/15 responses, 1/15 both)

In follow-up via elicitation (independent of the questionnaire), one consultant says that for her, only the target sentence with *kudune* is possible. For her, the sentence with *kudu* is only possible if all the other ways to get to Yogya are impossible, such as *jalane rusak*, 'the roads are broken'. One might wonder why some participants allow the sentence with *kudu* here. I suggest that for some participants, *kudu* is interpreted as a bouletic modal, such as 'If you go to Yogya, you want to take the Bojonegero route.'

　　　Finally, one participant offered an alternative target sentence for this context, again with *kepenak'e* 'KE-nice-NE': "*Nek sampeyan reng Yogya teko Paciran, kepenak'e liwat Bojonegero'*. This alternative echoes the point above that this is another way to express teleological modality.

To summarize the results so far, I have shown that *mesthine* appears to not allow for deontic modality. For the type of modality that *kudune* allows, I have shown that this modal allows for both deontic and teleological modal flavours. We have seen in §3.2 above that the pure necessity modal *kudu* appears to allow for all root modal flavours: it can be interpreted as deontic, circumstantial, teleological, and bouletic. We might expect that *kudune,* which shares the same root, can also convey circumstantial and bouletic modality. I show that *kudune* seems to allow for a circumstantial reading, but that this weak necessity modal does not convey bouletic modality, different from the pure necessity modal *kudu*.

First, concerning circumstantial modality, the modal *kudune* seems to allow for this modal flavour, as it is felicitous in (44). One consultant comments that this would be appropriate in a context when you really have to pee; in other words, concerning some facts about the world (e.g. about how the body works).

(44) aku **kudu-ne**   wes nguyoh
      1SG DEONT.must-NE PERF AV.pee
      'I ought to have already peed.' (16may2011.015)

Second, different from the necessity root modal *kudu*, the weak necessity modal *kudune* does not appear to allow for a bouletic interpretation, based on one's wishes or desires. For instance, empirical evidence was given in Chapter 3 and also above in §3 that *kudu* can be interpreted as 'want'. One example is repeated in (45).

(45) sa'-karep-e,   sampean **kudu**   nginep   opo ora
      SA-wish-NE   2SG   DEONT.must AV.stay.overnight what not
      'Up to you, you want to stay overnight or not.....' (10Apr11.088)

With the addition of the suffix *–(n)e*, however, a bouletic reading such as 'would like' or 'wish' is not possible. As exemplified in (46), *kudune* is infelicitous in this context, suggesting that it can only have a deontic, circumstantial or teleological interpretation. If *kudune* allowed for a bouletic reading, this sentence would be felicitous as in the intended "Up to you, you would like to stay overnight". The question then arises why the bouletic reading is unavailable with *–(n)e* – whether it is due to the semantics of the suffix itself or

due to the semantics of *kudu* interpreted as 'want'. Further research on these two avenues will be important to understand this restriction.

(46) # sa'-karep-e,   sampean   **kudu-ne**   nginep
       SA-wish-NE   2SG   DEONT.must-NE AV.stay.overnight
       ('Up to you, you ought to stay overnight.')
       (Intended: 'Up to you, you would like to stay overnight.') (10Apr11.090)

Instead, a felicitous example in (47) is offered, where *kudune* clearly does not have a bouletic interpretation, but a deontic one; for example, based on social regulations of the appropriate time when to go home or stay overnight.

(47) **kudu-ne**   sampean   nginep   kene soal-e   wes bengi
      DEONT.must-NE 2SG   AV.stay.overnight here because-NE   PERF evening

      tapi   sa'-karep-e
      but   SA-wish-NE
      'You ought to stay overnight here because it's already evening, but it's up to you.'
      (10Apr11.091)

The findings in this sub-section on the type of modality that the weak necessity modals *mesthine, kudune* allow can be recapped by comparing these findings to the type of modality that their pure necessity counterparts *mesthi, kudu* allow. First, empirical evidence presented above suggests that the weak necessity modal *mesthine* allows for the same type of modality that the pure necessity modal *mesthi* allows for: epistemic modality, based on a body of available evidence. Second, results from the questionnaire on modality as well as elicitation on *kudune* suggest that the type of modality that the weak necessity modal *kudune* allows for is different from that of the pure necessity modal *kudu*. Specifically, the necessity modal *kudu* allows for all root modality interpretations: deontic, teleological, circumstantial and bouletic. The weak necessity modal *kudune*, however, allows for all but bouletic modality interpretations. These findings are summarized in Table 4.

Table 4. Paciran Javanese modal system of necessity and weak necessity modals
(Vander Klok 2008, Fieldwork 2011)

		MODAL FLAVOUR				
		EPISTEMIC	ROOT			
		EPISTEMIC	DEONTIC	TELEOLOGICAL	CIRCUMSTANTIAL	BOULETIC
MODAL FORCE	NECESSITY	*mesthi*	*kudu*			
	WEAK NECESSITY	*mesthine*	*kudune*			-

These findings then raise the question of why the type of modality that the weak necessity modal *kudune* is different than that of the necessity modal *kudu*. I do not offer an analysis here, but speculate that it is likely due to semantic reasons, rather than syntactic. That is, I do not consider a proposal whereby the distribution of *kudu* interpreted as 'want', the bouletic reading, is in a syntactically different domain as a verb than the other readings of *kudu* and therefore not available to raise to the –*(n)e* projection, the highest projection along the extended verbal projection in Javanese. This is because I consider that the –*ne* TAM markers are formed via direct Merge to the –*ne*P projection and not via internal Merge, as argued in Chapter 3.

Therefore, I suggest that this difference in the types of modality that *kudune* and *kudu* allow for could be due to semantic reasons. In particular, this would involve explaining that *kudu* as 'want' may have a different semantics than *kudu* as deontic, teleological or circumstantial, and the suffix –*(n)e* is susceptible to this different semantics. Future investigation into the semantics of *kudu* interpreted as 'want' in Javanese may give insight into this line of investigation.

Having discussed the two main dimensions of modality, modal force and modal flavour, for *mesthine, kudune*, I now turn to discussing possible similarities with other TAM markers that share the suffix –*(n)e* compared to those that do not in Paciran Javanese.

4.2   Modals *mesthine, kudune* and others with the suffix –*(n)e*

In this section, I note the similarities between TAM markers in Paciran Javanese that share the suffix –*(n)e* and speculate on why these markers in particular are grouped together.

As noted in Chapter 3, the TAM markers in Paciran Javanese that share the same suffix -*(n)e* include the weak necessity modals *mesthine, kudune* as discussed above as well as what I have termed evidential markers: *jekene, koyoke, ketoke, watake, bonake.* This group is shown in Table 5.

Table 5. TAM markers with –*(n)e* in Paciran Javanese

Grammatical Category	Modal marker	Gloss
Adverb	*jekene*	'direct evidential'
	koyoke	
	ketoke	
	watake	'indirect evidential'
	bonake	
	mesthine	'epistemic.should'
	kudune	'deontic.should'

The evidential markers, which deserve much more detailed research, are roughly grouped into 'direct evidentials' and 'indirect evidentials', as I have described in Chapter 1 and 2. To reiterate a few points, the direct evidentials include *jekene, ketoke, koyoke* and allow direct perceptual evidence as (48). These evidential markers also allow indirect evidence, such as an inference, as exemplified in (49).

(48)   Context: *Ndelok Jozi adoh, awakmu takok*. ([You] see Jozi from afar, you ask…)
        jeke-ne / **ketok-e** Jozi?
        I.think-NE / see-NE   Jozi
        'Could it be Jozi?' (19Feb11.034, 035)

(49)   Context: *mbak Titin tangi jam 6 minggu wingi, tapi biasane, tangi jam 4* (Miss
        Titin woke up at 6am last week, but usually, [she] wakes up at 4am)
        mbak   Titin **koyok-e** wes   loro
        Miss   Titin like-NE PERF   sick
        'Titin seems to have been sick.' (19Feb11.027)

Indirect evidentials, however, only allow for indirect evidence (as its name suggests) such as via auditory perception, (50). In Paciran Javanese, the indirect evidential markers include *bonake, watake*. In general, these markers appear to be felicitous under any kind of non-visual evidence.

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(50) Context: *Awakmu nok jero omah. Awakmu gak iso ndelok metu. Awakmu krungu thok bledeg.* (You are inside the house. You cannot see outside. You only hear thunder.)
bonak-e / **watak-e**   ape   udan
seem-NE / character-NE   FUT   rain
'It seems that it will rain.' (19Feb11.072, 073)

The fact that these evidential markers are grouped together with the weak necessity modal markers *mesthine, kudune* raises a number of questions. For example, what can this grouping tell us about the semantics of the suffix *–(n)e*? We might expect this suffix to have the same semantic effect across weak necessity modals as well as for evidential markers. Likewise, what can this grouping tell us about the semantics of the roots that it attaches to? Specifically, this grouping might reveal a commonality across weak necessity modals and evidential markers that allows for the same suffix. While the first question must await future research, comparing modals with the suffix *-(n)e* to those without may shed light on the second question.

4.3   Modals that cannot appear with the suffix *–(n)e*

In this section, I compare the roots of TAM markers with the suffix *–(n)e* to those that cannot occur with *–(n)e* to better understand this partition. I suggest that the type of modal force appears to distinguish these two groups. More specifically, I show that all modals that cannot appear with the suffix *-(n)e* are possibility modals, while the roots of the weak necessity modals *mesthine, kudune* are necessity modals. Furthermore, this suffix can also attach to the future marker *ape* in Paciran Javanese, which I assume to also have necessity force similar to a bare future (e.g. Copley 2002). I speculate therefore that the suffix *–(n)e* can only attach to markers that have necessity force. This suggests that the roots of evidential markers with *–(n)e* also have necessity modal force in Paciran Javanese; however, further research is necessary to better understand this proposal. The modal markers that have the suffix *–(n)e* are bolded in Table 1, repeated from above.

Table 1. Modal markers in Paciran Javanese

Grammatical Category	Modal marker	Gloss
Adverb	*jeke**ne***	'direct evidential'
	*koyok**e***	
	*ketok**e***	
	*watak**e***	'indirect evidential'
	*bonak**e***	
	*mesthi**ne***	'epistemic.should'
	*kudu**ne***	'deontic.should'
	mesthi	'epistemic.must'
	paleng	'maybe'
Auxiliary	*kudu*	'deontic.must, circ.must, teleo.must'
	*ape**(ne)***	'FUT'
	oleh	'deontic.may'
	iso	'can'
Verb	*kudu*	'want'

In addition to occurring with the weak necessity modals *mesthine, kudune* and the evidential markers, I show here that the suffix *–(n)e* can also occur with the future marker *ape*, illustrated in (51). While the form with *–(n)e* was overheard in natural conversation, there are no examples in my database of recorded conversation. When asked about this form in elicitation, there appears to be no difference in meaning that arises, but further research is necessary on both semantic and syntactic fronts.[125]

(51) a.   mas Anas **ape** ewoh rokok-an
        Mr. Anas FUT busy   smoke-AN
        'Mr. Anas is going to be smoking.' (4may11ape.003)

    b.   mas Anas **ape-ne** ewoh rokok-an
        Mr. Anas FUT-NE busy   smoke-AN
        'Mr. Anas is going to be smoking.' (4may11ape.004)

The future marker *ape* is now added to the list of markers that can take *–(n)e* in Paciran Javanese. The following table contrasts the roots that can occur with this suffix and those that cannot. Focusing on those that do not occur with this suffix, what is striking from

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[125] The form with *–ne* is suggested to be used more frequently in the south of the village (*kidul*): *artine podho mbek* 'ape', *tapi beda daerahi* 'the meaning is the same with *ape*, but [from a] different area'. I would want to follow up on this clue as well as better understand the syntactic constructions that *apene* can or cannot occur in.

this partition is that *paleng* 'maybe'*, oleh* 'allow' and *iso* 'can' all have the same quantificational force as possibility modals.

Table 6. Roots that can take 'adverbial' *–(n)e* and
those that cannot in Paciran Javanese

Can take adverbial *–(n)e*	Cannot take adverbial *–(n)e*
jeke 'I.think'	*paleng* 'maybe'
koyok 'like, as'	*oleh* 'allow'
ketok 'see'	*iso* 'can'
watak 'character'	
bonak '-'	
mesthi 'epist.must'	
kudu 'deontic.must'	
ape 'FUT'	

Before discussing the group of markers that can occur with the suffix *–(n)e,* I first present evidence that the other group do not occur with this suffix. This is clear for the modal *paleng* 'maybe': the addition of *–(n)e* results in ungrammaticality, shown in (52).

(52) * paling-e
      maybe-NE

It is not so clear at first glance that the modals *iso* and *oleh* do not take this suffix, as shown in (53) and (54) respectively. However, I show that this is a different suffix *–(n)e* that derives a noun, and not an adverb.[126] In other words, *-(n)e* with possibility modals are located in the DP domain while *–(n)e* with necessity modals such as *mesthi, kudu* are located in the CP domain.

(53) Jozina: trus...iso boso   seng liyo   sak liya-ne   boso   jowo,
              then...can language REL different ONE different-NE language javanese,

        boso   indonesia?
        language   indonesia
        'Can [they] speak any language other than Javanese?'

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[126] An additional test would be to use the negation test between *dudu*, which subcategorizes for nominals vs. *ora/gak*, which subcategorizes for verbal or adjectival predicates as shown in Chapter 2. I leave this test for future research.

Nasrul: [...]gak iso miss.... asli-ne yo, **iso-ne** mung saitik-saitik
      NEG can Miss... original-NE yes, can-NE only little-little
      '[They] can't, Miss. Ordinarily, [they] can only a little bit.'
      (May1_11_IJ_Nasrul: 3;15-3:20)

(54)   alon-alon **oleh-e** Jozi mangan
        slow-RED *oleh*-NE Jozi eat
        'Slowly is the way Jozi eats.' (4June2011-TF)

Evidence that the suffix *–(n)e* with *iso, oleh* is not the same as the adverb-deriving suffix *–(n)e*, as with *mesthine, kudune*, is that *iso, oleh* can also occur with the pronominal suffixes *–ku* 'my' and *–mu* 'your'. This is demonstrated in (55) for *iso* and (56) for *oleh*.

(55) a.   **iso-ku** masak sego goreng, sego pecel
           can-my cook rice fried rice pecel
           'My ability is to make fried rice and pecel rice.' (4june2011-TF.022)

      b.   **iso-mu** nangis bae
           can-your AV.cry just
           'All you can do is cry.' (12july2012)

(56) a.   **oleh-ku** nules layang iki ora deq wingi
           oleh-my write letter DEM NEG just yesterday
           'It wasn't yesterday that I wrote this letter!' (Horne 1961:250; *my gloss*)

      b.   kapan **oleh-mu** arep bali nyang Solo?
           when *oleh*-your FUT back to Solo
           'When are you going back to Solo?' (Horne 1961:251; *my gloss*)

Horne (1961) discusses this construction with *oleh*, describing this as "substantive phrases", where *oleh-e* can be translated as 'his/her/their act of [doing or being]', *oleh-ku* 'my act of doing or being' and *oleh-mu* 'your act of doing or being'. This same paradigm in shown with canonical nouns such as *pen* 'pen' and *buku* 'book' in (57), strongly suggesting that this suffix is located in the DP domain, and does not derive an element in the CP domain like modals *mesthine, kudune*.

(57) a.   pen-**ku**
           pen-my
           'my pen'

b.   buku-**mu**
         pen-your
         'your book'

    c.   buku-**ne**
         book-DEF
         'his book', 'the book' (Horne 1961:14, *my gloss*)

This paradigm is not possible with the following modals: *jekene, koyoke, ketoke, bonake, mesthine, kudune, apene*:[127]

(58) a.   * jeke/koyok/ketok/bonak/mesthi/kudu/ape-**ku**
      b.   * jeke/koyok/ketok/bonak/mesthi/kudu/ape-**mu** (12july2012)

From these results, we can conclude that the suffix *-(n)e* that can occur with possibility modals *iso, oleh* is not the same suffix as the one occurring with modals such as *mesthine, kudune*. In particular, the suffix *-(n)e* occurring with *iso, oleh* derives a noun and is located in the DP domain while the suffix *-(n)e* occurring with *mesthine, kudune* derives an adverb and is located in the CP domain. Finally, the main generalization is that all modals that do not occur with the adverbial *–(n)e* are possibility modals, as shown in Table 6 above.

As all modals that do not occur with adverbial *-(n)e* have possibility force, this raises the question whether all modals that do occur with this suffix can also be grouped according to their modal force. As shown above in §4.1, *-(n)e* attaches to necessity modals *mesthi, kudu* to derive a weak necessity modal. This suffix also attaches to *ape*, a future marker in Paciran Javanese, which I also assume to have necessity force. It is not known at this point what semantic effect, if any, this suffix has on the future marker. Given this evidence, we might then expect that the roots of the evidential markers to also

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[127] Note that this paradigm is possible with the root *watak* 'character', showing that this root can occur with the DP suffix -*ne*:
   (i)   **watake** *Jozi iku senengane ngeke'i wong-wong sing kere* 'Jozi's personality is one that is happy to give to the poor'
   (ii) **watakmu** *apik* 'your personality is good'
   (iii) **watakku** *keras* 'your personality is bad'
However, this root seems to be able to be used with both the DP –*ne* as well as the CP adverbial –*ne* suffix as it appears that only the CP *watake* has freer surface syntactic distribution (sentence-initially, between the subject and VP, sentence-finally), as shown in Chapter 2.

have necessity force. Further investigation into the roots of the evidential markers as well as with the suffix *–(n)e* will provide additional insight into this proposal.

5 Summary

To give a summary of this chapter, I have investigated a number of different modal expressions in the dialect of Javanese spoken in Paciran through a variety of fieldwork methods. These methods include storyboards (www.totemfieldstoryboards.org), natural conversation recordings, interviews and elicitation. From the empirical results of this research, I have established the modal system as exemplified in Table 2 (repeated here). I have concentrated on how modal expressions carve up the modal space considering two dimensions: modal force and modal flavour.

Table 2. Paciran Javanese modal system (Vander Klok 2008, Fieldwork 2011)

		MODAL FLAVOUR				
		EPISTEMIC	ROOT			
		EPISTEMIC	DEONTIC	TELEOLOGICAL	CIRCUMSTANTIAL	BOULETIC
MODAL FORCE	NECESSITY	*mesthi*	*kudu*			
	WEAK NECESSITY	*mesthine*	*kudune*			-
	POSSIBILITY	*paleng*	*oleh*	-	*iso*	-

I find that a number of modals in Paciran Javanese lexically specify for both the modal force as well as the modal flavour. However, I show that not all modals within Javanese have the same prototype, such as with *kudu* or *kudune*, which allow for different types of modality.

In the following chapter, Chapter 6, I discuss the cross-linguistic implications of different modal systems, keeping in mind the modal system of Paciran Javanese.

Chapter 6.
Conclusions and Extensions.

1   Introduction

The objective of this chapter is to outline the main conclusions attained in this dissertation in §2. In §3, I consider one avenue of how the research in this dissertation can be extended. Specifically, I concentrate on the cross-linguistic implications of different types of modal systems within a possible typology.

2   Conclusions

This dissertation provides the first comprehensive inventory of the set of TAM (tense-aspect-modal) markers in Javanese, specifically focusing on the dialect spoken in Paciran. In identifying these markers, I establish the grammatical category of these TAM markers in Chapter 2. I show that there is a set of adverbs; namely, *ketoke, koyoke, jekene* 'direct evidential', *bonake, watake* 'indirect evidential', *mesthine* 'EPIST.should', *kudune* 'ought', *mesthi* 'EPIST.must', *paleng* 'maybe', as well as a set of auxiliaries which include *wes* 'PERF', *lagek* 'PROG', *kudu* 'DEONT.must', *ape* 'FUT', *tau* 'EXP.PERF', *iso* 'can', *oleh* 'allow'. As well, in Chapter 3, I establish the relative syntactic position of each individual TAM marker. I conclude that TAM markers in Javanese must occur in a strict relative order similar to the hierarchy proposed in Cinque (1999), providing support for the proposal of a universal hierarchy of functional projections. More broadly, I show that all TAM adverbials occur structurally higher than all TAM auxiliaries in Paciran Javanese. From this research, this dissertation makes an important contribution to how TAM markers can be represented in natural language.

In addition to establishing the inventory of TAM markers in Paciran Javanese, in this dissertation I investigate two aspects of TAM markers, one focusing on the syntax of auxiliaries and one focusing on the semantics of modals in this dialect.

On the syntactic side, in Chapter 4, I show the main properties of three different constructions in Paciran Javanese: VP-topicalization, subject-auxiliary answers, and auxiliary fronting in yes-no questions. This dissertation provides the first description of the syntactic properties of VP-topicalization and subject-auxiliary answers in Javanese and shows dialectal variation of auxiliary fronting in yes-no questions, comparing Paciran Javanese with Peranakan Javanese as discussed in Cole et al. (2008).

Investigation into the interaction of TAM auxiliaries in these three different constructions reveals that despite their different properties, each of these constructions distinguishes the set of TAM auxiliaries into the exact same two groups in Paciran Javanese. I propose that an intermediate complementizer-like projection, MP, mediates the distinction of these two groups and serves as a phase edge. I show that this phase edge must be above low NegP as well as some auxiliary projections but below TP, similar to proposals in e.g. Aldridge (2010). Furthermore, I suggest that these different constructions exemplify the fluctuation of Javanese as between an A-type and a B-type language, similar to Indonesian (Travis 2008), in terms of the proposed X/XP parameter (Travis 2005, 2006).

On the semantic side, in Chapter 5, I establish how modal system is organized in Paciran Javanese through a variety of fieldwork methods including a questionnaire on modality that I designed, storyboards (totemfieldstoryboards.org), elicitation and recorded interviews and conversations. This research is important as it is among the first comprehensive studies on modality in East Javanese. In particular, investigation into the semantics of modals in Paciran Javanese shows that a number of modals in Paciran Javanese lexically specify for both modal force and modal flavour. However, not all modals are characterized this way; for example, I show that *kudu* must specify for universal modal flavour, but this modal allows for any root interpretation in this dialect.

Both the syntactic and semantic investigations underline the significance of theoretical linguistics towards a deeper understanding of the characterization of, for instance, cross-linguistic clausal structure. In other words, the theory provides the missing link that connects certain properties in natural language, such as why the three different constructions of auxiliary fronting in yes-no questions, VP-topicalization and

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subject-auxiliary answers to yes-no questions behave the same in their relation with the set of TAM auxiliaries.

Along the way, I have pointed out a number of extensions that are relevant to the syntax and semantics of TAM markers in Paciran Javanese. These include, for example, the different strategies to form yes-no questions and the syntax of putative VP-Ellipsis. There are many other avenues that this research brings to light, as many aspects of TAM markers have not yet been documented or studied in Javanese, let alone within the Austronesian language family. Before ending this dissertation, I want to discuss one of these avenues that concerns the cross-linguistic implications of different types of modal systems.

3   Cross-linguistic perspectives on modal systems

In this section, I discuss modal systems from a cross-linguistic perspective in light of the research on the Paciran modal system as presented in Chapter 5. In the literature, it has been noticed that modals seem to lexicalize for two main properties in different ways. These two main properties, as discussed in Chapter 5, are modal force, e.g. possibility, necessity, etc., and modal flavour, e.g. *epistemic*, based on a body of available evidence; *deontic*, based on a body of rules and regulations, etc.

Despite the different ways that languages lexicalize these properties, such as English compared to St'át'imcets which I describe in further detail below, the fact that modal systems employ the same two properties in their lexicalization suggests that there could be an underlying commonality cross-linguistically. Specifically, such possible generalizations in the lexicalization of modality suggests that there may be a deeper explanation, such as in terms of parameterization. I explore how such a parameterization might be characterized in this section, while pointing out a number of issues along the way that this implementation raises. I ultimately conclude that there needs to be further research and analysis on modal systems cross-linguistically to be able to fully evaluate such an implementation.

3.1   Inverse correlation?
Possible cross-linguistic generalizations concerning the lexicalization of modals is brought to the forefront in research by Rullmann et al. (2008). Their research shows that

the lexicalization of modals in St'át'imcets, a Salishan language, is the inverse to those in Indo-European languages like English.

For instance, English modals typically allow variable types of modality, but lexically specify for modal force. As illustrated in the simplified version of the English modal system in Table 1, the same lexical item allows for different types of modality holding the modal force constant. For example, the necessity modal *must* allows for epistemic, deontic, and circumstantial interpretations, but a different lexical item, *can* is used for possibility modal force.

Table 1. Simplified version of the English modal system
(adapted from Matthewson et al. 2006)

		TYPE OF MODALITY		
		EPISTEMIC	ROOT	
		Epistemic	Deontic	Circumstantial
MODAL FORCE	∀	*must*	*must*	*must*
	∃	*can*	*can*	*can*

The opposite organization is seen with the St'át'imcets modal system: in this language, modals allow seemingly variable quantificational force but lexically specify for the type of modality. Data from Matthewson et al. (2007), Rullmann et al. (2008) and Davis et al. (2009) show that the entire system of modals in St'át'imcets is uniform in its lexicalization of the two dimensions of modality, as shown in Table 2.

Table 2. St'át'imcets modal system
(data from Matthewson et al. 2007, Rullmann et al. 2008, Davis et al. 2009)

		TYPE OF MODALITY					
		EPISTEMIC			ROOT		
		epistemic-inference	reportative	perceived evidence	deontic-irrealis	circumstantial	future
MODAL FORCE	∀	*k'a*	*ku7*	*-an'*	*ka*	*ka-...-a*	*kelh*
	∃	*k'a*	*ku7*	*-an'*	*ka*	*ka-...-a*	*kelh*

The inverse lexicalization patterns of modals between Indo-European languages like English and St'át'imcets can be summarized as in Table 3.

Table 3. Inverse lexicalization patterns of modals (Rullmann et al. 2008:353, 86)

		TYPE OF MODALITY	
		SELECTIVE	UNSELECTIVE
MODAL FORCE	SPECIFIED		English
	UNSPECIFIED	St'át'imcets	

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von Fintel and Matthewson (2008:28) summarize that "in spite of the different places in which the languages make these distinctions lexically explicit, the basic modal semantics is entirely parallel in the two languages." This striking parallel could be considered "...evidence that languages may share fundamental aspects of meaning, while differing in the lexicalization of certain distinctions or in the syntactic means they use to achieve a similar semantics" (von Fintel and Matthewson 2008:28). I am concerned with the limits, if any, of the differences in lexicalization taking modal force and type of modality to be two fundamental dimensions of modality.

Specifically, from a typological perspective, the English and St'át'imcets data suggest that there is at least two possible loci of variation for modal expressions: (i) variation concerning the type of modality or (ii) variation concerning modal force. Such variation then raises the question of what kind of variation in modal expressions we could expect cross-linguistically. We might wonder whether the differences between an English-type modal system and the one in St'át'imcets are linked; that is, whether there could be an inverse correlation between these two types of modal systems. In this sub-section, I discuss this possibility and the questions that arise. I conclude that such an inverse correlation is not tenable.

Rullmann et al. (2008) speculate on the characterization of what a typology of modal systems would look like if such an inverse correlation holds. They note that we would expect to find no language with 'overspecified' modals as in the top left cell, and no language with completely 'underspecified' modal system as in the bottom right cell in Table 3 above. Barring further factors, it is then a question whether this could be a systemic typological generalization. Rullmann et al. (2008:354) observe that such a correlation could simply be an artifact of the rarity of studies on modality in different languages.[128]

Based on large-scale typological studies, there may be languages with a completely 'overspecified' modal system. In particular, van der Auwera, Ammann, and Kindt (2005) report in their typological study of 241 languages on epistemic and deontic modality that over half of these languages lexically specify for both types of modality

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[128] As Rullmann et al. (2008) note, nothing in their specific analysis predicts that an inverse force-modality type correlation should hold.

(123/241 languages). Similarly, van der Auwera and Ammann (2008) in their WALS survey report that 105/207 languages do not have a modal expression that can encode both epistemic or deontic (or in their terms 'situational') modality on either the necessity or possibility level. However, both van der Auwera et al. (2005) and van der Auwera and Ammann (2008) do not include modal force as a dimension of variation. As a consequence, languages with St'át'imcets-type modals and those with 'overspecified' modals are grouped together, but the characteristics of these modals are fundamentally distinct. [129] Therefore, it is likely that there exists modal systems that have an 'overspecified' modal system which lexically specifies for both modal force and the type of modality; however, as far as I am aware, such a language has not been specifically identified. We might be tempted to consider the Javanese modal system to be of this type (as suggested in Vander Klok 2008) as typically, modals lexically specify for both modal force and modal flavour. However, I do not consider Paciran Javanese to be of this type because there exist modals that vary along the dimension of type of modality, such as *kudu* or *kudune* as shown in Chapter 5; instead, I consider Javanese to be similar to an English-type modal system. I discuss this point further below.

Concerning a language with a completely 'underspecified' modal system, Rullmann et al. (2008:354) speculate that languages with a modal system that only encodes a single opposition between realis and irrealis might correspond to this type of modal system. In this system, the only modal expression would be the irrealis marker. An investigation of this point is beyond the scope of this dissertation and would require careful discussion. That is, irrealis marking varies cross-linguistically in languages that draw a distinction between realis and irrealis (Palmer 2001:2). For example, Papuan languages such as Amele, Nobonob, Anjam, Bargam and Wojokeso all mark future, imperative and counterfactual as irrealis, but not all mark hortative or prohibitive as irrealis (Roberts 1990). As well, irrealis can also include aspectual markings: Bargam marks the habitual past as irrealis, while Amele, Nobonob and Wojokeso mark habitual past as realis (Roberts 1990:392). Research on the possibility of an 'underspecified'

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[129] van der Auwera et al. (2005) (but not in van der Auwera and Mannann (2008)) include St'át'imcets, as not having 'polyfunctionality' across epistemic and deontic modality. Since it is unknown at this point how many languages are like St'át'imcets, we cannot conclude how far off these figures are. The important point is that the 'overspecified'-type and St'át'imcets-type modal sytems should not be grouped together.

modal system would therefore have to specifically identify the type of realis-irrealis distinction that may correspond to such a type of modal system.

Therefore, an inverse correlation as determined in Table 3 above raises two important questions: (i) are there 'overspecified' languages whose modals lexically specify for both the type of modality and modal force? and (ii) are there 'underspecified' languages whose modals do not lexically specify for either the type of modality or modal force? I discuss these questions in the following section.

3.2 A strong null hypothesis?

In this section, I consider a second possible generalization for a typology of modal systems, assuming that modal force and the type of modality are two dimensions for variation. In particular, I consider that at least three slots in Table 3 above can be instantiated in natural language; namely, an English-type, a St'át'imcets-type, and an 'overspecified' type. That there exists an 'overspecified' type of modal system is expected given results in van der Auwera et al. (2005), van der Auwera and Ammann (2008), as outlined above. However, it is not known whether a fourth type whereby modal expressions vary along both dimensions in a modal system is attested (i.e., an 'underspecified' type). The approach considered in this section is based on a null hypothesis that only allows three types of modal systems and how this generalization could lead to a parameterization in modal system types. However, I will show in the following section that ultimately, more research and analysis is necessary to fully evaluate this approach.

Before exploring a strong null hypothesis approach, I first consider one approach as advocated for instance in Evans and Levinson (2009). This approach is to say that languages are immensely diverse and we simply have not found such a language yet. Such an approach would maintain the facts as outlined for the three attested modal systems (an English-type, a St'át'imcets-type, and an 'overspecified' type system, cf. Table 3), but would also allow the existence of a fourth type whereby modal expressions can be ambiguous along the type of modality dimension and the modal force dimension (an 'underspecified' type). But leaving open the possibility for this fourth type begs the question of why we would expect such a language to exist and also why such a

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characterization of modality in natural language has not yet been found. Let us first identify how an underspecified type of modal system could be characterized.

One instantiation is where a modal system has one element that stands for all modal meanings (e.g. necessity epistemic, possibility epistemic, necessity deontic, possibility deontic, etc.), exemplified in Table 4.

Table 4. Hypothetical modal system that is ambiguous along both axes

		TYPE OF MODALITY	
		EPISTEMIC	DEONTIC
MODAL	NECESSITY	*x*	*x*
FORCE	POSSIBILITY	*x*	*x*

With this lexical entry, such a modal would be able to express any type of modality as well as any force, from pure possibility to pure necessity. This type of modal expression would be easy to construct with the semantic tools traditionally used to define modal expressions (i.e. Kratzer 1977, 1981).[130] However, we do not see this type of modal as a common lexical entry in a modal system for natural language.

A second type of instantiation of an underspecified modal system, where a modal expression varies along both dimensions in a specific manner as in Table 5, does not seem to be a possible instantiation. For instance, this kind of expression would say "If I have existential force, then I am epistemic and if I have necessity force, then I am deontic" or vice versa. Intuitively, such a modal expression is not a natural class, given the dimensions of variation to be modal force and the type of modality.

Table 5. Hypothetical modal system that is ambiguous along both axes

		TYPE OF MODALITY	
		EPISTEMIC	DEONTIC
MODAL	NECESSITY	*y*	*x*
FORCE	POSSIBILITY	*x*	*z*

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[130] The semantics of such a modal is easily constructed under a Kratzerian approach to modals. For example, the semantics of this modal could basically look like a St'át'imcets modal as analyzed in Rullmann et al. (2008) but without the presuppositions on the modal base (f) or the ordering source (g). Therefore, this modal is relative to any modal base or ordering source, deriving the referential ambiguity of the type of modality. As well, it takes an additional argument, m, a modal choice function from Rullmann et al. (2008:337, (50)), which can derive the apparent variable force.

(i) $[\![\text{MODAL} \ (m) \ (f) \ (g) \ (\alpha) \ ]\!]^{w,c} = T$ iff $\forall w' \in \cap c(m)(\max_{c(g)(w)}(\cap c(f)(w))): [\![\alpha]\!]^{w'} = T$

(ii)   A function m of type $<st,st>$ is a modal choice function
       iff for any set of worlds W, $f(W) \subseteq W$ and $f(W) \neq \varnothing$

Further, this kind of instantiation of a fourth modal system is not considered an acceptable type of lexical entry.[131] Therefore, I do not consider this type further. It seems then that the only probable type of modal system where modals remain unspecified for force and do not lexically select a type of modality is a system where there is one modal that stands for all modal meanings. We might expect a modal system not to exist because of its non-expressive power.

A different stance, which I will explore here, is to assume the strong *null hypothesis of universality* that the fourth type of modal system (where modals can vary along both dimensions) does not exist in order to develop a strong, predictive theory of a grammar (von Fintel and Matthewson 2008). The null hypothesis of universality can then be validated or revised once more relevant data is available. A definition of the null hypothesis is given in (1).[132]

(1)   A first null hypothesis for a typology of modals:
        Within a modal system, a language can vary along only one axis.

This hypothesis seems to be compatible with each type of modal system while disallowing the fourth underspecified type. As well, it can support variation within the modal system. For instance, while in the English modal system, modals are referentially ambiguous along the type of modality axis, the null hypothesis does not prevent a modal expression from further specification (e.g. *overspecification*) – this is what we see with

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[131] Under a Kratzerian account, it seems that the semantics for such a modal would not be possible without resorting to a disjunction in the lexicon. I have attempted to spell this out in (i).

(i) $[\![\text{MODAL}]\!]^{w,c}$ is only defined if <u>$c(f)$ is a realistic modal base</u> and <u>$c(g)$ is a stereotypical ordering source</u>.
        If defined, $[\![\text{MODAL} (f) (g) (\alpha)]\!]^{w,c} = $ T iff $\exists w' \in \max_{c(g)(w)} (\cap c(f)(w))$: $[\![\alpha]\!]^{w'} = $ T
        OR
        $[\![\text{MODAL}]\!]^{w,c}$ is only defined if <u>$c(f)$ provides a realistic modal base</u> and <u>$c(g)$ a deontic ordering source</u>.
        If defined, $[\![\text{MODAL} (f) (g) (\alpha)]\!]^{w,c} = $ T iff $\forall w' \in \max_{c(g)(w)} (\cap c(f)(w))$: $[\![\alpha]\!]^{w'} = $ T

Somehow these two lexical entries would be combined into one semantics for one modal expression. Even if we assumed a secondary ordering source or a modal choice function as in Rullmann et al. (2008) for St'át'imcets to derive the seemingly variable force, we would not be able to derive the dependency of the type of modality to the modal force (or vice versa). Thank you to an anonymous SALT reviewer for pointing this out.

[132] Another way the null hypothesis for a typology of modals could be defined is by stating what *cannot* be the case: *Within a modal system, a language cannot vary along both the type of modality axis and the modal force axis*. It seems that either definition is acceptable for the purposes of capturing the language facts here. I will stick with the one outlined in (1).

English *might*, which is lexically specified for both modal force (possibility) and the type of modality (epistemic). I suggest that Paciran Javanese also falls within the English type modal system, whereby modals vary only along the type of modality dimension, such as with *kudu* 'necessity root'. This does not preclude further specification as with modals *iso* 'possibility circumstantial' or *oleh* 'possibility deontic', which each lexically specify for both the modal force and modal flavour. German offers an example of another kind of variability within its modal system. Kratzer (1981:60-61) reports that some modals in German, while still ambiguous, have restrictions on the types of modality it is compatible with: the possibility modal *darf* cannot express circumstantial modality, and possibility modal *kann* cannot express bouletic modality. Therefore, modals can be more specific in allowing readings with only certain types of modality, but still be ambiguous. Crucially, though, this definition of the null hypothesis does not allow *complete underspecification* – for example, a modal that is already variable on one axis to change to be contextually dependent along both axes.

In addition to providing a strong predictive theory, the strong null hypothesis lends itself easily to developing parameters for a typology of modal systems.[133] Specifically, the main idea is that once a language has set a parameter to be ambiguous along one axis, it cannot then be ambiguous along a second. For example, once a modal expression is ambiguous along the type of modality axis, we would then expect that that language will not be able to have that same modal or a different modal expression be ambiguous along the modal force axis. This seems to be correct for the English and St'át'imcets data. However, data from Gitksan, a Tsimshianic language, (Peterson 2010, Matthewson 2011, in press) show that a generalization concerning the modal system of *a language as a whole* is too strong. It seems that the null hypothesis must be specific to domains *within* a modal system, rather than relating to the modal system of a language as a whole.

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[133] One might wonder whether it is necessary to think of modal systems as parameterized. Thank you to Alan Bale and Hotze Rullmann for bringing up this point to me. That is, one could imagine instead that all modals are learned as a lexical item, one by one, by the child and the learning is not constrained by a certain parameter, but rather by the meaning of the lexical item itself. One possible way of tearing apart these two models (lexical item learning vs. learning via parameters) could be to further investigate the difference between the epistemic and root modals (discussed immediately below). The learning via parameters approach is potentially more constrained than lexical item learning. See Cournane (under review) for discussion on language acquistion of modals.

In particular, Gitksan reveals a striking distinction when we compare the epistemic and root modals. In Gitksan, epistemic modals *ima('a)* and *gat* have seemingly variable modal force, but specify for different types of epistemic modality. Within the root modals (labelled in Matthewson (2011) as 'circumstantial'), the modal *sgi* is lexically specified for force[134], but does not distinguish between deontic or non-deontic modals (Peterson 2010, Matthewson 2011, in press), as in Table 4 below. This language shows that it is possible to have both types of ambiguity with two different modal expressions, but crucially, it is not with the same lexical item and it is not within the same syntactic domain.

Table 4. Gitksan modal system (Peterson 2010, Matthewson 2011, in press)

		TYPE OF MODALITY			
		EPISTEMIC		ROOT	
		PLAIN	REPORTATIVE	DEONTIC	NON-DEONTIC
MODAL FORCE	(WEAK) UNIVERSAL	*ima('a)*	*gat*	*sgi*	*sgi*
	EXISTENTIAL	*ima('a)*	*gat*	*anook(xw)*	*da'ak(hl)xw*

The data from Gitksan reveals that the first version of the null hypothesis *within a modal system, a language can only vary along one axis* cannot be correct: the epistemic reportative modal *gat* is ambiguous along the modal force axis and the universal modal *sgi* is ambiguous along the type of modality axis, showing that a modal system can vary along two axes.[135]

How modals behave in Gitksan suggests that there are two systems for a typology of modality: an epistemic system and a root system. What is striking is that the modals that show variable force are only within the epistemic domain, while the modals that show variability with the type of modality are within the root domain. That we find a difference between these two domains in Gitksan echoes what has long been reported for the behaviour of epistemic vs. root modals in many other languages (e.g. Jackendoff

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[134] For the purposes of variation along the axis of modal force, I assume that this means a modal has variable force of the full scale from *pure possibility* to *pure necessity*. That the Gitksan modal *sgi* can be used for both *weak necessity* and *pure necessity* (as well as deontic and non-deontic types of modality) would therefore not be considered under this assumption to have variable modal force.

[135] See Peterson (2012) for an alternative analysis whereby *sgi* is considered as a lexicalization of the modal base and *anook(xw), da'ak(hl)xw* as the lexicalization of two different ordering sources within the classic Kratzerian analysis of modals (Kratzer 1977, 1981).

1972; Palmer 1986; Brennan 1993; Hacquard 2006; Portner 2009, among many others). While there has been debate as to whether these two main types of modality can be divided in terms of syntax, where epistemic modals are raising constructions and root modals are control constructions (e.g. Jackendoff 1972 vs. Wurmbrand 1999), what has been cross-linguistically stable is that root modals are consistently lower in the hierarchical order of TAM markers than epistemic modals (e.g. Cinque 1999; Hacquard 2006). I suggest then that the generalization for possible ambiguity in modal systems can be set at two domains, which are defined as one at the root level and one at the epistemic level, corresponding to their syntactic height. Accordingly, the hypothesis is revised as follows:

(2)   Null hypothesis for a typology of modals:
        A language can vary along only one axis within one modal domain.

In sum, the Gitksan modal system raises the important point that a parameterization for a typology of modal systems must take into account the distinction between epistemic and root modality. The modal system in Paciran Javanese also seems to take into account this structural distinction: the root modality domain varies along the type of modality axis, similar to English while the epistemic modality domain is exemplary of an overspecified type where there is no lexical variation. Furthermore, in view of this parameterization, English-type modal systems then would simply have the same setting that modals can vary along the type of modality axis for both the epistemic domain and the root domain. This applies to St'át'imcets-type modal system as well; both domains would be set to vary along the modal force axis. As such, there is no need to posit any additional stipulations to capture the data for English-type or St'át'imcets-type modal systems under this revised version of the null hypothesis.

3.3   Possible counterexample and final remark

The null hypothesis for a typology of modals as stated in (2) above makes the strong prediction that there is no language that has a modal expression which varies along both dimensions within either the epistemic modality domain or the root modality domain. For instance, this hypothesis would predict that a language cannot have one modal expression that can express all the root types of modality as well as possibility and necessity.

However, in van der Auwera and Ammann's (2008) discussion concerning their typological WALS survey, they observe that from the description in the grammar by Robins (1958), the Yurok language of the Algic family spoken in northwestern California, USA, may convey just this given the translations. More specifically, Robins (1958:99) notes that the marker "...*ki*, the most generalized particle referring to future time [...] may be variously translated as 'will', 'may', 'can', 'ought', 'must'". Some examples from Robins' (1958) grammar are given in (3). Garrett (2010:43), in a more recent grammar, discusses *ki* (or *kee*) as only having two of these translations: that of a general future, translated as 'will', and one of an ability modal, translated as 'can'.

(3) a. **ki** ʔohsek' paʔah
         'I **will** give him some water'

     b. toʔ **ki** ʔok'ʷ
         'It **should** be left alone (lit., it should be (where it is))'

     c. **ki** koʔl nepek'
         'I **can** eat something'

     d. ku nekah ko·yckʷoh ʔoʔleł kʷelekʷ **ki** hohkuʔ
         'The house we bought **must** be repaired' (Robins 1958:100)

Given the translations, the Yurok marker *ki* could be a counterexample to the null hypothesis in (2) whereby there is one modal expression that varies along both dimensions within one domain modality; namely, the root modal domain. However, as I have previously mentioned, it is crucial in semantic fieldwork to view translations only as clues to the meaning of an item that can guide the fieldworker, as discussed in Matthewson (2004). Translations cannot be used as results in semantic fieldwork, which tends to the case in typological research such as in van der Auwera and Ammann (2008) leading to potential over- or under-generalizations. For this reason, it remains to be shown via further semantic fieldwork in obtaining felicitous judgments whether or not the marker *ki* in Yurok is a true or only apparent counterexample to the strong null hypothesis in (2).

In summary, the above example is one instance of how the null hypothesis makes a strong prediction that can be easily tested. Furthermore, this example highlights the

need for research on modality cross-linguistically using a variety of semantic fieldwork methods that identify both contexts where a certain modal expression is felicitous as well as where it is infelicitous. As such, I hope that my current research on Javanese as well as the questionnaire on modality presented in this dissertation is useful for future investigations on modality in languages across the world.

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Appendix 1.
Results of modal questionnaire

7 TARGET: NECESSITY EPISTEMIC *mesthi*

(1)   Ramadon routinely has coffee at Lisa's warung everyday. Even if he's sick, he doesn't miss a day! It's not obligatory for Ramadon; he just goes for coffee there all the time. It's coffee time now, so...

Ramadon MUST be at Lisa's warung.
Ramadon senengane ngopi nek warunge Lisa sa'bendino. Masinan lagek loro, gak tau gak ngopi rono! Iki gak wajib gawe Ramadon, dewe'e ngopi nok kono terus. Sa'iki wayahe ngopi sore, dadi...
a.   Ramadon **mesthi** neng warunge Lisa   → target
b.   Ramadon **kudu** neng warunge Lisa
Gave answer: Ramadon mesthi nek warunge lisa (added to *mesthi*)

Table Ref: (1), I-B	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	13	3	0	0
QII (rating task, 1-5)	1.5	1.5		

(2)   Ahmad has an allergy to dust, and it's unfortunate for him when he visits his friend Mohammad because Mohammad's house is so dirty. You know that Ahmad is visiting there right now.
Ahmad must be sneezing / #Ahmad has to sneeze

Ahmad nduwe allergi bledug. Ahmad nduwe konco Mohammad. Omahe Mohammad rusoh kabeh, tapi sampeyan weroh Ahmad isek dolan rono.
a.   Ahmad **mesthi** waheng nek kono.   → target
b.   Ahmad **kudu** waheng nek kono.
Gave answer: Ahmad paleng gelek waheng nek kono

Table Ref: (2) I-B	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	9	5	1	1
QII (rating task, 1-5)	2.4	1.9		

(3)   (From Rullmann et al 2008:321) Context: You have a headache that won't go
        away, so you go to the doctor. All the tests show negative. So, it MUST just be
        from tension/stress.

        Sirahmu ngelu gak waras-waras. Terus awakmu reng dokter. Wes di prekso
        tapekne gak ono penyakit opo-opo. Dadi....
        a.   Iku **mesthi** kakean pikiran.   → target
        b.   Iku **kudu** kakean pikiran.
        Gave answer: iku paleng kakean pikiran
                      Iku paleng kakean pikiran
                      iku paling kakean pikiran

Table Ref: (3), I-B	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	12	0	0	3
QII (rating task, 1-5)	1.4	2.4		

(4)   (Adapted from von Fintel & Gillies 2007) The math teacher says: The ball is in A
        or in B or in C. It is not in A. It is not in B. So, it must be in C
        Guru matematika ngomong: "Bale ono nek kothak A utowo kothak B utowo
        kothak C. Nek kothak A, gak ono. Nek kothak B, gak ono. Dadi,...
        a.   bale **mesthi** neng C   → target
        b.   bale **paleng** neng C
                Gave answer: bale paleng nok kotak C (added to PALENG)

Table Ref: (4), I-D	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	10	8	0	0
QII (rating task, 1-5)	1.3	1		

(5)   Mas Hakim is calling for his cat. The cat is not coming. Mas Hakim looks for the
        cat in the kitchen, but the cat is not there. Then he looks in the living room, and in
        the bathroom, and in his sister's bedroom. The cat is not in any of those rooms. He
        looks all over the house again, but the cat is nowhere to be found in the house.
        Mas Hakim thinks...
        The cat must have escaped from the house.
        Mas Hakim nyeluk kucinge. Kucinge gak gelem moro. Mas Hakim nggoleki
        kucinge nek pawon tapi gak ono, nek ruang tamu gak ono, nek jeding gak ono,
        nek kamare adikne gak ono. Mas Hakim nggoleki nek omahe pisang engkas, tapi
        Mas Hakim gak nemo'no kucing nek endi-endi nek njero omahe. Mas Hakim
        mikir...
        a.   kucing iku **mesthi** wes ucul teko omahe   → target
        b.   kucing iku **paleng** wes ucul teko omahe
                 Gave answer: (a) kucing iku paleng wes metu teko omae

Table Ref: (5), I-D	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	0	15	0	0
QII (rating task, 1-5)	1.6	1.3		

8   TARGET: NECESSITY DEONTIC *kudu*

(6)   In Indonesia, the law states that when you ride a motor bike...
       You MUST wear a helmet

Peraturan nek numpak sepeda montor nek Indonesia:
a.   Sampeyan **mesthi** nganggo helm.
b.   Sampeyan **kudu** nganggo helm. → target
        Gave answer: (b) sampeyan kudu gawe helm

Table Ref: (6), II-A	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	9	9	0	0
QII (rating task, 1-5)	1.2	1.1		

(7)   (Adapted from von Fintel 2005, von Fintel & Gillies 2007) You are going to visit your friend in the hospital. When you enter into the hospital, you stop at the information desk to inquire what room your friend is in. But the woman at the information desk tells you that you can't visit your friend now because it's already 8pm! She says, "I'm sorry, the hospital regulations say that..."
       Visitors MUST leave by 6pm.

Awakmu nyambangi koncomu nek rumah sakit. Pas awakmu masuk rumah sakit, awakmu dik cegat sustere sing njogo nek kamare koncomu. Sustere ngomong: "Sepurone, sampeyan gak oleh nyambangi. Sa'iki wes jam 8 bengi. Soale aturane nek rumah sakit ngomong...
a.   wong wong **kudu** muleh jam 6 mari maghrib. → target
b.   wong wong **mesthi** muleh jam 6 mari maghrib.

Table Ref: (7), II-A	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	13	4	0	0
QII (rating task, 1-5)	2.5	2.6		

(8)   (adapted from von Fintel & Iatridou 2008) There is only one main road, Deandles, along the northern coast of Java to get to Semarang from Paciran. If you go to Semarang from Paciran, you **have to /# should** take this road

Nek ono siji thok dalan tek iso reng Semarang teko Paciran, dalan Deandles.
a.   Nek sampeyan reng Semarang teko Paciran, **kudune** lewat dalan iku.
b.   Nek sampeyan reng Semarang teko Paciran, **kudu** lewat dalan iku.
        →target

Table Ref: (8), II-H	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	8	9	0	0
QII (rating task, 1-5)	1	1		

(9)   When Agus went to the hospital, he was confused at first because he tried to get a doctor's appointment, but he couldn't! But then, the nice lady at the information desk explained that he didn't yet have a hospital ID card to be a patient here, and if you don't have one, there are no exceptions. This is because the regulations at the hospital state:
a.   Patients must have a hospital ID card to use the hospital services.
b.   Patients should have a hospital ID card to use the hospital services.

Pas Agus lungo reng rumah sakit, kawitane Agus bingung soale dewe'e nyobak nggawe janji mbek dokter, tapi Agus igak nggawe. Terus, sustere sing apik ngandani nek dewe'e durung nduwe kartu pasien nek rumah sakit iku. Terus nek awakmu durung nduwe, berarti awakmu igak iso nggawe janji ketemu mbek doktere. Iku soale wes peraturane rumah sakit iki nek...

a.   Pasien **kudu** nduwe kartu rumah sakit nggawe prekso. → target
b.   Pasien **kudune** nduwe kartu rumah sakit nggawe prekso.

Table Ref: (9), II-H	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	10	8	0	0
QII (rating task, 1-5)	1.1	1.2		

(10)   (Adapted from Horne (1961:269), cited in thesis proposal) A pound of rice usually lasts for three days, and there are two pounds left now. I don't have time to go to the market because it's far away...
So I HAVE to make the remaining rice last for six more days.

Sa'karung beras biasane enthek 3 dino. Tapi isek sisoh 2 karung. Aku gak nduwe waktu gawe tuku nek pasar soale adoh. Dadi...

a.   aku **kudu** nyukupno luwehan beras iki gawe 6 dino. → target
b.   aku **oleh** nyukupno luwehan beras iki gawe 6 dino.

Gave answer: aku kudu ngepasno luwehan beras iki gawe 6 dino
                        (added to KUDU)
                        aku kudu nyukupno luwehane beras iki gawe enem dino
                        (added to KUDU)

Table Ref: (10), II-E	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	15	0	0	0
QII (rating task, 1-5)	1.6	1.9		

9   TARGET: NECESSITY CIRCUMSTANTIAL *kudu*

(11)   You are on a bus to Yogya. You have not had a chance to go to the toilet for 6 hours, and your bladder is full. You text your friend:
I HAVE to pee so badly!

Awakmu nek perjalanan ape reng Yogya. Awakmu gak ono waktu gawe nguyoh suwene 6 jam, terus awakmu wis kebelet nguyoh. Awakmu ngirim sms nek koncomu:

a.   Aku **kudu** nguyoh   → target
b.   aku **mesthi** nguyoh

Gave answer: (a) aku kuwudu nguyoh (didn't change anything)

Table Ref: (11), III-A	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	15	0	0	0
QII (rating task, 1-5)	2.1	3.3		

(12)   Normally at ngaji (holy Qu'ran reading), it is time to be serious. But then we saw bu Yeni fell asleep in a funny position.
Our friend Bu Siti HAD to laugh.

Biasane nek ono pengajian, kudune serius. Tapi bu Yeni keturon mbek lambene mangap.

a.   Bu Siti **kudu** ngguyu → target
b.   Bu Siti **mesthi** ngguyu

Table Ref: (12), III-A	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	11	4	0	0
QII (rating task, 1-5)	2.1	4		

10 TARGET: POSSIBILITY EPISTEMIC, paleng

(13) Professor Farihi is not consistent. The students never know if he's going to come or not to give a lecture. Today, it's time to start class and the students are waiting again.
He MIGHT be coming to the university today.

Profesor Farihi wonge gak mesthi. Mahasiswane gak tau weroh Pak Farihi lungo ngulang to gak. Dino iki, wayahe ngulang, terus mahasiswane ngeteni Pak Farihi maneh.

a. Profesor Farihi **paleng** teko neng universitas dino iki. → target
b. Profesor Farihi **mesthi** teko neng universitas dino iki.
Gave answer : (a) Pak farihi paleng teko nek universitas dino iki
          Pak Farihi paleng teko mboh gak dino iki

Table Ref: (13), IV-A	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	7	8	0	0
QII (rating task, 1-5)	2.3	2		

(14) Dewi is looking for her necklace. She's not sure if she lost it or if it is still somewhere in the house because she doesn't remember the last time that she wore the necklace. She looks in her wardrobe and on top of the wardrobe. It's not there. She looks on top of the tv. It's not there. She looks in her backpack; it's not there. Wait! She didn't check her sister's wardrobe yet…
Dewi's necklace MIGHT / #must be lost.

Dewi ewoh nggoleki kalunge. Dewi gak yakin kalunge iku ilang temenan toh mek lali ndeleh, soale Dewi gak eling nek endi terakhir ndeleh kalunge. Dewi wis nggoleki nek nduwure lemari, nek dhuwure tv, nek njero tase, tapi isek durung ketemu. Engko sek! Dewi durung nggoleki nek lemarine adikne....

a. kalunge Dewi **paleng** ilang. → target
b. kalunge Dewi **mesthi** ilang.
Gave answer: Kalunge Dewi durung mesthi ilang

Table Ref: (14), IV-A	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	14	1	0	1
QII (rating task, 1-5)	2.3	2.7		

(15)　Amin's parents told him that he is not allowed to go to see his friend in Jakarta because it is too far away. You heard that Amin is leaving Paciran next week, but you don't know where he will go. Amin is a daring type of guy that usually does things that he is not permitted to do. You think:
Amin MAY go to Jakarta. (might, #allow)

Wong tuwone Amin ngandani Amin: "Awakmu gak oleh dolan neng omahe koncomu nek Jakarta, soale adoh." Sampeyan krungu Amin ape lungo minggu ngarep, tapi sampeyan gak weroh ape lungo reng endi. Amin bocahe tambeng, Amin biasane ngelakoni opo-opo gak tau ngomong karo bapakne. Sampeyan mikir...

a.　　Amin **paleng** reng Jakarta → target
b.　　Amin **oleh** reng Jakarta

Table Ref: (15), IV-E	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	15	0	0	0
QII (rating task, 1-5)	1.7	4		

(16)　Mas Arif cannot to play badminton because he is blind. But one time he had a racquet and was swinging it randomly, while his friend hit balls to him.
Arif might / # can hit the ball back (by accident). BOTH....?

Mas Arif gak iso tenis soale mripate gak iso ngawasi. Tapi Mas Arif tau nduwe raket, terus koncone nguncalno bale nek Mas Arif. Terus Mas Arif angger mbales mbek rakete iku mou sa'enake.

a.　　Arif **iso** nguncalno bale.
b.　　Arif **paleng** ape nguncalno bale. → target?
GAVE ANSWER:　　Arif mesthi nguncalno bale
　　　　　　　　　Arif ora iso nguncalno bale

Table Ref: (16), IV-F	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	5	8	1	2
QII (rating task, 1-5)	3.5	3		

11 TARGET: POSSIBILITY DEONTIC oleh

(17) The ferris wheel ride at WBL is only for children under 15 years old. Tutus is 12 years old. It is not obligatory for Tutus to go on the ride if she doesn't want to. (Kana MAY/#must ride the ferris wheel)

Tas tasan nek WBL mek iso ditumpaki bocah-bocah sing umure sa'durunge 15 taun. Tutus umure 12 taun. Nek Tutus gak kepingin, gak usah numpak gak opo-opo soale iku gak wajib.

   a.   Tutus **oleh** numpak 'tas tasan' nek WBL.   → target
   b.   Tutus **kudu** numpak 'tas tasan' nek WBL.

Table Ref: (17), V-B	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	12	1	2	0
QII (rating task, 1-5)	1.1	3.4		

(18) (from Rullmann et al 2008:329) You are going for a job interview and the receptionist outside the office tells you that.... you can leave your bag there, but you can also take it with you when you go in.

Awakmu lungo interview terus sekretarise ngomong nek awakmu:
   a.   *"Sampeyan **oleh** delehno tase sampeyan nek kene, utowo sampeyan gowo melbu."* → target
   b.   *"Sampeyan **kudu** delehno tase sampeyan nek kene, utowo sampeyan gowo melbu."*

Table Ref: (18), V-B	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	12	3	0	0
QII (rating task, 1-5)	1.9	3.1		

(19) Context: According to the rules of the hospital, only family members are allowed to enter the patient's room during visiting hours. You came to visit your sister, but it was after visiting hours. But the really nice nurse says...
You MAY enter...
Miturut aturane nek rumah sakit, seng oleh nyambangi pasien iku mek keluarga thok. Sampeyan nyambangi adik sampeyan, tapi wes gak wayahe jam nyambangi. Tapi sustere sing apik ngomong...

   a.   awakmu **oleh** melbu. → target
   b.   awakmu **kudu** melbu.

Table Ref: (19), V-B	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	14	1	0	0
QII (rating task, 1-5)	2.4	3.4		

(20)   Dewi's parents are very strict, but they realize that Dewi is getting older and needs more space. They know that Dewi has not ever dated someone yet, but they know that she likes this one guy from school. They decided that:
Dewi MAY go out on dates.

Wong tuwone Dewi keras. Tapi wong tuwone nyadari nek Dewi wis tambah gedhi dadi Dewi butoh kebebasan. Wong tuwone Dewi ngerti Dewi gak tau pacaran mbek sopo-sopo blas, tapi wong tuwone Dewi ngerti Dewi seneng koncone sekolah. Wong tuwone mutusno:
a.   Dewi **paleng** pacaran
b.   Dewi **oleh** pacaran   → target

Table Ref: (20), V-D	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	11	4	0	0
QII (rating task, 1-5)	1.5	3.1		

(21)   Kana's teacher told her class that it was okay to go swimming, but Kana doesn't want to because she cannot swim!
Kana CAN go swimming.

Gurune Kana ngomong neng kelase Kana: "Gak popo nek kepingin ngelangi". Tapi Kana gak gelem soale Kana gak iso ngelangi.
a.   Kana **iso** ngelangi
b.   Kana **oleh** ngelangi   → target
Gave answer: Kana gak oleh ngelangi
                        Kana gak oleh ngelangi

Table Ref: (21), V-F	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	11	3	0	2
QII (rating task, 1-5)	3.1	4		

(22)   Ria fell down the stairs and broke her arm a while ago. She hasn't been lifting her baby while her arm was hurt because the baby is heavy. Finally, she has recovered, and she went to the doctor for a final check-up. The doctor gave her permission to lift her baby. But when she got home after her visit to the doctor, Ria found that she is still too weak to lift her baby.
Ria CAN lift her baby.

Ria tibo terus tangane coklek winginane. Nek durung waras temenan, Ria gak gendhong anake disek soale anake abot. Akhire, Ria wes waras. Terus Ria prekso reng doktere maneh, doktere Ria ngomong nek Ria: "Sampeyan oleh nggendong anake sampeyan." Tapi mari teko doktere, Ria mikir dewe'e isek durung kuat nggendong anake sa'iki.

a.   Ria **iso** nggendong bayine.
b.   Ria **oleh** nggendong bayine. → target

Table Ref: (22), V-F	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	10	8	0	0
QII (rating task, 1-5)	2	2.4		

12 TARGET: POSSIBILITY CIRCUMSTANTIAL, iso

(23)   Jozi knows how to make dudoh menir. Now she is back in Canada, and she wants to make sayur menir, but the right kind of ingredients are not sold where she lives! So she's unhappy because she wanted to show her parents how to make sayur menir.
Jozina can / #might make sayur menir.

Jozi iso carane nggawe dudoh menir. Sa'iki Jozi wes mbalek reng Kanada, terus de'e kepingin nggawe dudoh menir, tapi bahan-bahane igak dik dol nek Kanada. Dadi Jozi sedih soale Jozi kepingin nyudohno reng wong tuwone piye carane nggawe dudoh menir.

a.   Jozi **iso** nggawe sayur menir → target
b.   Jozi **paleng** nggawe sayur menir

Table Ref: (23), VI-D	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	14	1	0	0
QII (rating task, 1-5)	1.8	3.3		

(24)   (Adapted from Kratzer 1991) Context: Jennifer came to visit a small island in Indonesia. She noticed that the climate and many of the plants are similar to some places she visited in Papua. For example, the temperature is the same, the rainfall is the same, the types of rocks and the soil are the same. But when she looked around, she didn't find any DUKU trees anywhere. But because the tempature, rainfall, and soil are the same, she thinks that:
Duku can/#might grow here.

Jennifer sa'iki dolan nek pulau cilik nek Indonesia. Jennifer weroh musim mbek akeh tanduran-tanduran nek pulau iku sing podho mbek nek Papua. Contohne, suhu udarane podho, udane podho, jenis watu-watu mbek tanahe yo podho barang. Tapi, pas dewe'e ndelok-ndelok, Jennifer gak nemu uwit duku blas. Tapi, mergo suhu udarane, udane, mbek tanahe iku podho, Jennifer mikir:

a. duku **paleng** cukul nek kene.

b. duku **iso** cukul nek kene. → target

Gave answer: (b) duku iso cukul nok kene

duku paleng iso cukul nek kene

duku paleng iso cukul neng kene

duku paling iso cukul nek kene

Table Ref: (24), VI-D	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	10	3	0	3
QII (rating task, 1-5)	2.7	2.8		

(25) The 'travel' vans have a limit of 13 people by law. But the drivers don't care, and stop for more than 13 people. Also, the vans are bigger than you think.
Travel vans CAN fit 20 people.

Miturut aturane, angkutan umum penumpange kudu 13 paling akeh. Tapekne supire gak ngurusi. Terus isek numpakno penumpang luweh teko 13 soale angkutane yo rondok gedhe.

a. angkutan umum **iso** kamot wong 20. → target

b. angkutan umum **oleh** kamot wong 20.

Table Ref: (25), VI-E	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	14	0	1	0
QII (rating task, 1-5)	3.1	4.2		

(26) Budi was in a motorbike accident 3 weeks ago, and he sprained his ankle. Budi is able to walk now. However, the doctor told Budi that he is not allowed to walk until 5 weeks after the accident.
Budi CAN walk now.

Budi mari kecelakaan 3 minggu kepungkur. Terus, sikile coklek. Budi iso melaku sa'iki. Tapi doktere ngomong neng Budi, "Ojo dik gawe melaku dhisek nek gak wes 5 minggu soale sikile durung waras."

a. Budi **oleh** melaku sa'iki.

b. Budi **iso** melaku sa'iki.→ target

Gave answer: Budi durung oleh melaku sa'iki

Budi gak oleh melaku sa'iki, Budi gak iso melaku sa'iki

b (Budi gak oleh mlaku sa'iki)

Table Ref: (26), VI-E	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	10	4	0	3
QII (rating task, 1-5)	2.7	3.7		

13 TARGET: WEAK NECESSITY EPISTEMIC, mesthine

(27) You know that Pak Sari works from 8am – 12pm every morning and he usually
      doesn't miss a day of work. It is now 9am. You say:
      Pak Sari SHOULD be at the office now.

      Awakmu weroh Pak Sari kerjo kawit jam 8 isuk sampek jam 12 awan sa'bendino.
      Biasane Pak Sari gak tau gak kerjo. Sa'iki jam 9 isuk. Trus awakmu ngomong:
      a.   Pak Sari **kudune** wis neng kantor sa'iki
      b.   Pak Sari **mesthine** wis neng kantor sa'iki   → target

Table Ref: (27), VII-H	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	12	4	1	0
QII (rating task, 1-5)	1.4	1.7		

(28) You are not living in Yogya anymore, but you are realizing how different it is
      with the weather in Malang, where you live right now. You know that in Yogya
      it's the rainy season now, and there's often rain every afternoon. Now it's 3pm.,
      so...
      It should be raining now in Yogya

      Awakmu gak manggon nek Yogya maneh, tapi sa'iki nek Malang. Awakmu ngerti
      bedone musim nek Yogya mbek nek Malang. Awakmu weroh nek Yogya wayahe
      udan, terus sa'ben sore, gelek ono udan nok kono. Sa'iki jam 3 sore. Dadi...

      a.   **Mesthine** sa'iki udan nek Yogya   → target
      b.   **Kudune** sa'iki udan nek Yogya
      Gave answer: Biasane nek Yogya sa'iki wis udan
                    Paleng sa'iki nek Yogya udan

Table Ref: (28), VII-H	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	13	2	0	2
QII (rating task, 1-5)	1.8	3.2		

14 TARGET: WEAK NECESSITY DEONTIC, kudune

(29) Rima is not yet used to riding a motorbike, she just started learning to ride 1
      month ago. Her friend suggests that:
      Rima should drive slowly.

Rima durung biasa numpak sepeda montor. Rima lagek belajar numpak sepeda
montor sak wulan kepungkur. Koncone Rima ngomong:
a.   Rima **kudu** nyopir alon-alon.
b.   Rima **kudune** nyopir alon-alon. → target
Gave answer: Rima nyupire alon-alon

Table Ref: (29), VIII-C	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	10	4	0	1
QII (rating task, 1-5)	1.2	1.5		

(30)   Waiq is the oldest child. His younger brother, Hakim, wants to get married. But
         according to tradition,...
         ...the oldest should marry first.

Waiq iku anak sing mbarep. Adikne, Hakim, kepingin kawin.
Tapi, adate, sing mbarep kudu kawin dhisek.
a.   Sing mbarep **kudune** kawin dhisek. → target
b.   Sing mbarep **mesthine** kawin dhisek

Table Ref: (30), VIII-G	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	13	7	0	0
QII (rating task, 1-5)	1.5	1.2		

(31)   Diki's parents are really concerned about how well he does in school. They want
         him to succeed in all the subjects. But Diki wants to play football all the time
         instead of doing schoolwork. His parents order him:
         You should finish your homework before playing football.

Wong tuwone Diki kuwatir masalah piye kegiatane Diki nek sekolahane, apik to
gak. Wong tuwone Diki kepingin Diki sukses nek pelajarane kabeh. Tapi Diki
seneng balbalan masinan lagek wayahe jam sekolah.Wong tuwone Diki ngomong:

a.   Kowe **mesthine** marekno PRmu disek sa'durunge balbalan
b.   Kowe **kudune** marekno PRmu disek sa'durunge balbalan → target

Table Ref: (31), VIII-G	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	8	10	0	0
QII (rating task, 1-5)	1.6	1.7		

15 TARGET: WEAK NECESSITY TELEOLOGICAL, kudune

(32)   (adapted from von Fintel & Iatridou 2008) There are three ways to get to Yogya:
the Semarang Route, the Bojonegero route, and the Surabaya route. Cak Khuluq
says that the Bojonegero route is the best.
If you go to Yogya, you **should** take the Bojonegero route.

*Ono telong coro tek iso reng Yogya teko Paciran: liwat Semarang, liwat
Bojonegero, mbek liwat Suroboyo. Cak Khuluq ngomong sing paling enak iku
liwat Bojonegero.*
a.   Nek sampeyan reng Yogya teko Paciran, **kudune** lewat Bojonegero.
→ target
b.   Nek sampeyan reng Yogya teko Pacrin, **kudu** lewat Bojonegero.
Gave answer: Nek sampeyan reng Yogya teko Paciran, kepenak'e liwat Bojonegoro

Table Ref: (32), IX-B	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	12	3	0	1
QII (rating task, 1-5)	2.2	2		

(33)   If you have to go to Blimbing market, you can get there by different ways. You
can take a horse-drawn carriage, machine rickshaw, a public van, or a motorbike
if you have one. Patrus and Dur think the best way to go to the Blimbing market is
by horse-drawn carriage because it's more relaxing and the cheapest. So,
according to Patrus and Dur's opinion...

*Nek kudu reng pasar Blimbing, iso numpak macem-macem kendaraan. Awakmu
iso numpak dokar, becak mesin, angkutan umum, utowo sepeda montor nek
nduwe. Cak Patrus mbek Yu Dur mikir luwih enak reng pasar Blimbing numpak
dokar. Soale, luwih nyantai terus murah pisan. Dadi, menurute Cak Patrus mbek
Yu Dur...*
a.   Nek sampeyan reng pasar Blimbing, kudune numpak dokar. → target
b.   Nek sampeyan reng pasar Blimbing, mesthine numpak dokar.

Gave answer: nek sampeyan reng pasar blimbing enak'e numpak dokar
nek sampeyan reng pasar Blimbing kepenak'e numpak dokar
Nek sampeyan reng pasar Blimbing, enake numpak dokar
nek sampeyan reng pasar Blimbing enake numpak dokar

Table Ref: (33), IX-G	Target Answer	Contrast Answer	No Answer	Gave answer
QI (semi-force choice)	10	2	0	4
QII (rating task, 1-5)	1.8	2.1		