Implaced Communication:

Wayfinding and Informational Environments.

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In memory of my mother, Albina Chmielewska z Ostrowskich:

Każdy przecież początek
to tylko ciąg dalszy,
a księga zdarzeń
zawsze otwarta w połowie.

Every beginning
is only a sequel, after all,
and the book of events
is always open halfway through.

– Wisława Szymborska

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I will repeat after Kerényi, "finding and losing belong to the ambivalent sphere of the god of journey, who so often put into my hands just the right reading material for the voyage". Indeed, the gifts of Hermes, in the form of texts, people and thoughts, unexpectedly appeared, always at the right moment, quite independently of my search.

And finally, to M-R for the names of things and re-defining the temporal dimension of the future conditional... beyond chance: *Koinos Hermés*!

Abstract

This thesis investigates the relationship between communication and place, and the informational environment it forms. The thesis takes as its object of analysis signage, and examines signage as an implaced medium of communication.

In this work communication, including its practices and technologies, is treated as a dynamic ritual formed by the marking, naming, connecting, and interpreting the environment in the process of wayfinding. Such an approach underscores the inherent duality of communication: its manifestations framed by transmission *and* ritual; its boundedness by both space *and* time; and its expression in both mobile *and* fixed (implaced) media. The thesis thus shifts the disciplinary discourse from the usual text- and language-based focus to a more comprehensive focus that encompasses architectural and infrastructural environments and the grounding action of physical presences. Through its focus on the navigational aspects of communication, and framing by such concepts as wayfinding and signposting, the thesis shows how we can reconfigure the notion of the visual to include the embodied, experiential, and implaced. This in turn can help us gain a new perspective on the changing nature of text, image, representation, information and reality.

The thesis argues that as the themes of orientation, navigation, and interface grow alongside the new communication technologies, they make it important to attend to the original mediating role of the built environment and the navigational dimensions of place. It is here, within our foundational spatial orientation and wayfinding, that we turn for the metaphors, conceptual structures, and grounding as we chart our ways through the emerging informational environments.

In examining signage as a system of interfaces used in negotiating informational environments, as way-markers in a process of wayfinding, the thesis demonstrates the ways in which the concepts of wayfinding and navigation have become consequential to communication scholarship. It proposes that fruitful cues for the theorising and understanding of emerging informational realms can be drawn from the communicative dimensions of the most familiar immersive environments and their related practices: the physical spaces and built environments that we inhabit and negotiate daily.

Résumé

Cette thèse porte sur le rapport entre la communication et le lieu et le milieu informationnel qu'il forme. Elle a pour objet l'analyse de la signalisation et son étude comme moyen de communication fixe.

Dans le cadre de ce travail, la communication, notamment ses pratiques et techniques, sont traitées comme un rituel dynamique formé par le marquage, la nomination, la connexion et l'interprétation du milieu dans le processus d'orientation. Cette méthode souligne la dualité inhérente de la communication : ses manifestations encadrées par la transmission *et* le rituel, ses frontières délimitées par le temps *et* l'espace et son expression dans les médias à la fois mobiles et fixes. Cette thèse décale le discours disciplinaire de l'axe texto-linguistique habituel vers un axe plus complet qui englobe l'environnement architectural et les infrastructures, de même que l'action fondamentale des présences physiques. Ainsi, grâce à cet axe sur les aspects navigationnels de la communication, encadré par les concepts de signalisation et d'orientation, la thèse démontre comment on peut reconfigurer la notion du visuel pour englober ce qui est symbolisé, expérientiel et fixe. Cela nous aide à envisager sous un angle nouveau le caractère changeant du texte, de l'image, de la représentation, de l'information et de la réalité.

Puisque les thèmes d'orientation, de navigation et d'interface évoluent parallèlement aux nouvelles techniques de communication, il est important de se pencher sur le rôle médiateur originel de l'environnement bâti et des dimensions navigationnelles du lieu. C'est là, dans le cadre de l'orientation et de la signalisation spatiales générales, que nous nous tournons vers les métaphores, les structures conceptuelles et la conscience du lieu en se frayant un chemin à travers les environnements informationnels émergents.

En étudiant la signalisation comme système d'interfaces utilisé pour la négociation des environnements informationnels, comme outils du processus d'orientation, la thèse illustre comment les concepts de signalisation et de navigation sont devenus corrélatifs à l'étude de la communication. Elle propose d'extraire des signaux fructueux pour l'échafaudage et la compréhension des univers informationnels émergents des dimensions communicatives des environnements immersifs qui nous sont le plus familiers, au même titre que leurs pratiques connexes : espaces physiques et environnements bâtis que nous occupons et avec lesquels nous négocions quotidiennement.

INTRODUCTION

> More than a mere backdrop, places provide the changing but indispensable material medium of journeys, furnishing way-stations as well as origins and destinations... [1]

Our new informational environments are designed to be used in a peripatetic fashion, with information presented as networks of interconnected texts, data, and images. The literature on and the popular language surrounding these new forms of electronic communication is filled with the metaphors of navigation and movement through space. But how do we actually find our way through these environments? Why are we intent on imagining and theorizing them in terms of familiar spatial relationships? How do they relate to our pre-existing physical realm? How do they relate to traditional communication media and technologies?

For thousands of years we have been navigating the immersive informational environments that we have constructed around ourselves through successive conceptual overlays on our physical surroundings. We have transformed these environments (and our ways of mediating them) with each breakthrough in communication technology. Yet, it is only now that we have begun to acknowledge the concept of a somewhat unified environment of information. And it is only recently that we have begun to theorize its structure, features, and relationships. Developments in electronic communication technologies have indeed allowed us to collect, manipulate, and analyze vast amounts of information. But the environment formed within this electronic medium does not constitute the first informational environment that we humans have created; not even the first virtual informational environment. Some of these have been explored within communications scholarship: those related to language, particularly to alphabetic writing,

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[1] Edward Casey, *Getting Back into Place. Toward a Renewed Understanding of the Place-World* (Bloomington & Indianapolis: Indiana University Press, 1993), p. 274.

as well as to visual representations. Here, the focus has been either the transportable, transmittable substrates of communication and information exchange, or the visual (focal) aspects of fixed environments and relationships. Conceptions of space and time have been examined through changing modes of verbal exchange (i.e. orality versus literacy); of writing (manuscript versus print technology), or of the predominant senses engaged in communicative practice (aural versus visual). While recent communications scholarship has moved its enquiry into the emerging informational realms made possible by the new electronic technologies, the immersive built environments and their systems of spatial marking and notations have, for the most part, remained outside the purview of the field.

This thesis focuses on precisely these semiological systems of spatial markings and notations, and the manifestation of communicative practices that results in part from the relationship of communication practices to place. The thesis labels these general phenomena as "signage" and the "navigational dimensions" of the built environment. The thesis seeks to position the subject of signage within the communication discourse, drawing out links already present in existing treatments and bringing together diverse semiological materials for comprehensive consideration of the subject. Signage is understood as an immediate encompassing medium of communication with its multiple interfaces and accrued layers of complex markings. Navigational markers are principally represented by the way sign and its role in the process by which place mediates communication.

In bringing together examples and discussions from a variety of sources and across a number of disciplines, the concepts of signage and wayfinding are presented as central to grasping the communicational dimensions of physical place. The task necessarily implicates interdisciplinary concerns and thus poses a number of methodological challenges. For one, we need to consider the barriers that are formed by specialized vocabularies and the territorial demarcations of established disciplines and approaches. We also need to contend with the apparently mutually exclusive paradigms

of separate disciplines, and even the oppositional approaches existing within disciplines and discourses. Moreover, the absence of an unified historical treatment makes the comprehensive examination of the subject difficult. The interdisciplinary conversation that is proposed here is provisional. A fully nuanced discussion would exceed the scope of the thesis, and perhaps even the reach of any single work.

The subject of this work, to use the words in which J. B. Harley described the history of cartography, "occupies a nomadic land among many paths of scholarship".[2] Theoretical studies of the nature and historical importance of physical navigational markers are relatively few. As discussed below, the multi-dimensional nature of signage makes it difficult for any specific discipline to furnish a disciplinarily bounded analysis. Amidst the many moments of doubts induced by the vastness and fragmentary nature of the task at hand, considerable guidance has come from the discipline of communication. In return, the thesis hopefully contributes to that discipline a renewed appreciation of the role of signs themselves.

In his introduction to the *History of Cartography*, Harley considers maps as the "visual embodiment of various conceptions of space". Indeed, maps are "enduring works of graphic synthesis"; "their significance transcends their artifactual value".[3] But what kinds of environmental information are maps actually synthesizing? Maps are seen as graphic schemas in which an undifferentiated landscape somehow miraculously becomes abstracted into a codified framework, a document, a representation of spatial relationships.[4] Despite the complex sciences of survey and measurement of space and time that feed into cartography, and the perceptual and relational complexities underlying the sense-making of surroundings (often referred to as, or reduced to the notion of

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2 J. B. Harley and David Woodward (eds) *The History of Cartography. Volume One. Cartography in Prehistoric, Ancient, and Medieval Europe and the Mediterranean* (Chicago and London: University of Chicago Press, 1987), p. xvi.

3 Ibid.

4 And such is the view held not only by cartographers, as exemplified by the analysis proposed in James Carey, *Communication as Culture. Essays on Media and Society* (New York and London: Routledge, 1989), discussed in Chapter 4 below.

"mental mapping"), environmental features here seem to come into existence only through their cartographic representation. A knowledge of landmarks, natural and constructed, and of the spatial and conceptual relations amongst them, appears to be absent from most discussions of cartography. Yet this knowledge of specific elements and their relationships constitutes a preliminary layer of synthesis of environmental information. And maps are not the first or only artifacts through which this knowledge is manifest.

Components of the built environment – architecture, infrastructure, systems of objects and related markings – form a dynamic matrix of signs. Some of these signs have been invested with the overt purpose of aiding our spatial orientation and wayfinding. Throughout history, we have accumulated a rich assortment of such navigational markers: trail markers, road signs, orienting landmarks, place-names, boundary markers, etc. And throughout history, these markers have formed a dynamic interface between the physical world and the human action within it, with the various elements and systems of the built environment taking on changing – and often multiple – roles in communication for the purpose of navigation and orientation. This rich semiological data exemplifies our modes of communication within, and through, the built environment. The various manifestations of communicative practices constructed within the built environment (from articulations of architectural and urban form, through communication graphics and signage systems) can in turn be linked to the informational environments of new electronic technologies (computer interfaces and virtual spaces). A common thread is their function as navigational markers. Here, the concept of wayfinding opens up questions of how semiological systems organize space, articulate place legibility, and provide their arrays of mediating elements: directional cues, orienting markings, signs of warning and prohibition, territorial demarcation, etc. Our modes of negotiating physical environments are presented most clearly in the complex signage systems that we construct within, or overlay upon, built form. Similarly, within the networks of

informational environments brought about by electronic communication technologies modes of navigation are reflected most directly in their interfaces.

The usefulness of the wayfinding concept becomes apparent as we attempt to make sense of the new computer environments and their seas of data. When faced with these vast informational realms, we continually resort to spatial concepts, wayfinding strategies, metaphors of navigation and exploration. At the same time we take largely for granted the simultaneous multi-modal communication within our more tangible informational habitat. We remain immersed in the physical and social hierarchies of our navigational interfaces with their layers of information mediating: the physical setting itself (with its interfaces and physicality inseparable from our body's experience of place); our organizational environments (with its signs, numbering systems, and hierarchies of spaces which are increasingly organized and specialized); and our purely technological informational spaces. As these layers accrete, the highly integrated interfaces tightly define self-enclosed systems of navigation/interaction and begin not only to discourage, but actively to prevent simultaneity of navigational modes. They become more formally organized, limiting access to other modes of navigation (from one-way streets, single-mode transportation corridors, to specific electronic search tools). Such organization and specialization of informational interfaces closely reflects the structures and organization of our knowledge systems.

Histories of navigation typically focus on unmarked environments (sea and space voyages) and notational systems (as mapping has focused on the conceptual, abstracted relationships of the physical realm). Signs and symbols have traditionally been explored separately, primarily as detached from their physical context or transferable from one context to another. When we reach for a literature on the very special navigation that takes place in marked environments, we find little. Traditional histories of navigation, while explaining some aspects of navigation (particularly the nature of its purely technological mediation) fail to provide us with a full understanding of our movements

through the environments we most commonly use. As concepts of navigation and wayfinding become increasingly a part of emerging theories of information design, it seems useful to trace these connections between navigational landscape markers and ways of making sense in our traditional and our emerging informational spaces.

The built environment can be throught of as a complex and multi-modal system of signs. In the words of Donald Preziozi, "the analysis of communication events in their multi-modal totality has acquired today a fundamental urgency and importance."[5] These words written over two decades ago gain further significance in the face of new developments in communication technology. The concept of wayfinding – making possible, as it does, an analysis of the dynamic and multi-modal dimensions of communication practices – thus holds considerable promise for the theoretical foundation of information design and for a largely neglected aspect of communication: the mediating role of place.

This work is structured in three parts. The first part examines signage as a fundamentally fixed, implaced medium of communication.[6] The second part offers a discussion of the archetypal line of communication – the road – a linear place that is inherently navigational, and investigates a number of examples of way markers. Finally, the third part considers the promise of the concept of wayfinding, particularly its multi-modal simultaneity involving the peripheral, not exclusively focal, aspects of communication and thus necessarily embracing cross-disciplinary and multi-dimensional approaches.

Part One, CONSIDERING ATTACHMENT, proposes the inclusion of the concept of place within the disciplinary interest of communication. It is physical *place*, and not the abstract concept of *a sense of* or a *meaning of* place that is investigated here.

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5 Donald Preziosi, *Architecture, Language and Meaning. The Origins of the Built World and Its Semiotic Organization* (The Hague: Mouton Publishers, 1979) p. 96.

6 I am using the term *implaced* after Edward Casey; "the *im-* of *implacement* stresses the action of getting in or into, and carries connotations of *im*manence that are appropriate to the inhabitation of places." Casey, *Getting Back into Place*, p. 315, note 9.

It is argued that by its very nature, place fixes space and time, if for a brief historical moment, and allows us to look at our *position within* the surrounding environment of information, not merely our *position on* the subject. Inherent to the concept of place is specificity, differentiation, and the process and act of marking or designating: distinguishing the 'here' from the surrounding landscape.

Part One traces communication scholarship's treatment of place and examines the notions related to communication within the literature on the built environment. It links these disparate literatures, teasing out material on environmental communication (signage) that remains largely marginal to a number of disciplines, just as signage itself remains tangential to the interest of a number of domains: those that deal with the built, those concerned with the perceptual, those focused on language, and those focused on technologies.

Part Two, CONSIDERING LINEARITY, discusses one form of the interplay between communication practices and technologies and their context: the way-marker. It examines a place that is inherently marked, the road, a place that is arguably the most expressive of changes in technologies and ideas related to movement and transmission. The road – simultaneously a place of connection, and a connecting place – provides fertile ground for exploration of the relations between communication technologies and place, and the transformation of navigational modes and markings. This section takes a broad historical sample of wayfinding markers and suggests a provisional morphology for positioning and analyzing the multidimensional issues related to signage and the navigational aspects of informational environments.

The phenomenon of signage potentially spans pre-historic to present-day manifestations. To address the methodological challenge of such a vast historical (and geographic) terrain, this work has assembled samples of selective semiological materials (texts, maps, photographs, computer images and programs) which reflect selected road and marker relationships drawn largely from the European tradition. The range of

manifestations of navigational marking presented here is broad, but it is not intended as an exhaustive historical study of way-markers, rather it is a contextualized examination of their complex role in the process of communication. The grouping suggests an historically framed matrix of diverse examples of road signs that represent the varied modes in which place can mediate communication.

Part Three, CONSIDERING SIMULTANEITY, focuses on the usefulness of the concepts of wayfinding and signposting, and the way in which place and the communicative dimensions of the built environment are implicated in these processes. This discussion establishes links between the marking of tangible spaces in the built environment and the understanding of the purely informational space said to "cast away the ballast of materiality".[7] Navigational markers are discussed as expressive of concepts of space, structures of knowledge, ways of envisioning information, and organizational principles for information delivery. These markers form links between the physical environment, notational systems and mapped forms. This part discusses how the notions of wayfinding and signposting are helpful not only in the theorizing of issues related to new electronic spaces, but in the provision of threads of continuity in the analysis of human communications itself, within its historically developed practices and media.

This work proposes that a considerable conceptual change in the focus of the discipline may be needed to better understand the new informational environments and their historical development (their fit within the histories and theories of communications). However, is not a shift that is suggested but rather a reconfiguration, as it may be most productive to continue to hold the already explored terrain within the disciplinary field of vision. This reconfiguration involves the embracing of a number of thus far peripheral dimensions of communication and the weaving into the discipline of their physical (bodily immersive) communicational formations. It calls for an enquiry into the manifestations of communication that are necessarily fixed into place in relation

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[7] Michael Benedikt, *Cyberspace: First Steps* (Cambridge, Mass.: The MIT Press, 1994), p. 2.

to our mobile bodies; that is into the linear (sequential and continuous) nature of the immersive conduit within which environmental communication is embedded; and into the simultaneous presence of the focal and peripheral field which circumscribe the informational environment within which we are (dynamically) implaced. Such a reconfiguration, while remaining wary of opposing arguments, is meant to underscore the existence of an important body of insight and discernment that is particularly useful to an understanding of the "new" ways of structuring knowledge in our increasingly visual and mediated informational environments.

This thesis hopes to demonstrate that the neglected territory of signage provides a fertile terrain for theoretical exploration within communication research. This territory necessitates examining the fixed, the linear, and the simultaneously multi-modal dimensions of communication media, complicating disciplinary explications and pointing perhaps at some reasons why the subject of signage has been largely left fallow. Environmental signs – inherently orienting, identifying devices, designating the specific, the local, marking the place – are increasingly becoming the most visible surface layer of built environments. With mutable, unstable content, they paradoxically play a permanent role as interface between built form and human action, the environment and the human navigation within it. Built places themselves form complex, immersive communicative environments and their navigational aspects, while framing our experience of place and movement, are most sensitive to changes in communication technologies. The thesis argues that through the examination of systems of navigational interfaces the effects and consequences of communication technologies on built environments and emerging informational spaces can be articulated and more systematically understood.

PART I

CONSIDERING ATTACHMENT: The Idea of Implaced Communication.

FIGURE 1.i-1

> ...media, like physical places, include and exclude participants. Media, like walls and windows, can hide and they can reveal. Media can create a sense of sharing and belonging, or a feeling of exclusion and isolation. Media can reinforce a "them vs. us" feeling or they can undermine it.[1]

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1 Joshua Meyrowitz, *No Sense of Place. The Impact of Electronic Communication on Social Behavior* (New York, Oxford: Oxford University Press, 1985), p. 7.

In the popular understanding of the term, the media, the main object of interest of the discipline of communication, relate solely to those technological means of expression (newspapers, radio, TV) that transmit messages inscribed through language or image. Joshua Meyrowitz defines communication media as "all channels and means through which information is transmitted among people."[2] Indeed, conveying *information*, dispatching *messages* seems to be the defining characteristic of communication media. Is communication, however, limited to transmission, to moving information? And are media the mere conduits that convey discrete messages, pieces of information contained in verbal expressions or visual signs? Meyrowitz also points to another aspect of media, their multimodality. Media, he proposes, are "many things at once: technologies, cultural artifacts, personal possessions, vessels for storing and retrieving cultural content and forms, and political and economic tools."[3] This defines communication not as a mere process of transmission, but as a set of practices and perhaps rituals, where media are seen as social environments which, like physical places and architectural elements, as Meyrowitz argues, include and exclude, divide and unite, invite and repel.

But where does place fit into the scene? Could the physical environment (a place, a landscape, a city) itself be considered a medium of communication? It is all these things at once, after all: technology, artifact, container for personal and social knowledge, instrument of polity and economy. Or is the physical environment a point of reference, perpetually "out there", outside communication if only to retain its metaphoric powers? My answer to this latter question is no, and the following section on the communicative dimensions of place explains why. The chapters that follow focus on one particular layer of the physically constructed environment, signage, and investigate it as a medium of communication. Granted, it is a most unusual medium, a true interface between the built world and the human action within it. Signage acts as an intermediary layer between the

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2 Meyrowitz, *No Sense of Place*, p. 331.
3 Ibid.

physical and social environments and it exists as a boundary: the most visible boundary, instrumental in its defining, identifying, protecting and marking of action, yet possibly the most taken for granted. It is a vital component of the urban surface layer that defines, contains and protects the internal, often otherwise hidden significant functions. Yet, despite its omnipresent status in everyday life, it has been afforded little historical and theoretical attention.

Signage requires some initial conceptualizing. It is, on the one hand, inherently immobile; not only attached to place but fundamentally defined by its mooring. It is inherently implaced: its immediate relation to place forms its key attribute.[4] It can be characterized by what Donald Preziosi would call a permanence of broadcast:[5] enduring in place in anticipation, as it were, of continuing its transmission. On the other hand, signage is formed of ephemeral elements, messages inscribed in text or images, messages that are unstable, mutable, dynamic. This complex layer of information and symbol is at once highly expressive of, and at the mercy of, cultural political, and technological changes and transformations. It is the first layer to be taken down, painted over, toppled or replaced. This peculiar dual nature of signage, its relative permanence and instability, together with its precarious position between built form and language or image, presents an interesting ground for exploration of the role of place in communication. It is this relationship of communication to place manifested in various interfaces and modes of navigation that forms the focus of the investigation below. The concept of place is crucial to an understanding, both of the mediating (communicative) role of built form, and of the orienting (implacing) role of signage. This thesis demonstrates how an understanding of place is crucial to the tasks and issues associated with our increasingly complex communicational environments.

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4 I am using Casey's term "implacement" to emphasize the immediacy and immanence of placement. As Casey argues, the locus is more than "a mere backdrop for concrete actions and thoughts. Place itself is concrete and at once with action and thought." *Getting Back into Place*, p. xii.

5 Preziosi, *Architecture, Language*, p. 6.

The very term *signage* reveals some of the difficulties with defining the subject of the present inquiry. Just as with street signs – we typically are not aware of them until we notice their absence, when lost or disoriented – signage as a subject exists largely through its marginal presence. Despite the omnipresence of signs in public environments that are increasingly complex and mediated through surface-applied messages, the term describing this layer of public space is absent from dictionaries, and academic and popular language. It is confined to professional terminology (either regulatory or design practice).[6] This may be indicative of the disciplinary status of the subject: with its material dimensions confined to praxis (and addressed mainly through standards, guidelines, and codes), and its theoretical dimensions largely defined by semiotics.

Throughout this work I use the term *signage* to encompass signs (whether textual messages or graphics – icons or symbols); sign systems (interfaces, organizing frameworks, environments), and wayfinding/orienting markers and techniques (physical manifestations of ritual, material expressions of social knowledge). Defined as such, signage includes the entire range of sign manifestations: surface-applied messages, conceptual structures and codes, and the spatial markings articulating built form. The common thread among these manifestations is their function as navigational markers, their ways of marking landscape by designating some characteristics of place. This work is not concerned with abstract codes, classifications of signs and de-contextualized symbols, but the actual physical markers used in the process of navigation, spatial orientation and way-finding.[7] I am insisting on the term *signage* to differentiate it from

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[6] In the design practice 'signage' is equated with 'environmental graphics' and thus understood in terms of graphic representation. As such the only historical treatment of the subject is included in the history of graphic design with its focus on the production of images, typography and advertising. See for example Phillip Meggs, *A History of Graphic Design* (New York: John Wiley & Sons, 1998). In urban planning literature, the term 'signage' is used to describe the totality of commercial signs, advertising, storefront signs, billboards, while transportation engineering treats signage as related to traffic regulations and signalling. See: Charles McLendon and Nick Blackistone, *Signage. Graphical Communications in the Built World* (New York: McGraw Hill, 1982); Claus R. James and Karen James, *Visual Environment. Sight, Signs, and By-Law* (New York:Collier-MacMillan, 1971).

[7] A detailed discussion of navigation and way-finding is included in Chapter 9, below.

the term *sign* and to emphasize that there is, as I discuss in Chapter Two, much more to signage than semiotics. When I do speak of *signs*, unless otherwise noted, I mean the actual, artifactual entities: signposts not semiotic units.

This work deliberately expands the concept of signage to underscore its linkages with traditional architectural and urban terrain, as well as with the domains of information design. The aim is to examine signage as a visually palpable interface in the way-finding process and further to discuss the concepts of way-finding, navigation, and spatial orientation as equally relevant to built and purely informational environments. This focus locates its approach within what is called the ritual view of communication. A ritual approach focuses not on the movement *of* messages but rather on the physical (or conceptual) passage *through* complex environments. As such, all informational environments, whether physical (both built and residual natural), social, or virtual, are mediated by an intricate interface of signage. The thick layer that accrues between the human presence and its surroundings forms an immersive intermediary which is composed of an intricate mixture of signs, signaling systems, cues, symbols, icons, brand names, advertising messages, and ephemeral events. This surface layer, a shield[8] as it were, has increasingly taken on the role traditionally performed by architecture (as well as by social norms and codes of behavior). The articulations of form and spatial configurations of the built environment grow uniform, abstract, and generic, and surface-applied messages, signs and markings, take on the function of orienting features, differentiating elements, and major urban interface systems, with text and symbol (image) carrying the key messages of identity and meaning. In this sense, the ritual view of communication opens out the realm of multisensorial and multimodal mediation.[9]

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[8] The term 'shield', traditionally, both identifying and protective device used in battles, has developed in some linguistic traditions to mean both an identity sign and a signboard (as in the German term *Schild*, which migrated into Polish as *szyld*).

[9] Howard Gardner's concept of multiple intelligences is potentially encompassing of the simultaneity of communicative events and intentions. Particularly important is his discussion of spatial intelligence (rather than merely visual) "patterning". Howard Gardner, *Multiple Intelligences* (New York: Harper Collins, 1993), pp. 17-21.

This multimodality of ritual implicates the material reality of the environment in several ways. While the transmission of messages can easily be detached from context and the human agent and analyzed on its own (within its own self-referential context, within one particular mode of delivery, or one particular medium), ritual cannot be freely disengaged from its material setting. Thus, the view of communication as ritual suggests the possibility of a truly multi-disciplinary analysis. Romedi Passini believes that communication's dual focus (content and form) makes the discipline a particularly useful tool for the multidisciplinarity required for examination of information design and its knowledge base.[10]

Ritual requires implacement; it is inscribed in the physical manifestations of its context, even when this is portable or transitory.[11] Ritual needs place as an anchor of memory. While the built environment has been a major repository of knowledge, a medium of both storage and movement, it is not merely a container or a channel for transmission; it forms an immersive medium, a habitat which acts as an interface between the embodied human presence and the landscape. It can be argued that the built environment (whether architectural, infrastructural, or urban) has traditionally performed the function of a mediating interface between human and nature.[12] Architecture, for example, can be considered as an interface in itself: it is at once a visible and complex technology of materials, structure, building technique, ornament, and a system of codes, a

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[10] Romedi Passini," Information Design: An Old Hag in Fashionable Clothes?" in Robert Jacobson, ed. *Information Design* (Cambridge, Mass.: The MIT Press, 1999), p. 85.

[11] Some examples may be useful here: a prayer carpet, a certain arrangement of specific objects, physical orientation, these are all spatial (or "placial") elements that create a specific context for ritual. Even ritual practices of nomadic peoples – like Roma (Gypsies), Lapp, or Bedouin – involve various aspects of physical context: ways of marking the environment, and often highly structured rituals of dwelling "on the move": siting, placement of objects, rituals related to arrivals or departures.

[12] See Norman Crowe, *Nature and the Idea of a Man-Made World. An Investigation into the Evolutionary Roots of Form and Order in the Built Environment* (Cambridge, Mass.: The MIT Press, 1995). Other works that discuss this theme: Paul Shepheard, *What is Architecture? An Essay on Landscapes, Buildings, and Machines* (Cambridge, Mass: The MIT Press, 1994); Michael Benedikt, *For An Architecture of Reality* (New York: Lumen Books, 1987); Edmund Bacon, *Design of Cities* (New York: Penguin Books, 1974).

language, an inscription of social practice and ritual. As the technologies of communication become increasingly mobile and invisible, the need for a separate interface surfaces with great force. This need is becoming particularly apparent as the articulations of form and spatial configurations of the built environment grow more abstract, generic and ephemeral. In such conditions, I would argue, surface-applied signs and markers take on the entire function of way-finding devices, of interfaces themselves.

Part One is structured as follows: Chapter 1 describes some of the themes related to signage that have been covered in the literature from a number of domains. Chapter 2 examines the science of signs, semiotics, and its treatment of topo-sensitive signs and the built environment. Chapter 3 shows how the discipline of communication approaches place and the built form. Finally, Chapter 4 discusses the idea of an implaced communication and an immersive communicational medium.

This arrangement and sequence of chapters is intended to show that as technologically structured environments grow in importance, human navigation within the new (growing more spatially ordered yet illegible, more regularized yet increasingly visually confusing) urban space and its emerging cultural environments can and should become a focus of interest for communication scholarship. If we are indeed witnessing a reshaping of our communicational environments, with the backgrounding of architectural articulation and the increasing importance of ephemeral, surface-applied signage, it will be correspondingly important to examine the ways in which the human–machine interface serves this reconfiguration of the communicative environment and the physical space around us.

CHAPTER 1

Signage: the Nature of the Informational Environment.

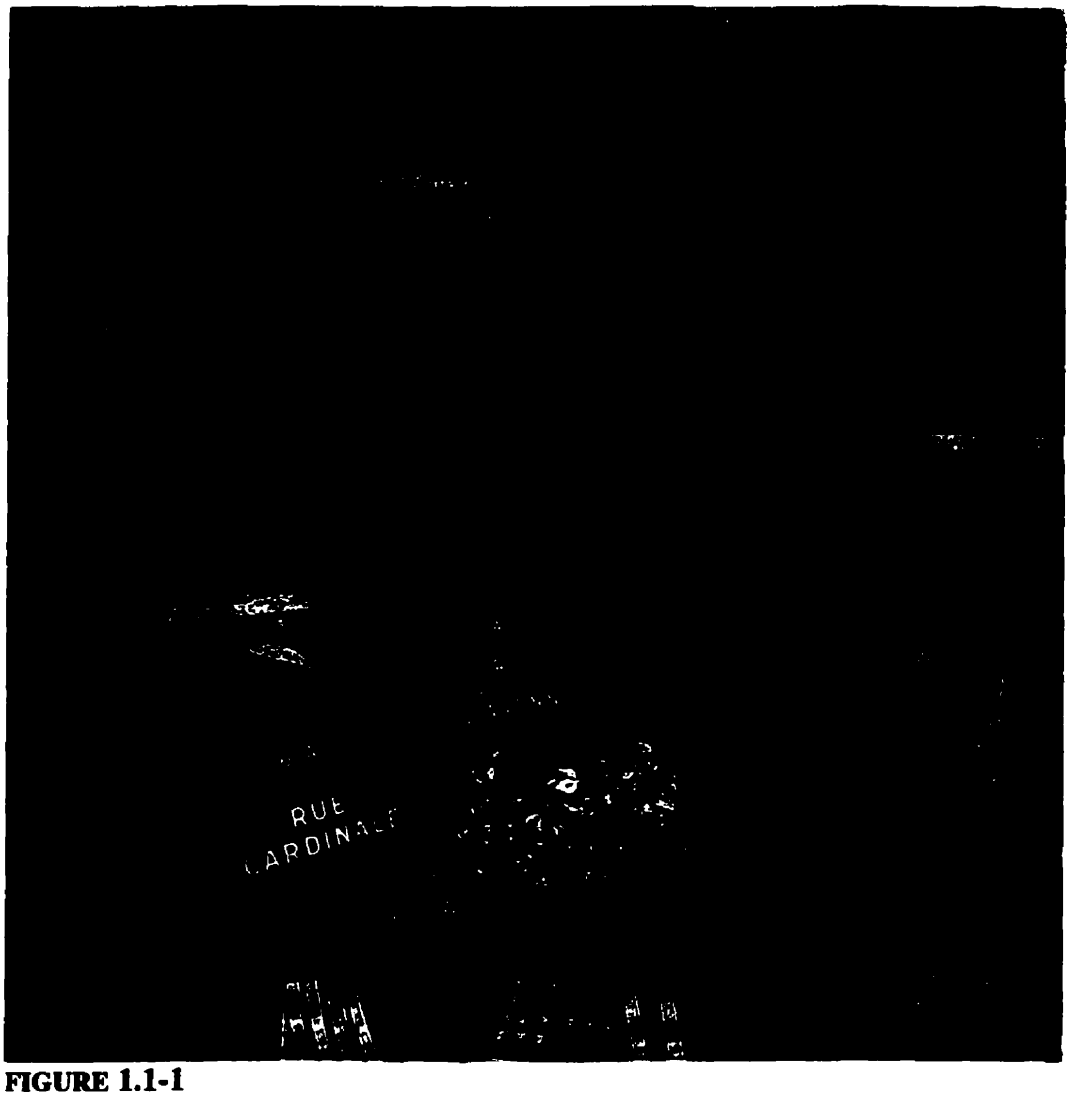

FIGURE 1.1-1

When I walk down a crowded city sidewalk, I am immersed in a communicational environment. I am not even aware that my entire sensorium is engaged in the simultaneous processing of layers and hierarchies of data. While moving within these informational complexities, my body seems mindful, and commanding, of its speed, direction and position. It takes readings from the various elements of its surroundings, constantly plots and adjusts my trajectory to account for the positions of other bodies and

the numerous objects in its way. Even its relative dimensions are 'alterable' to a degree, as when I adjust my position, move sideways, to fit smaller spaces. I constantly compare the size and shape of the space I occupy with the vacant spots I can position myself into as if gauging the negative spaces around me. I factor in my relative speed, accelerating when a sudden opportunity, an opening, presents itself on my course. William H. Whyte in his studies of the skilled pedestrian movements describes this complex process of navigation: "[a]lmost everyone is in a collision course with someone else, but with a multitude of retards, accelerations, and side steps they go their way untouched. It is indeed a great dance."[1]

In addition to reading and responding to the information related to bodies (mine and others), and various objects (whether moving through the same space or stationary), I take notice of, and respond to, the landscape and the entirety of perceivable information within it. On the crowded city street I notice street signs, names and the addresses of buildings, I read traffic signals and take account of the traffic situation. I monitor the road surface and adjust my steps to its texture and condition. I check shop windows, advertisements and billboards along the way. My attention is tuned to a multitude of

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[1] William H. Whyte, *City: Rediscovering the Center* (New York: Doubleday, 1988), p. 67. Whyte's study reflects the interest in environmental behavioral research developed in the sixties and seventies. Experiential aspects of the city and human communication were extensively studied at the time from a number of perspectives: Edward Hall examined non-verbal communication and proxemics; Amos Rapaport focused on cultural aspects of architectural form; Christian Norberg-Schultz examined the notion of dwelling as consisting in orientation and identification; and Romedi Passini looked at the process of wayfinding in architecture. Their work developed in a synergic relation with research in cognitive and environmental psychology and considerable interest in the concept of place and its human and social dimensions of geography (Yi-Fu Tuan, David Canter, Edward Relph). Whyte's work highlights the importance of behavioral dimensions to the analysis of place. His work focused on the daily use of urban space, and observations of social interactions in urban places. He recorded and analyzed the behavior of "skilled pedestrian", patterns of movements, habits and their relation to specific types of places: street corners, train stations, and sidewalks. For a discussion of simultaneous

coincident palpable events: visual, auditory, and haptic. In the words of Edward Casey, "I find myself attending closely to the immediate perceptual environs, the 'near sphere'."[2] Simultaneously, I may be acutely aware of time, consulting my watch frequently and adjusting my pace and trajectory of movement accordingly. I am also aware of a more encompassing sphere, of the "circumambient field" inside which the directly palpable field itself is placed.[3] I have some sense of cardinal direction (or at least the directions guiding the place I am traversing)[4] and a certain understanding of what lies beyond my immediate spatial position. A number of less direct cues allows me to infer information that relates to "over there", beyond the range of my direct perception, beyond my focal field. Edward Casey speaks of a double-tracking in the reading of environmental information: the reading not only of each informational field, but a simultaneous relating of both, the near sphere and the larger world.[5] The site of co-ordination and cross-referencing is the self-referential system centred on my physically moving, perceiving, thinking body. This is where the immediately palpable external references are linked to the larger, indirectly perceptible, known or inferred systems of reference: temporal, directional, socio-cultural.

While I am negotiating this multidimensional environment, I am not a mere 'reader' of a spatially positioned 'text'. The textual metaphor, while fashionable and

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perception in experiencing cities see: Tony Hiss, *The Experience of Place* (New York: Alfred A. Knopf, 1990).

2 Casey also refers to it as the "focal field", *Getting Back into Place*, p. 278.

3 Ibid.

4 Within an urban setting true cardinal directions are of lesser importance than the conventional orienting schema: in Montreal, for example it is generally assumed that Sherbrooke Street represents true East-West direction and that Saint-Laurent runs North-South. The geographic validity of this assumption has little to do with its usefulness for conventional sense of orientation and direction.

5 Casey, *Getting Back into Place*, p. 278.

poetically effective, is fundamentally deficient when applied to the multitude of actions involved in my simple walk down a crowded sidewalk. It contracts spatial perceptions, proprioceptions, and cognitions to flattened acts of 'reading' and decoding. And although language, and even its literal reading, play a role in my negotiating of the environment, it remains a component of a much more complex process. The written and printed words found in public spaces indeed form an important layer of information; however, the reading of a street name or a building address is not an act of "public reading" in quite the same way as the reading of the text of a newspaper.[6] Literal reading and "the spectacle of words"[7] are set against a plethora of non-textual (non-verbal) markings, images, symbols, icons, shapes and colours that cover much of the surface area of the city around me. Together with the elements and structures of the built form, they comprise an environment for which 'texture' rather than 'text' may be a more appropriate metaphor.[8] (Unless we use the original meaning of *textum*, that is the web or fabric of connections that the immersive informational environment constitutes.)[9]

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6 This is contrary to the argument made by Martin Henkin in *City Reading. Written Words and Public Spaces in Antebellum New York* (New York: Columbia University Press, 1998).

7 Henkin is preoccupied with the literal reading that takes place in public space. He argues against the metaphoric use of textual references in urban studies: "while 'reading the city' has become a familiar and fashionable theme in urban studies, actual reading practices receive limited attention". He is focused on the literal meaning of reading and thus concerned with signs containing letters. This is certainly justified in the historical context of antebellum New York since at that time, as Henkin pointed out, "increasingly, the information came in the form of writing or print", and "there was something novel in the spectacle of so many words". However, Henkin's focus on the literal reading of messages that contain letters and words overlooks a number of important processes of mediating the urban environment of strangers. Henkin, *City Reading*, pp. 17-25.

8 Henri Lefebvre, *Writing on Cities*, trans. and eds. Eleonore Kofman and Elizabeth Labes (New York: Blackwell Publishers, 1996), pp. 191-193.

9 The Oxford English Dictionary, 1998 on-line, http://dictionary.oed.com

The built environment that makes up a large portion of the immersive information fields around me, according to Donald Preziosi, is not merely "a particularly clever way of writing texts in 3-D, any more than verbal language is architecture in Flatland. And despite their overlapping correlatives of functions, they are not simply two different ways of doing the 'same' thing."[10] As I argue, the metaphor of 'text' is in fact reductive when it is used in the analysis of the built environment and the processes it contains. Its poetic cache disguises its confinement. Its ubiquity in the literature, however, underscores the prevalence of linguistic-based models in the study of systems of signs.

Communication scholarship seems particularly drawn to the view of the built environment as language-centred. Communication scholarship has a long tradition of examining the role of language in shaping culture and its symbolic forms. The works of Marshall McLuhan, Jack Goody, Walter Ong, among others, charted the trajectory of the discipline around the primacy of verbal language (alphabetic literacy and the media that transmit the verbal message).[11] As a consequence, communication processes that could not be theorized through language-based models and the consequences and significance of their development have been pushed to the margins of the discipline.

This language-focused mind-set dismissive of "lesser" points of view (even on subjects that have little to do with verbal language) has resulted in some curious attacks on urban scholarship and its theorization of the communicative dimensions of built form.

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10 Preziosi, *Architecture, Language, and Meaning*, p. 17.

11 Henkin asserts that while "Jack Goody, Walter Ong, Marshall McLuhan, and others have overessentialized the consequences of literacy and oversimplified the cultural divide between oral and literate societies, it is nonetheless true that an expanded reliance on print can have powerful cultural implications at a particular historical moment." Henkin, *City Reading*, p. 19.

Semioticians seem particularly vehement in their judgment of the work of Kevin Lynch, with Roland Barthes' scorn setting the general tone for further critique.[12] Even some recent cultural critiques see Lynch's theories as the usurpation of textual reference for non-textual territory.[13] However, Lynch's use of the term 'legibility' for city spaces, far from assessing the text-equivalent readability of urban form, refers to its visual gestalt, its "apparent clarity", or "the ease with which its parts can be recognized and can be organized into coherent pattern."[14] This term does not imply a passive 'reading' but the idea of active way-finding, "a consistent use and organization of definite clues from the external environment."[15] Lynch's use of 'legibility' thus seems to point to the subtle dimensions of 'reading' overlooked by a strictly textual understanding caught by the Latin *legere*, meaning, as well, 'to collect', or 'to gather' elements into recognizable patterns,[16] a process fundamental to the understanding and use of complex and multimodal informational environments.

Lynch's work introduces a number of concepts and relationships that are tremendously useful for analysis of the complex spatio-temporal terrain of the urban environment. His work is best known for the concept of environmental image (mental representation of the physical form) and an analysis of the city in terms of the elements of urban form (paths, edges, landmarks, nodes, and districts). But it goes much farther than the mere concept of mental map and discussion of units of spatial analysis. Lynch gathers

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12 See Roland Barthes "Semiotics of the Urban" in *The Semiotic Challenge*. trans. Richard Howard (New York Hill and Wang, 1988), pp. 191-201.

13 Henkin is critical of Lynch's usurpation of the 'legibility' metaphor for practice that does not involve reading of printed words, *City Reading*, pp. 5, 179.

14 Kevin Lynch, *The Image of the City* (Cambridge, Mass.: The MIT Press, 1986), pp. 2-3.

15 Ibid., p. 3.

16 The OED. Gardner's notion of "patterning" is helpful in understanding such meaning of "reading", see Gardner, *Multiple Intelligences*, p. 21.

research on wayfinding from a number of disciplines (cognitive psychology, philosophy, anthropology, architecture, and the history of technology, to mention just a few) and lays significant groundwork for the conceptualization of spatial orientation and the linkages between space and time, particularly in his lesser known work, *What Time is This Place?*[17] The conceptual relation between textual reading and the process of wayfinding can be articulated through the notion of sequence, a succession of events creating the linear structure of a narrative. Yet each process, however sequential, involves different sensory and spatial complexities which, while captured in the concept of wayfinding, are lost in the reductive comparison to textual reading.

In my negotiation of the physical city space I am then not a mere textual 'reader'. Neither am I necessarily a *flâneur*, another fashionable metonymy uncritically applied to urban perambulations.[18] Whether I saunter bedazzled by the unfolding urban

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[17] Lynch discusses the manifestations of time in the built environment in *What Time is This Place?* (Cambridge, Mass.: The MIT Press, 1972). He introduced the concept of wayfinding in *The Image of the City*. The concept was developed further in cognitive and environmental research through the seventies and eighties. Important contribution has been made by Roger Downs and David Stea, Steven Kaplan, Edward Carpenter, G. Moore and R. Golledge, and most notably Romedi Passini who focused specifically on the process of wayfinding in architecture and synthesized much research from other disciplines in its application to the design of the built environment. The work of the latter forms an important contribution to the emerging field of information design and seems re-discovered in research on computer visualization techniques and hypermedia navigation. This is discussed further in Part Three, below. Some of the works on wayfinding: Downs, Roger and David Stea, eds. *Image and the Environment: Cognitive Mapping and Spatial Behavior* (Chicago: Aldine, 1973) and *Maps in Mind* (New York: Harper and Row, 1977); G. Moore and R. Golledge, eds. *Environmental Knowing* (Stroudsburg, PA: Dowden, Hutchinson, and Ross, 1976); Reginald G. Golledge,(ed) *Wayfinding Behavior. Cognitive Mapping and Other Spatial Processes* (Baltimore and London: The Johns Hopkins University Press, 1999); Edward Carpenter, "Wayfinding: Design breakthrough or a trendy buzzword?" *Print* (43, no. 1, 1989), pp. 92-163.

[18] Walter Benjamin's (and Baudeleaire's) *flâneur* is a gentleman of leisure... walking turtles in the arcades may have lost its currency in the contemporary city. See Benjamin, *Illuminations. Essays and Reflections.* (New York: Schocken Books [1969] 1985). See also Jenck's discussion on *flâneur* as a metaphor and a method, "Watching your Step. The history and practice of the *flâneur*." pp.142-160 in Chris Jencks, *Visual Culture* (London and New York: Routledge, 1995), and Anke Gleber, *The Art of Taking a Walk* (Princeton, NJ.: Princeton University Press, 1999).

spectacle, or rush through it dismayed and unimpressed by the crowd, I still partake in the experience of environmental information and its use in the process of wayfinding. Walter Benjamin actually reflected on some of the important aspects of the process linking place to memory (particularly Bergson's *memoire involontaire*) and embodied experience.[19] In his discussion of the reception of architecture he also stressed that buildings are appropriated both by use (habit) and perception. Thus the built environment, according to Benjamin, "cannot be comprehended by optical contemplation alone but tactile appropriation accomplished not so much by attention as by habit" and by "noticing objects in incidental fashion".[20]

Although my body is implicated in the action of negotiating the environment, I do not merely move through this informationally immersive medium. My movement is not simply an act of locomotion. I rely on my bodily memory of movements and on proprioception, on my body's system of reference, particularly in familiar settings.[21] In addition to my movement, however, I constantly process the information I collect and make inferences based on my surroundings (both directly perceptible and those farther afield).[22] I bring into my movement the knowledge of the space around me, its relationships and hierarchies, and my memory of its landmarks; my orienting skills allow

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[19] See Benjamin's discussion in "The Image of Proust", *Illuminations*, pp.157-8; Alberto Pérez-Gómez in "The City as a Paradigm of Order" speaks of the *flâneur* as a mere spectator within a context of an irrelevant stage, *Carlton Book* (Ottawa: Carlton University School of Architecture, 1986), p. 14.

[20] Benjamin, "The Work of Art in the Age of Mechanical Reproduction" *Illuminations*, pp. 239-40.

[21] Brian Massumi provides an interesting discussion of navigation in familiar settings, from an unpublished at the time essay " Buildings, Biograms, and the Body Topologic" kindly made available to me. See also Geoffrey C. Bowker and Susan Leigh Star, *Sorting Things Out. Classification and Its Consequences* (Cambridge, Mass.: The MIT Press, 1999).

[22] Again, it is important to keep in mind the etymology of to read: Latin *legere* also means to gather, and to collect. The OED.

me continuously to re-chart my position. My navigational shuffle on the city sidewalk thus involves the simultaneous dance of perception and cognition typically taking place in the informational environments described by Edward R. Tufte:

> We thrive in information thick worlds because of our marvelous every day capacities to select, edit, single out, structure, highlight, group, pair, merge, harmonize, synthesize, focus, organize, condense, reduce, boil down, choose, categorize, catalog, classify, list, abstract, scan, look into, idealize, isolate, discriminate, distinguish, screen, pigeonhole, pick over, sort, integrate, blend, inspect, filter, lump, skip, smooth, chunk, average, approximate, cluster, aggregate, outline, summarize, itemize, review, dip into, flip through, browse, glance into, leaf through, skim, refine, enumerate, glean, synopsize, winnow the wheat from the chaff, and separate the sheep from the goats. [23]

Although both the visually palpable, and the "circumambient world" encompassing it are 'mappable', the process in which I am involved is not reducible to the abstract act of mental mapping. In the words of Casey, "I do not take it as metrically determinate or even laid out in a regular way. Instead, I grasp it as diversely configured, multidimensional environment with its own inherent directionality".[24] The concept of mapping has been widely used as an explanatory device for the understanding of spatial relationships, orientation and even structures of knowledge. James Carey, for example, suggests in his explication of the ritual view of communication that "[t]hinking consists of building maps of environments."[25] In addition to its metaphoric cache, the concept of mapping has been used as a gauge of the sophistication of navigation and spatial orientation. In fact, navigational and orienting abilities have been often equated with the capacity for symbolic representation in the form of drawings, actual maps of spatial relationships and topographical features of the environment. Historically, cartographic

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23 Edward Tufte, *Envisioning Information* (Cheshire, Conn.: Graphics Press, 1990), p. 50.
24 Casey, *Getting Back into Place*, p. 278.
25 Carey, *Communication as Culture*, p. 28.

representations of the environments produced in different cultures have been seen as evidence of advanced thinking.[26]

The idea of a map (and consequently the relationship between the map and the territory it represents) has attained a monumental metaphoric stature in scholarship, similar to that of 'text'. Alfred Korzybski's and Ernst Cassirer's words which refer to the nature of representation were perhaps most instrumental to this development.[27] The debate as to whether the ability to draw maps, to organize symbols into meaningful representations, preceded the development of language may be of import to communication scholarship. However, different sets of criteria seem to be used for the evaluation of these two notational systems (writing and drawing). Mapmaking is often regarded as evidence of spatial thinking; as if the artifactual evidence of writing represented the first attempted speech acts. Despite the textual and alphabetic bias that communication scholarship may be guilty of, it generally acknowledges at least the richness of oral culture. In contrast, map-making and mapping are seen as gauges or evidence of spatial knowledge – as if mapping were the only phenomenon to make abstract thinking material. In James Carey's discussion of ritual communication practices, the map is presented as a tool that not only uses symbolic forms to exemplify

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[26] Cassirer sees the ability to draw maps as a step in the development of human consciousness: Ernst Cassirer, *An essay on man* (New Haven: Yale University Press, 1944), p. 46; Michael Blakemore, "From way-finding to map-making: the spatial information filed of aboriginal peoples." *Progress in Human Geography*, 1981, pp. 1-24; J. B. Harley, "Maps, knowledge, and power" in Denis Cosgrove and Stephen Daniels, eds., *The Iconography of Landscape. Essays on the symbolic representation, design and use of past environments* (Cambridge: Cambridge University Press, 1988), pp. 277-312.

[27] Alfred Korzybski, *Science and Sanity* (Lancaster, Pen.: International Non-Aristotelian Library Publishing, 1941), p. 58; Ernst Cassirer, *The Philosophy of Symbolic Forms, Vol.3* , (New Haven: Yale University Press, 1957), p. 153. See also Cassirer, *An essay on man*. p. 46.

and explain spatial relationships, but "transform[s] vacant space into a featured environment".[28]

Unless I am in an unfamiliar setting, I am guided neither by an imaginary nor actual map as I move through the complexity of urban space, regardless of my capacity for mapping (conceptual, cartographic, or even digital). I typically use the immediate elements of the environment to guide the sequence of my steps. I use various markers from my surroundings in a way that is similar to what Bruno Adler described in his seminal study of prehistoric mapping. He likened footprints, tree markings, trails, cairns, and other early markers to contemporary urban signs, street names and numbers.[29] His study is quite unique, and not only to the history of cartography, for its identification of the generative role of navigational markers and social knowledge in spatial orientation and the development of symbolic representations of topological features of landscapes, spatial correlations and orienting cosmologies.

When I move through the cityscape, then, I rely on the complex interfaces (signage systems) that organize space, articulate place legibility, and provide an array of

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[28] Carey, *Communication as Culture*, p. 27. Carey talks about the dual capacity of symbolic forms, presenting reality ("symbols of") and creating their own reality ("symbols for") p. 29. "The map stands as a representation of an environment capable of clarifying a problematic situation. It is capable of guiding behavior and simultaneously transforming undifferentiated space into configured – that is known, apprehended, understood space" p. 27.

[29] Bruno Adler, *Karty piervobytnykh narodov. Trudy geograficheskago otdieleniya.* Izviestia Imperatorskogo Obschestva lubiteli yestestvoznaniya, antropologii y etnografii. Izviestiasostoyaschago pri Imperiatorskom Moskovskom Universiteti. (tom CXIX, Vypusk 2. No.2. St.Petersburg, 1910), p. 24. Adler's work, curiously remains not translated into English, though every source on the history of cartography refers to it as seminal. It is frequently cited as the first comprehensive study of mapping among so called at the time 'primitive' people, though the original text refers to 'aboriginal' or 'first' thus avoiding the pejorative connotation that prevailed in Western literature until relatively recently. See Blakemore, "Way-finding and map-making". Adler's study begins with a chapter on various techniques of spatial orientation, and follows with an entire chapter on navigational markers (Adler refers to them as "objects", *primiaty*) used in the process of wayfinding.

mediating elements: directional cues, orienting markings, signs of warning and prohibition, territorial demarcation, etc. I negotiate this complex informational environment through myriad perceptual acts, cognitive decisions, and physical and mental actions that I typically take for granted; I become aware of the complexities of the surroundings only in the absence of familiar or anticipated elements. It is when information is missing from an anticipated place or sequence of events that I become conscious of the process I am engaged in: the process of negotiating, of making my way through the environment and simultaneously of plotting my course in relation to the numerous systems of references. It is only in their absence that I become attentive to those elements that I need for my navigation: a number, a building, a landmark, an arrow sign, a street name, an address – a missing piece in a sequence of markers, in the complex sign system around me. In a physically immersive informational environment I rely on and actively search for markers, objects, a sequence of elements, an arrangement, or pattern that would confirm the correctness of my understanding of the relevant spatial relationships (and thus my position and direction), and give some navigational clues as to where I am and what my next step ought to be.

The navigational markers that I employ have been either purposefully placed to orient, identify, or direct, or are temporarily appropriated from the surroundings; summoned, as it were, to perform an orienting function. In either case, markers are characterized by their multimodality and the multidimensional fluidity of their substrates. They come in a number of shapes and forms and can range from architectural articulations, inscriptions and symbols to forms appropriated from the landscape and even other bodies with their movements, positions, and arrangements in space. These markers

are not bound by one substrate, not circumscribed by one mode of expression. They engage multiple senses and form an environment that can best be understood as simultaneously an interface and an immersive medium. The nature of the built environment, in the words of Preziosi, is "realized through what appears to be an impossibly complex hybrid of media"; "[it] is not merely equivalent to the sum of artifactual or made formations but will normally include formations appropriated from a given landscape, as well as formations made solely by the relative deployment of bodies in space."[30] Indeed, if on my way to the metro station, I am told to turn left at the corner store,[31] I seek out and use the latter as a landmark. It acts very much like the natural sign described by Albert Borgmann, a sign that is summoned from its surroundings, that "emerges from the environment and disappears in it again"[32] after its momentary role is fulfilled.

Apart from their multimodality and multidimensionality, is there a common thread among the markers that I use in my perambulations? The most obviously common characteristic seems to be their publicity: they are placed outside of the interior domestic sphere. Navigational markers, orienting signs are phenomena that form part of the visible public space, with private domains familiar enough not to require specialized layers of orienting information, though we do use labels and relational schemas to organize our

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30 Preziosi, *Architecture, Language*, pp. 3-4.

31 The particular function of this landmark at that particular location (corner store) is not as relevant as its visible presence and its potential for being recognized as a marker of a decision point.

32 Albert Borgmann, *Holding On to Reality. The Nature Of Information at the Turn of the Millenium* (Chicago: The University of Chicago Press 1998), p. 2. Borgmann discusses this aspect of natural signs as "not getting in the way of things". Cultural signs, however, particularly in a highly marked urbanscape, also have the quality of changing prominence and stability depending on the function they are "summoned" to.

domestic spaces and the information contained therein.[33] As Geoffrey Bowker and Susan Leigh Star note about the organization systems used in our domestic spaces:

> We have certain knowledge of these intimate spaces, classifications that appear to live partly in our hands – definitely not in our heads or in any formal algorithm. The knowledge about which thing will be useful at any given moment is embodied in a flow of mundane tasks and practices and many varied social roles. When we need to put our hands on something, it is there. [34]

It is the familiarity with place that is important here. Different formal requirements for the marking and organization of place within the domestic and public environments may exist, but visually palpable marking is fundamentally used to manage information that exceeds the capacity of our memory or knowledge. It is used as a mnemonic device for insiders (in an environment that exceeds their ability to differentiate its features or the capacity of their memory);[35] or a coded sign directed towards the outsider (to be recognized, or specifically not recognized, by someone unfamiliar with the system). Depending on the addressee, markers will necessarily have different requirements. Those intended for the local audience will be informal, less structured, based on tradition and shared local code, rather than on a generic clarity of system or design.

The demarcation between public and private space has interesting historical and mythological roots, with different protectors of public and domestic space and different

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33 Bowker and Leigh Star, *Sorting Things Out*. p. 2.

34 Ibid.

35 For a discussion of memory and place see Edward Casey,"The Memorability of Inhabited Space" in *Spirit and Soul. Essays in Philosophical Psychology* (Dallas, Texas: Spring Publications, 1991), pp. 229-259; C. Francis Yates, *The Art of Memory* (London: Routledge and Kegan Paul, 1966), chapters 1-3; Henri Bergson, *Matter and Memory* (New York: Doubleday, 1959; Kent Bloomer and Charles W. Moore, *Body, Memory, and Architecture* (New Haven and London: Yale University Press, 1977); Edward Casey, *Remembering. A Phenomenological Study*. 2nd ed. (Bloomington and Indianapolis: Indiana University Press, 2000).

functions of their markers. This demarcation and symbolic attachment is perhaps terrain for another exploration. Here, I wish merely to point to some historical and mythological narratives describing modes of differentiation and symbolic protection of each space (private and public). Casey, for example speaks of "hestial" and "hermetic" modes of dwelling: with the private, domestic space of the family protected by Hestia, the goddess of the family hearth; and the public space (marketplace, the gate, the road, and the crossroads) left in charge of Hermes, the messenger of gods, protector of travellers, patron of negotiations, trade and oracles.[36] Wayfinding and trail-marking was within the sphere of influence of the latter. Hermes was considered the god of the road marker; some scholars claim that the mythological figure in fact developed from the ritual of marking roads and boundaries with stones or cairns.[37]

For the purposes of the current discussion, the issue in the division of public and private is not property ownership but the scale of the territory, familiarity with it and the type and size of the audience for the information within its boundaries. Martin Henkin, in his study of public reading in New York of the 1850s, discusses this point (and exemplifies perhaps a more general sentiment on the issue manifest in North American scholarship) by claiming that "most fixed signs advertise private commercial interest and register the claims of private property".[38] Fixed signs register the claim of implacement, of specificity, local identity. The idea of specific social knowledge linked to a particular place, stored in a particular locality, is of significance here. Typically, the kind of marker

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[36] Casey, *Getting Back into Place*. pp. 132-145. Michel Serres considers Hermes the patron of communication, Serres, *Hermes, Literature, Science, Philosophy* (Baltimore and London: The Johns Hopkins University Press, 1982). The metaphor of Hermes is further discussed in Part 3.

[37] See Chapter 7 below for a further discussion of this point.

that we need within our familiar environments is easily appropriated from our immediate surroundings. They can be, in Borgmann's terms, natural signs, or signs posted for other purposes and temporarily appropriated at will.[39] Our bodies remember the relational organization of the items we store within our private spaces, though we typically employ numerous organizing schemes to relate the various types of items to a specific locale. [40]

Though the public aspect of signs is not reducible to public spectacle and the commercial dimension, it is the visual display and commercial character of signs that seem to dominate the literature. Guy Debord's provocative ideas may have launched the spectacle theme in cultural theory.[41] The city is often discussed in such terms, as an unfolding visual drama: whether the "crowded seas of largely undifferentiated type" as described by Henkin, preoccupied with the written word within street surfaces,[42] or as "a physical site in which images and messages seem to swirl about, devoid of sustaining

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38 Henkin, *City Reading*, p. 4. For a discussion of the issue of private property and urbanism, see Ella Chmielewska, *Dwelling in Postmodernity: Elaboration on the Meaning of Home and Housing* (Master of Urban Planning Thesis, McGill University, 1996).

39 Borgmann, *Holding On to Reality*.

40 Our body remembers through habit: we reach into specific places anticipating the presence of certain things there. We may employ labels when faced with numerous similarly looking items. We remember spatial organization of things: something is always near something else, in a specific place (though the logic of this placement often remains clear only to us). If we were to allow someone to use our environment, however, we would most likely walk the prson through, demonstrate how our organizing system works, or we would leave notes indicating where various items could be found in the household. Similarly on our desktops (real or virtual), we have our specific organizing methods (again, mostly mystifying to others). Only when we need to ask someone to access our environment, do we need to explain exactly how to get there: we need to give a set of specific directions, an itinerary: "go to this drawer, pull out this file, open this document..." For a rich discussion of the nature of organization of space and classification see Bowker and Leigh Star, *Sorting Things Out*, for a discussion of body memory see Casey, *Getting Back into Place* and *Remembering*.

41 Guy Debord, *The Society of the Spectacle* (New York: Zone Books, [1967] 1995).

42 As Henkin suggests, "written words came to their own as self-sufficient public markers in the nineteenth century. Shop signs and trade cards were becoming more verbose and less emblematic, and newspapers were developing into crowded seas of largely undifferentiated type." *City Reading*, p. 18.

context" in Christine Boyer's description of the contemporary metropolis.[43] Beatriz Colomina discusses architecture as mass medium, but focuses principally on its publicity, thus considering the subject's visual (spectacular) dimensions.[44] Stephen Perrella goes even further and equates communication with advertising, [45]

The focus on the commercial sign gives an interesting angle to the analysis of the subject. Robert Venturi, one of the few architectural theorists who pursues an interest in the signs of the urban environment, examines the symbolic landscape of the commercial vernacular and the architecture of the strip.[46] Fascination with the aesthetics of the billboard, the roadside attraction, and the architecture of movement and advertising is a North American phenomenon of vast proportion, and it manifests itself in both scholarship and popular culture.[47] Signs are often discussed from the perspective of access, ways of marking the boundary of property, of designating private commercial interest.[48] They are also seen as folklore, folk art and vernacular expression. The display

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[43] Christine M. Boyer, *The City of Collective Memory. Its Historical Imagery and Architectural Entertainments* (Cambridge, Mass: The MIT Press, 1994) p. 28.

[44] Beatriz Colomina. *Privacy and Publicity. Modern Architecture as Mass Media* (Cambridge, Mass.: The MIT Press, 1994).

[45] Stephen Perrella, Skin Deep, *Blueprint* (171, April 2000), pp. 45-52. Perrella sees architecture as positioned "above the vulgarities of communication".

[46] Robert Rauch, Exhibition *Signs of Life. Symbols in the American City* (The Renwick Gallery of the National Collection of Fine Arts, Smithsonian Institute. Feb. 26-Sept. 30, 1976); Robert Venturi, Denise Scott Brown and Steven Izenuor, *Learning from Las Vegas* (Cambridge, Mass. and London England: The MIT Press, [1973] 1993 rev.ed.).

[47] Warren H. Anderson, *Vanishing Roadside America* (Tucson: The University of Arizona Press, 1976). Through a collection of images and brief notes, Anderson offers a perceptive analysis of the changing landscape that accompanies developments in technology of movement. Particularly important is his discussion of the merging imagery of the highway sign system and advertising.

[48] Henkin sees fixed signs merely as designators of private commercial interest. *City Reading*, pp. 39-68. For a broader discussion, it may be useful to consider the difference between the North American and European city and their respective approaches to urban planning and private versus public space discourse.

aspects of signs (advertising and signscape aesthetics) and the scenic dimension of the highway have a long-established tradition in North American research.[49]

The markers that I move by, notice, seek out (in the form of objects, forms, surfaces, texts, images and symbols) have another characteristic: their relationship to place. While I am moving, dislocating, they remain in place, and my movement is largely dependent on the relative permanence of their position and broadcast.[50] Navigational markers are not only typically affixed to specific places, they are inherently place-specific. Even if their form is generic and universal, they become what they are only when placed. The corner store that I temporarily used as a landmark for my navigation was chosen as a marker because of its location at some point of decision on my path. The store's particular look, style, prominence, history, ownership, and meaning had less to do with my choice than its specific placement.

The relationship between signs and places, the condition of their implacement preoccupies much of this work. This attachment to place seems to be a largely neglected characteristic of signs. Or perhaps, navigational markers as a type are largely neglected because of their inherent immobility. Paradoxically, their fixed condition may complicate their analysis. From the science of signs (semiotics) through communication scholarship to cartography, this difficulty is evident, resulting in a marginalization of the

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[49] See Donald Appleyard, Kevin Lynch and Robert Myer, *The View from the Road* (Cambridge, Mass.: The MIT Press, 1964); Peter Blake, *God's Own Junkyard. The Planned Deterioration of America's Landscape* (New York and Chicago: Holt, Rinehart and Winston, 1964); John Brinckerhoff Jackson, *Landscape in Sight. Looking at America* (New Haven and London: Yale University Press, 1997).

[50] See the discussion of relative "broadcast permanence" and "object permanence" (relative to other broadcasts) in Preziosi, *Architecture, Language*, pp. 6-7.

subject as a disciplinary interest.[51] Few sources focus on the multidimensional relationship of information to place, and on the complexity and dynamics of ties amongst the environment, symbolic representations of knowledge and human behavior. A notable inroad into systematization of the numerous research strands into a coherent theoretical framework was made by Donald Preziozi in his semiological analysis of architectonic system. His work is particularly useful to the present inquiry. So is the work of Romedi Passini,[52] who theorizes the process of wayfinding in architecture. The overlay of these two approaches brings to the fore the field of this discussion, signage.

While semiotics typically inquires into the power and meaning of the sign itself (sign detached from its location, lifted from any specific place into an abstract realm of codes and classification systems), the architectonic analysis that Preziosi elaborates underscores the environmental embeddedness of signs. Much can be gained from such a framework for communication scholarship which remains largely influenced by language-focused analyses and preoccupied with media carrying dislodged messages. The condition of displacement is even argued as necessary for production of symbolic forms, as in James Carey's discussion of the ritual view of communication.[53] Thus media of communication come to be seen programmatically as the media of transmission, dislocation and detachment.

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[51] Umberto Eco openly professes the difficulty semiotics has with signs that are topo-sensitive. Eco, *A Theory of Semiotics* (Bloomington and London: University of Indiana Press, 1979), p.184; David Harvey speaks of the concept of place, locale, milieu as having "the awkward habit of paralyzing the social theory's central propositions" Harvey, *The Urban Experience* (Baltimore: The Johns Hopkins University Press, 1989), p. 5.

[52] Romedi Passini, *Wayfinding. A Study of Spatial Problem Solving* (Ph. D Thesis, Pennsylvania State University, Philadelphia 1977); *Wayfinding in Architecture* (New York: Van Nostrand Reinhold, 1984); Paul Arthur and Romedi Passini, *Wayfinding. People, Signs and Architecture* (Toronto, Montreal: McGraw-Hill-Ryerson, 1992).

[53] Carey, *Communication as Culture*. This point is discussed further in chapter 4, below.

The relationship of media to place is important for another reason. Communication scholarship also has a tradition of relating culture to time and space (Harold Innis, most notably) and to technology and built form (Lewis Mumford). Both Innis and Mumford elaborate the complexity of links among technologies of communication and places of movement and exchange. While Innis was perhaps more focused on linear space and process (trade routes), Mumford was preoccupied with the clustered space of cities.[54] Both sketched out important theoretical frameworks for the concept of place and its position within the communication discourse. Mumford saw cities as instruments of memory and communication technology in themselves, "special receptacles for storing and transmitting messages".[55] Innis, in his concept of time- and space-bias, also elaborated connections between communication processes and the material world they transform in their storage and conveyance of knowledge and information.[56]

While the multidimensionality and multifunctionality of informational environments have challenged linguistic-based approaches, these aspects truly confront us when the sign is seen as implaced. The image of one sign post at a specific intersection (Fig. 1.1-2 next page) illustrates the complexity and multidimensional richness of signage systems. From this one image we can draw information on the prevailing technologies of communication, the hierarchy of movement systems, type of settlement, urban patterns, material technology and design aesthetics.

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[54] Lewis Mumford, *The City in History: Its Origins, Its Transformations, and Its Prospects* (New York: Harcourt, Brace & World, 1961), p.71. Although Mumford's reflections on highways, and particularly his passionate critique of interstate highway development, must also be noted. *The Highway and the City.* (New York: Harcourt, Brace & World, 1963).

[55] Mumford, *The City in History*, p. 99.

[56] Harold A. Innis, *The Bias of Communication* (Toronto: University of Toronto Press, 1982).

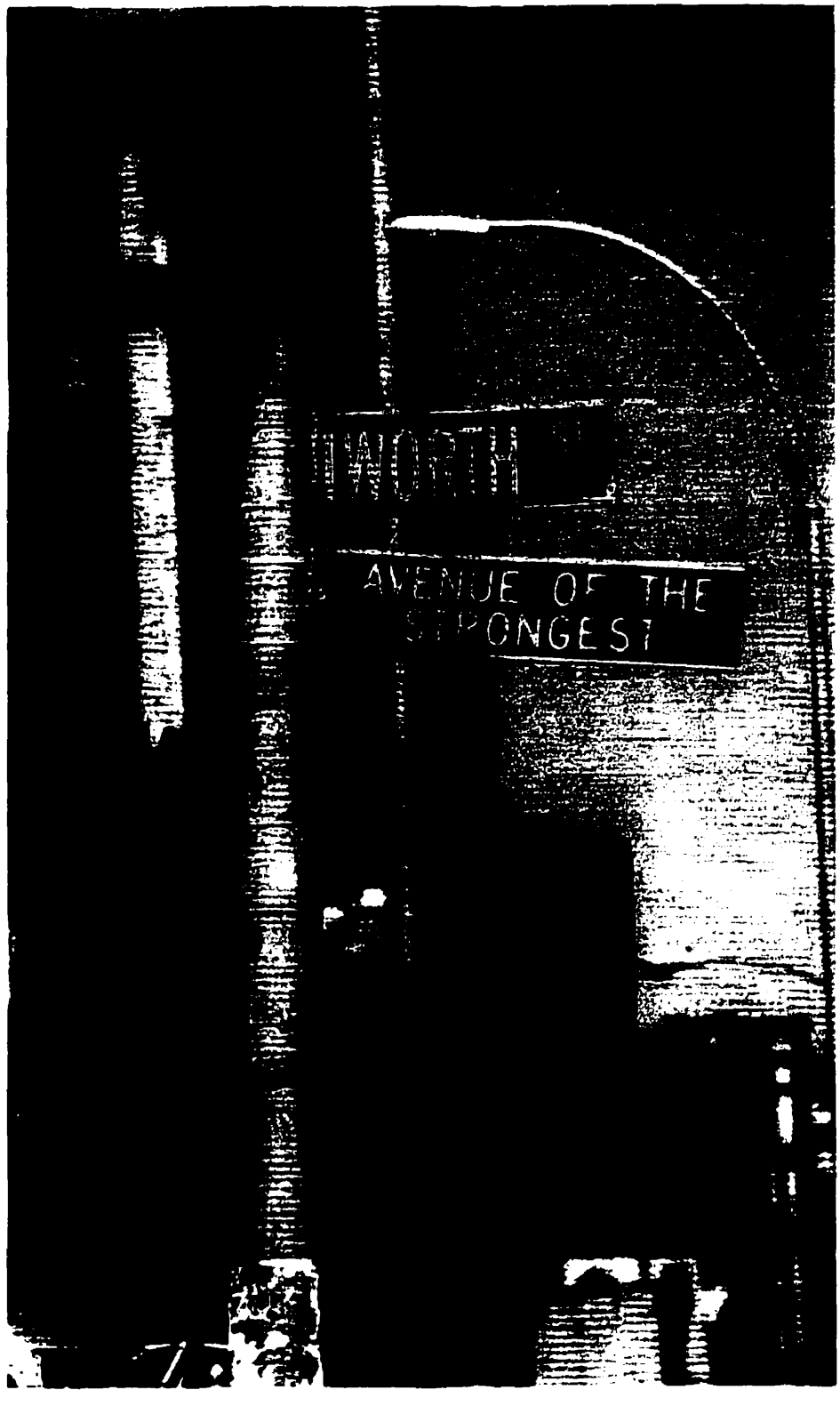

FIGURE 1.1-2

We can get an insight into wayfinding strategies, techniques for orientation, and the linguistic and cultural identity of the society that made this multi-dimensional mark, into a built environment which, in the words of Preziosi, "contains and broadcasts information about the social and cognitive world of a people".[57] And we can place all of these elements at a certain historical moment, in a certain geographical place as "an architectonic formation that provides evidence for the state of a society at a certain time and place."[58]

The search for context, rather than contemplation of the spectacle of dislocations and displacement, is a helpful position for the analysis of informational environments. Highlighting the role of place in communication discourse brings out the temporal dimension of context, and signage accounts for much of the temporal connection with the surroundings: designation of the 'here' and definition of the 'now'. Signage systems concern memory and techniques of inscription, the type and system of marks used for the storage of information and communication of messages.[59]

When I walk down that crowded city sidewalk, I am immersed in an informational environment. Much of it is inscribed in the hidden layers of organizational, regulatory, social and cultural, psychological frameworks. Much of it is visually palpable in what Borgmann describes as the "roar of information"[60] around me, where it seems that "every surface shouts and every silence is filled".[61] The way Bruno Latour weaves signage into his analysis of the layers of the complex infrastructure of the contemporary city in his

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57 Preziosi, *Architecture, Language*, p. 80.

58 Ibid.

59 See the way Lynch uses the images of signs to narrate the manifestations of time in the urban environment ("change made visible"), *What Time is This Place?* pp. 135-162.

60 Borgmann, *Holding On to Reality*, p. 3.

61 Brent Staples, "Life in the Information Age." *NY Times*, 7 July 1992.

work, subversively entitled *Paris ville invisible*, peeling off and making apparent the manifest and hidden layers of the city, exposes its underlying organizing structures, the hidden physical depths of its informational environment. [62] These communicational dimensions of built form and ways of marking and indexing the urban landscape implicate the place and material texture in ways that challenge language-based analysis and demand methodologies and approaches which consider language in the context of experience and implacement.

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[62] Bruno Latour and Emilie Hermant, *Paris ville invisible* (Paris: Institut Synthélabo, 1998).

CHAPTER 2

The Science of Signs: Between Text, Image and Built Form.

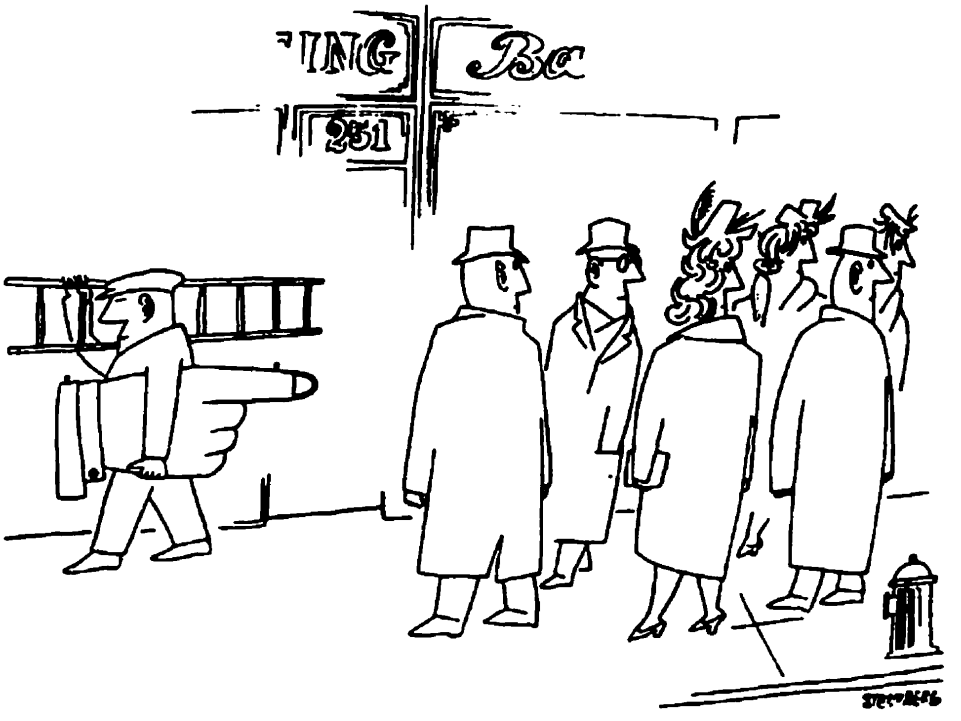

FIGURE 1.2-1

Semiotics, the science of signs, may seem like an obvious place to begin a discussion of signage. With semiotics claiming the entire field of knowledge related to *signs*, one cannot also help but presume that much, if not everything, about them must be worked out within its methods. However, to appropriate the words of Roland Barthes, "there is in fact a great obstacle... the obstacle of the obvious" in studying signage.[1] For one, signs as a subject of inquiry may suffer from the imprisonment of their appellation. The English word *sign* is an omnibus of sorts, encompassing manifold meanings within

[1] Roland Barthes, "Semantics of the Object" in *The Semiotic Challenge*, p.184.

the same linguistic ...well, sign; the same word denoting various categories of objects, concepts, and actions (signal, indication, symbol, signboard, trace, mark, etc.).[2] A conflation of meanings also results from the translation of terminology between different intellectual and disciplinary traditions. Even within the discipline important theoretical disputes exist. Can the English *sign* imbued with Peircean tradition possibly mean the same as the *sign* with French Saussurian roots? There is enough complication here to confine the discussion of signs to language-centered theories. But while signage appears as a natural candidate for the application of the theory of signs, one discovers on a closer examination, that an attempt to position it within the semiotic project turns up a quicksand of theoretical confusion.

It is beyond the scope of this work to discuss semiotic theory in much depth. The vastness of its self-contained territory and its pervasive stronghold on contemporary academic discourse may discourage or confuse much more learned a critic.[3] My aim here, in this chapter, is to survey a number of the semiotic blind spots already pointed out by others (whether critics of "semiotic reason" or ardent semioticians themselves) and to demonstrate how these blind spots account for the problems with the application of semiotic method to signage. There seem to be plenty of arguments within the semiotic discourse itself to demonstrate the difficulty of explaining the meaning and material reality of physical signs through the science (point of view, doctrine, or a method) of signs.[4] This discussion focuses on the dimensions that account for these difficulties and

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2 In some languages, certain meanings of the word *sign* are expressed by etymologically separate and thus more specific terms, making the discussion of certain aspects of signs somewhat less ambiguous. For example, the German *Schild* (signboard bearing the name of the business) comes from the tradition of advertising identity on the armour (English *shield*), similarly the Polish *szyld*; also in Polish there are several different names for specific types of signs: these are etymologically related to their function (like informational sign, *wywieszka*, has its etymological roots in 'hanging outside').

3 See Marc Angenot's polemic *Critique of Semiotic Reason* (New York and Ottawa: Legas, 1994) and more forgiving John Deely's *Basics of Semiotics* (Bloomington & Indianapolis: Indiana University Press, 1990).

4 See Deely's discussion of *method* and *point of view*, *Basics of Semiotic*, p. 9, and Angenot notes on semiotic *project* in *Critique of Semiotic Reason*, p. 13. Most definitions of semiotics presented in textbooks refer to it as a *science*.

contrasts them with the inquiry into the semiotics of the built environment by Donald Preziosi.[5]

To consider signage one needs to examine the complex corpus of forms precariously positioned within the territory delimited by language, visual codes and built form. Preziosi's concept of the architectonic system describes this larger realm within which we need to position signage as "any and all of the [visually and] spatially-palpable formations which humans may devise, construct or appropriate from the environment in order to transmit information regarding the conceptual world of a society".[6] The multiplicity and multidimensionality of way-finding markers make it necessary to consider linguistic, visual/iconic and spatio-temporal codes together. The study of signs, semiotics, is rooted in the philosophy of language and linguistics. Some theoreticians have pushed its exploration into the biological and social sciences, such as the science of signs elaborated by Thomas A. Sebeok on behavioral, cognitive, and social science grounds.[7] While much discussion exists on visual codes and iconicity, spatially constructed signs have not been explored in much depth. And while the various codes have been elaborated within their own domains (language, icon and spatial form), the ways they come together seems to have eluded theory. This position within the territory of the overlapping domains of language, visual code, and spatio-temporal network seems to be the source of a number of theoretical problems.

Let us begin with the visual, leaving Preziosi's analysis aside for a while, and examine what Marc Angenot in his *Critique of Semiotic Reason* describes as the general problem of the iconic sign and the "semiotician imbued with the linguistic model."[8] Angenot summarizes the state of the discipline as follows:

> ...the theory of signs already suffers from a number of blind spots and omissions when applied to natural languages and to artificial systems of

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5 Preziosi, *Architecture, Language*, p. 36.
6 Ibid.
7 Thomas A. Sebeok, *An Introduction to Semiotics* (Toronto and Buffalo: University of Toronto Press, 1994)
8 Angenot, *Critique of Semiotic Reason*, p. 13.

> arbitrary signs. These blind spots and omissions, when transported to the world of pictures, fixed or moving "simulacra", have the effect of blocking reflective thought, or rather of steering it toward an impasse. [9]

The semioticians's uncritical application of linguistic-based analysis to the study of icons, Angenot argues, results in a conflation of fundamentally different theoretical approaches.[10] While a jarring theoretical dissonance seems to be at the basis of the doctrine's main tenets, it is generally understood that the discourse is unified by its object of the inquiry, semiosis. Angenot, questioning the icon[11] as a legitimate object to build an entire structure of knowledge around, sees the internal divisions of semiotic discourse as a problem of a "lack of [its] own object of study".[12] What seems puzzling in the "semiotic reason" is not just the persistence of the linguistic model, but its pairing with the doctrinal claim to the entirety of the signifying process itself. Overlooking the limitations of these models for theoretical analysis of culture as a whole turns semiotic doctrine into dogma: indisputable in its colonizing ambitions, and obsessively arbitrary in its assumption that the rules governing one approach to language can, and indeed *must*, be applicable to all processes involving communication and meaning.[13] The resulting imprisonment in language is particularly important to communication scholarship as some theorists of communication see one trajectory of its bifurcated domain structured entirely around semiotics and linguistic theory.[14]

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9 Angenot, *Critique of Semiotic Reason*, p. 27.

10 Ibid.

11 The question of the legitimacy of the iconic sign for semiotic analysis has pervaded semiotic discourse for decades. To mention just a few seminal texts: A. K. Biermann, "That there is no iconic sign". *Philosophy and Phenomenological Research* (23, 1962), pp. 243-295, Umberto Eco, "Introduction to a semiotics of iconic signs." *Versus* (VS) (2, 1972), pp. 1-15; also Eco, *A Theory of Semiotics*.

12 Angenot, *Critique of Semiotic Reason*, p. 25.

13 In the tradition of Jacque Derrida who argued for the necessity of determining "as language the totality of the problematic horizon" Angenot, *Critique of Semiotic Reason*, p. 31. As Brenda Lee commented, "This is a particular problem since transmission-based models of language fail to connect linguistic capacity and expression with the tacit bodily and shared knowledge that links the speaker to the physical and social conditions of speech." Brenda Lee, conversation, October 2000.

14 Introductory texts on communication theory are particularly telling examples. See Paul Cobley, ed. *The Communication Theory Reader* (New York and London: Routledge, 1996), p. 1: "Linguistics provides the foundation and touchstone for communication theory" For the discussion of the schools of communication: process school and "production of meaning school."

The internal division of the focus of semiotics is often obscured by synonymous use of the terms *semiology* and *semiotics*.[15] For purposes of this discussion, delimitation of the field after Thomas A. Sebeok, reserving *semiology* as a component of *semiotics* seems most useful.[16] While most sources use the terms interchangeably, often noting the difference as related strictly to the geography of labeling (its European and North American roots), conflating the philosophical traditions for the purpose of unifying the semiotic domain comes at the price of a significant theoretical confusion. And of course, since the traditions are not easily made compatible, a discussion of their hierarchy and primacy would necessarily follow. So, some theorists, such as Sebeok, assert that the tradition of semiology must be seen as subordinate to semiotics because of its fixation on language, "that miniscule segment of nature some anthropologists grandly compartmentalize as culture".[17] He argues that in contrast to the linguistic tradition of Ferdynand de Saussure (semiology), the philosophical tradition of Charles S. Peirce (semiotics) elaborates *semiosis* as a broader and more fundamental process involving natural and social signs and the physical universe itself. Semiosis in this broader philosophical, rather than strictly linguistic understanding, is seen as the process "ordered to that larger whole – namely, the universe of nature as we experience it".[18]

Let us consider that indeed, as John Deely claims, "...the semiotic point of view naturally expands ... to include the whole phenomenon of human communication – not only language – and, both after and as a consequence of that, cultural phenomena as incorporative of, as well and in their difference from, the phenomena of nature."[19] Such an all-encompassing point of view, one would expect, would accommodate the interaction between human beings within their physical surroundings and the

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(semiotic) school, see John Fiske, *Introduction to Communication Studies* (New York: Routledge 1996).

15 Fiske, *Introduction*, p. 2.

16 Deely, *Basics of Semiotics*, p. 6.

17 Deely quoting Sebeok, *Basics of Semiotics*, p. 7.

18 Deely, *Basics of Semiotics*, p. 6.

19 Ibid, p. 17

informational layers inscribed there through the numerous systems of markings. However, in as much as semiotics acknowledges that "the action of signs first arises precisely from physically related environmental factors coming to be seen objectively as related, and conversely, from objectively related factors being presented as physically related",[20] it also asserts that the subject of its inquiry is not just signs but their action, their signification alone.[21] What interests semioticians is an elaboration of the relations, patterns of meanings and processes of semiosis itself, rather than that which relates to the material reality of signs. The theoretical basis of the discipline is an analytical abstraction, the notion of The Code, which underlines the relations among all processes, objects and phenomena under investigation.

With their focus on code, both paradigms (whether originating in the tradition of Peirce or Saussure,[22] *semiotics* or *semiology*) fall on purely linguistic models for support of their theories; in the words of Angenot, "the more or less avowed goal is the same: to remain within the inspirational practice of the linguistic model."[23] The idea of the all-encompassing text with cultural processes elaborated as acts of reading (decoding) has taken a strong hold on the many disciplines examining image and representation, with the philosophy of language and structural linguistics still permeating discourse in the visual arts, communication theory and cultural studies, as well as architecture and art history.[24] Language-focus also characterizes much of the analysis of work based on the Peircean tradition of semiotics. Deely, for example, follows his lengthy discussion of an all-encompassing semiosis in the tradition of Peirce with the assertion that "texts... can be any physical structure at all made to embody ideas in the semiotic sense. Indeed, the whole of culture, in this sense, is a text."[25] This would perhaps seem convincing were we

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20 Deely, *Basics of Semiotics*, p. 47.
21 Ibid., p. 105.
22 Although Angenot argues that little remains from the tradition of Saussure within the language-fixated semiotics of today, Angenot, *Critique of Semiotic Reason*, p. 30.
23 Ibid.
24 Roland Barthes and Jacques Derrida's strong position within the cultural critique attest to that.
25 Deely, *Basics of Semiotics*, p. 64.

allowed to see 'text' as not necessarily 'textual' (in lexical terms), but a collection of recognizable patterns, a web (in the original meaning of the Latin *textum*), a matrix of relations that could be examined from a number of points of view. In the words of Preziosi, "a lattice of associations".[26] But can a text remain all-encompassing if it is caught up in what Angenot calls the "fetish for The Code"?[27] Can it account for the whole of culture if it *must* be seen in purely linguistic terms? Does the claim that text can be an all-encompassing model for a number of phenomena not bring the metaphor toward the notion of *texture* presented by the strong semiotic critic Henri Lefebvre, thus moving us beyond the "codifying approach of semiology"?[28]

The fact that its internal divisions, its lack of consensus on fundamental grounds (or what Angenot termed "doctrinal cacophony"),[29] is rarely pointed to when semiotics is applied to theories within communication discourse only underscores the totalizing ambitions of the science of signs. Semiotics as a field of investigation not only claims to be, in the words of Deely, "the attempt to account theoretically for what is distinctive about the sign...".[30] It also, as Deely further asserts, and this is where some unease would be justifiable within other theoretical domains: "includes *by right* all the traditional disciplines in virtue of their dependency on what they are as typically distinct structures of signification upon a network of sign relations constituting them."[31] Considering that semiotics sees itself as inherently interdisciplinary[32] little room remains for inquiry within other disciplines or into other subjects of significance (if not signification).[33]

If the iconic sign is a problem, what about the subject of spatial relations which necessarily comes into the picture when signs included in architectural and environmental

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26 Preziosi, *Architecture, Language*, p. 35.
27 Angenot, *Critique of Semiotic Reason*, p. 37.
28 Henri Lefebvre, *The Production of Space* (Oxford: Blackwell Publishers, 1991).
29 Angenot, *Critique of Semiotic Reason*, p. 27.
30 Deely, *Basics of Semiotics*, p. 106.
31 Ibid.
32 Ibid, p. 107.
33 See Michael Benedikt's discussion of significance and signification in the built environment in *For An Architecture of Reality*, p. 38.

structuring are researched? Umberto Eco's semiotic theory encompasses this realm but he argues that while such phenomena as "paintings and many types of architectural and urban objects... unquestionably have a semiotic relevance", they have not been sufficiently explained by semiotic theory.[34] In his discussion, architectural and urban objects seem grouped together within the category of iconic signs. This may point to another larger theoretical problem. If linguistic models can only questionably be applied to iconic signs, can indexical, and more particularly topo-sensitive signs, be comfortably bundled with iconic and linguistic signs in one all-encompassing theory? It may be that conflation of the categories of iconic and topo-sensitive signs brings about a larger theoretical confusion. Eco sees architectural and urban structuring as lying "beyond the empirical boundaries" of semiotic research, and he points to some of the difficulties of semiotic theory in embracing this realm of signification. [35] These difficulties with architectural and urban signs arise out of the necessity of dealing with context, and the problematic status of sign's context within semiotic theory.

Two primary challenges are posed by context: its function (social praxis) and its indexical specificity (both spatial and temporal). Angenot points to the difficulty semiotics has had with *circumstantial indication* and its related social praxis and historical reality.[36] Eco in fact discusses the category of topo-sensitive signs (both verbal and non-verbal) as a particular challenge to semiotic theories.[37] Signs that are topo-sensitive form a large component of the informational environment around us. These archetypal graphic symbols are developed from the interactions between human body and landscape: specific points of reference embedding the human body and its practices into the immediate environment (foot print, trace, arrow, cross). Gestural language and symbols in signage systems, in written language and the symbols of alphabets, have developed from embodied, implaced experience. Asgar Talaye Minai

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34 Eco, *A Theory of Semiotics*, p. 6.
35 Ibid.
36 Angenot, *Critique of Semiotic Reason*, p. 59.
37 Eco, *A Theory of Semiotics*, p. 3.

argues that "all genuine metaphors arise from expressive shapes and actions in the physical world."[38]

The work of Donald Preziosi addresses the relationship between sign and context most directly. He discusses the notion of "environmental reference" whereby environment is structured and ordered through the marking and use of appropriated objects. Assemblages of objects and markings of various types are employed as instruments and sign-complexes in conventional and habitual ways associated with aspects of social behavior.[39]

In his compositional analysis of kinesic pointers (like the pointing finger or outstretched hand, for example) and their iconic surrogates (the image of an arrow on a road sign) Umberto Eco suggests as their principal features dimensionality (longitude and extremity), movement and dynamic stress. According to his analysis, topo-sensitive signs acquire their full meaning from their placement (context), their anchorage within spatio-temporal coordinates.[40] Rootedness can thus be claimed as an important property of signage. The coordinates of <u>where</u> and <u>when</u> imply as well the broader concepts of orientation, navigation and memory.

The dynamic dimension of signage relates to context in a subtle but salient way and it may be at the root of some problems with the theorizing of topo-sensitive signs in terms of codes and signification. Non-verbal indices, kinesic pointers, such as the pointing finger or directional arrow, as well as verbal signs such as <u>here-there</u>, <u>this-that</u>, seem particularly problematic for semiotics. Some theorists exclude such indices or create special subcategories for them (Peirce's sub-indices, for example).[41] Eco,

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38 Asghar Talaye Minai, *Architecture as Environmental Comunication* (Berlin, NY: Mouton, 1984), p. 67. Such an approach allows him to position architecture (understood as "a symbolic statement which conveys messages") within the theory of signs, as well as to place environmental communication within system's and information theory. George Lakoff demonstrates the fundamentally metaphoric structure of our language: George Lakoff and Mark Johnson, *Metaphors We Live By* (Chicago and London: The University of Chicago Press, 1980).

39 Preziosi, *Architecture, Language*, p. 22.

40 Eco, *A Theory of Semiotics*, p. 119.

41 Ibid., p. 115.

however, devotes considerable attention to these categories and attempts to expand the boundaries of the discipline to include architectural and urban expression. His analysis allows him to bypass the more restrictive definitions of semiotics which conceptually exclude the whole range of phenomena that lies within the domain of signage.

It is one thing to discuss the abstracted code and debate its proximity to linguistic structures, and yet another to deal with the functionality of signs. And the artifactual environment that we are surrounded by seems to be formed with conspicuously functional entities. Architecture, and the built environment, present a special problem to semiotics, according to Umberto Eco, because they are "often intended to be primarily functional and not communicative".[42] Putting aside the question of whether communication is in itself a function, the functional dimension of the built environment creates a certain difficulty for its "reading" or "decoding". This difficulty is caused by the experiential quality of the environment: its "functions" relate to dimensions that transcend codifying or signifying schemes, that are intricately related, rather, to specific actions. One such experiential and multidimensional function is way-finding; while the process relies heavily on conventional codes and classifications, the actions it encompasses are always embedded within praxis and related to a determined setting.

A number of theorists have explicated the multifunctionality of linguistic signs.[43] And with this multifunctionality, the problem of context typically surfaces. Mukarovský delimits five "functional horizons" of architecture, with none having a functional independence, and all functions mutually implicative. These horizons are: immediate purpose; history; manifestation of the identity and territoriality of its users and makers; aesthetics (the dominance of focus upon signification itself); and the individual functional horizon.[44] Mukarowský's horizons can be related to the numerous functions of way-

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42 Eco, *A Theory of Semiotics*, p. 164.

43 Jan Mukarovský, *Structure, Sign and Function: Selected Essays of Jan Mukarovský*, trans. eds. John Burbank and Peter Steiner (New Haven: Yale University Press, 1978).

44 Preziosi also refers to Jacobson's multiple functions of the speech act: the emotive function (related to the addresser), conative (concerning the addressee), poetic (related to the message), metalinguistic (expressing the code), referential (involving the referential context), and phatic

finding markers (as discussed in Part Two below): elements of infrastructure, sites of worship/ritual, boundary markers, orienting landmarks and sites of display. Also, an interesting analysis may come from the overlay of Lynch's elements of built form to the functional horizons proposed by Mukarowsky.

The meaningfulness of the built environment and its architectonic formations is inherently multidimentional and as such, Preziosi argues, it "will necessarily alter and broaden our understanding of the multifunctional nature of the speech signal, and deepen our understanding of the semiotic foundations of culture itself."[45] Preziosi suggests that it is only through a semiotic framework that the complex multifunctionality and multidimentionality of the built environment can be adequately studied and "its relationship to other aspects of culture more clearly oriented".[46] But the semiotic framework he proposes embraces the multimodal built environment, an architectonic code and a system of signs that is:

> ... co-occurent with ensembles of other sign systems in different media. Each sign system offers certain advantages over others under the varying conditions of daily life. A built environment does certain things which verbal language does not do, or only does by weak approximation and circumlocution – or vice versa. [47]

Thus he argues that the "architectonic formations" are immersed in and interconnected with other communicative events and practices which incorporate a great many different kinds of signs in various media.[48]

Not only the internal divisions within semiotics but also the inapplicability of linguistic models to many other forms of cultural expression and disciplinary methods, are largely obscured by the totalizing "logocratic"[49] ambitions of semiotic inquiry, thus in

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metalinguistic (expressing the code), referential (involving the referential context), and phatic (concerning the contact between the speaker and the hearer). Preziosi, *Architecture, Language*, p. 50.

45 Preziosi, *Architecture, Language*, p. 56.

46 Ibid, p. 7.

47 Ibid, p. 3.

48 Ibid.

49 In the words of P. Raffa cited by Angenot, *Critique of Semiotic Reason*, p. 47.

the words of Angenot "ideologically masking ideologies"[50]. The doctrine, while professing a claim to explain all aspects of signs, openly excludes specific inquiries, particularly those that prove difficult to elaborate when straightjacketed into linguistic theory. What cannot be treated as language is dismissed as a subject unworthy of inquiry; what cannot conform to language-based analysis cannot constitute valid method. Such boundaries could only be defended with a logic that sets the theoretical boundaries of the domain as infinitely flexible. Angenot calls this amorphous state of semiotics "a kind of epistemological accordion that, according to the (ideological) ambitions of the user, contracts and studies systems as limited as road signs or heraldry, or is stretched out to encompass a universal anthropology or gnoseology".[51] Such flexibility is only possible within an abstracted field, such as the domain defined by Sebeok: "semiotics is not about the real world but about complementary or alternative actual models of it... and about an infinite number of anthropologically conceivable possible worlds."[52] In the real world, unless objective reality is defined as "made up of noun-objects and verb-processes," [53] the limitations cannot be simply willed out of the discourse. And signage cannot escape "the real world", it is moored in it. It links the codes of meaning, the symbolic dimension of the built environment, of marks placed upon its surfaces and of our actions within them.

What if we set out to inquire specifically into some of the "signs of this or that type"; into the very "actions of signs in creating and molding *this and that* objective zone of experience"[54]? How can the grand project of semiotics be helpful to this modest goal? Again, we may be encouraged that specific signs, which would form a component of this inquiry, are routinely featured in its analysis. The highway sign, for example, is most notoriously used for explication of codes and types of signs (for example to explain the

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50 Angenot, *Critique of Semiotic Reason*, p. 37.
51 Ibid., p. 76
52 Sebeok. *An Introduction to Semiotics*, p. 4.
53 The objective reality of the "visible world" according to A. J. Greiman, quoted by Angenot, *Critique of Semiotic Reason*, p. 39.
54 Deely, *Basics of Semiotics*, p. 47.

difference between icon, symbol, and index).[55] Martin Krampen used an elaborately detailed study of the road sign system to discuss the problem of iconicity.[56] This study involved empirical (quantitative) analysis of the psychological relevance of the Peircean trichotomy,[57] as well as an elaborate "historical" study of the development of the road sign. Unfortunately, the historical dimensions of this detailed study are curiously based on a content analysis of contemporary regulatory documents, with barely two pages of text devoted to the trip from antiquity to contemporary times.[58]

Krampen's "The Icons of the Road" delivers an important and extensive semiological analysis of road signs. Road signs form a semiotic system which derives its complexity at least partly from implacement, that is from its context referentiality. Krampen provides a review of the semiotic literature on the subject: "Different systems of road signs are quoted again and again in semiotic literature as examples of typical sign systems or of special semiotic problems."[59] A long list can be drawn: Jacobson's discussion of a grammar of traffic signals; Hjelmslev's analysis of the "language" of traffic signals; Prieto's references to road sign systems as illustrations of codes and Peircean terms of firstness and secondness; Studnicki's exposition of the system of road signs as a language with its vocabulary and syntactic rules for composition; Droste's analysis of road signs according to the rules of generative grammar; Zawadowski's classification of traffic signs and road signs as semantic systems.[60] Introductory texts on iconic codes typically use traffic signs as explanatory devices for basic semiotic

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55 See Sebeok, Barthes, Deely.

56 Martin Krampen, "The Icons of the Road," *Semiotica*, 1983.

57 Ibid, p. 32.

58 Ibid, p. 33.

59 Ibid, p. 21.

60 Roman Jacobson, "Concluding statement: Linguistics and Poetics," in *Style in Language*, T. A. Sebeok, ed. (Cambridge, Mass.: MIT Press, 1960), p. 365; Jacobson, "Language in relation to other communication systems," in *Selected Writings*, II, pp. 697-708, (The Hague: Mouton, [1960] 1971); F. Studnicki, "Traffic Signs", *Semiotica* (2, no. 2, 1970), pp. 151-172; F. G. Droste, "The grammar of traffic regulations." *Semiotica* (5, no. 6, 1972), pp. 257-262; L. Zawadowski, "A classification of signs and semantic systems," in *Sign, Language, Culture*. A. J. Greimas, R. Jacobson, M. R. Mayenowa, S. K. Samjan, W. Steinitz, and S. Żółkiewski, eds. (The Hague and Paris: Mouton, 1970), pp. 28-49. For a discussion of texts by Prieto and Hjelmslev, see Krampen "The Icons of the Road," p. 21.

concepts.[61] Martin Krampen argues that his discussion moves us beyond the synchronic into a diachronic analysis.[62] He argues that "the realm of road signs has been established in the framework of the social sciences as a sociosemiotics of visual communication." His work is a detailed semiotic analysis of changes in the code of traffic signs.[63] What he calls 'diachronic development' is however limited to the last century and thus necessitates a number of generalizations about earlier developments that are only briefly sketched out. The study set out to prove that "there are iconic signs", so it is not surprising that nowhere in the study is there an elaboration of the relationship of the road sign to its context.

If we put aside the details of the regulatory history of the highway code and the typology of signifying elements of the road icon, is there anything that could be brought into this discussion on the broader theme of signage? Highway signs are often cited as examples of a number of possible classifications, as they are typically combinations of icons, symbols, index, and text. The non-arbitrary aspect of signs is also difficult to fit into their analysis, and to top it all off, the simultaneity of modes must be dealt with. The highway code is typically examined as an entity in itself, and rarely placed within the larger context of the built environment or its history. Further complexifying investigation of the code is thus somewhat avoided. But let us look at Roland Barthe's discussion of objects and urbanism for some clues to the semiotic perspective on this context. "The urban" is a particularly interesting place of reflection as this is where the semiotic critique of other perspectives turns most vehement.[64]

Before discussing the problems of urban semiology, Barthes acknowledges that "anyone who wants to sketch out a semiotics of the city must be at once a semiologist (a specialist in signs), a geographer, a historian, an urbanist, an architect, and probably a

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61 Arthur Asa Berger, *Seeing is Believing. An Introduction to Visual Communication*, 2nd ed. (Mountain View, Ca.: Mayfield Publishing, 1998), p. 39.
62 Krampen, "The Icons of the Road," p. 24.
63 Ibid.
64 Barthes, "Semiotics of the Urban."

psychoanalyst".[65] This is an important insight as the analysis of the multidimensional environment of a city must take numerous perspectives into account. After admitting to his amateur status as "barely a semiologist", however, Barthes proceeds with a scathing attack on Lynch's analysis of urban form. His main point of critique is truly puzzling considering the opening assertions of his essay: he proposes that Lynch's conception of the city, despite a vocabulary that would imply semantic interest, "remains more gestaltist than structural" and that his research from the semantic point of view remains dubious.[66] Since Lynch claims no interest in an essentially semantic perspective, Barthes's critique adds little to an understanding of urban semiotics. If we are truly interested in shifting, in Barthes words, "from metaphor to analysis when we speak of the language of the city",[67] would it not be useful to incorporate at least some of those different perspectives noted at the onset? And if so, how can a useful analysis simply begin with "dissociating the urban text into units, then distributing these units into formal classes", as Barthes proposes, only to move onto "sampling the fragments of the utterances"[68]? Lynch's research suggests an approach to an understanding of the city as a complex spatio-temporal manifestation, not a semantic procedure for the analysis of a text, or a poem. And if indeed, as Barthes proposes, the city is a poem, would his analysis fully disclose its poetic nature?

Barthes brings into his discussion of the urban some interesting insights into the relationship between signification and mapping. He asserts that "human space (and not only urban space) has always been a signifying space" and "scientific geography and especially modern cartography can be considered as a kind of obliteration, a censorship objectivity has imposed upon signification".[69] The essentially semantic approach proposed by Barthes for urban space, however, may impose another kind of censorship

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65 Barthes, "Semiotics of the Urban," p. 191.
66 Ibid., p. 193.
67 Ibid., p. 195.
68 Ibid., p. 199.
69 Ibid., p. 192.

upon an immersive environment that simply cannot be understood through the "shock of detachment."[70]

One can, of course, approach the subject of signage through the relation of various typologies of semiotics (signal, symptom, icon, index, name, etc.) to typologies of signage (directional, identification, warning/prohibition, informational, prescriptive/command), and an exploration of the issues of code, meaning and signification within different signage systems. The multitude of modes of signage, however, would make it a rather arduous task. One would need to systematize such disparate modes of visual display and spatial articulations as: numbers and letters; buildings and signs; sign posts (totem poles, street signs, buildings as signs); identity signs (corporate logos, banners, signatures); signage systems (signs as frameworks, systems of objects, universal sign standards), and others. To appropriate the words of Preziosi, signage comprises an "enormous material and medium variation and flexibility..." that potentially includes any set of environmental resources palpable to human perception.[71]

Preziosi begins his own analysis of architecture, meaning, and language with what seems a puzzling proposition:

> ... in the semiotic task of revealing more clearly the place of language in communication, the study of nonverbal communication – and in particular the analysis of visual communication – has acquired today a fundamental urgency and importance. [72]

In fact these words are doubly puzzling. First, the "fundamental urgency"? Has it been sustained over the decades? Have we failed to arrive at explanations so urgently called for over two decades ago? In recent years, both verbal and visual modes of communication have grown more complex and problematized by new communication

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[70] Barthes, "Semiotics of the Urban," p. 184. The shock of detachment is necessary according to Barthes in order to objectivise the object. He argues this in "Semantics of the Object." To properly understand the meaning of objects, he resorts to an order of representations as found in advertising, the cinema, or the theatre.

[71] Preziosi, *Architecture, Language*, p. 41.

[72] Ibid., p. 46.

technologies. Contemporary informational environments collapse what once were considered inherent divisions between the various domains and media of expression: text and image, space and time, form and surface. They seem to converge, cross-reference one another, their codes changing as often as their substrates and interfaces. With the pace of mutability of the new communication environments (driven by developments in computer technologies), the sets of references for our material, physical environments grow more complex. We retrieve their mutated metaphors from computer environments and apply them to the physical spaces around them. With emerging electronic environments changing and challenging the meaning of the spatial references we use, the concepts of text, narrative, linearity, address, presence, agency, representation permeate and overlay one another. They influence and implicate one another in profound ways, all seemingly put into flux by the simulatory possibilities of the new technologies, as are the ideas of movement and navigation, reference, writing, reading, marking.

Secondly, we may have reached for his work to grasp the role of the built environment – and not language – in communication. The exploration of language, and the media that transmit its representations and symbolic forms, remains the major focus of the discipline of communication. Why would we need to reveal its place further? Since this preoccupation has not accommodated the subject of this inquiry – signage – we may have sought a different focus. Is Preziosi confirming what semiologists like Roland Barthes have been saying all along, that "everything which signifies in the world is always more or less mixed up with language" that "language always intervenes"?[73] Is it truly all about language then? Preziosi's words (and his contribution to the inquiry into signs) warrant a reflective pause mainly because of the way he positions language within the semiotic discourse. He does not assign an instrumental role to visual communication – that of a helpful agent in explaining the function and role of language – rather, he argues for a holistic and multifunctional analysis which will "deepen our understanding

[73] Barthes, "Semantics of the Object," p.180.

of the semiotic foundations of culture itself."[74] Following Peirce's demarcation of semiotics as a distinct body of knowledge, he argues for an all inclusive analysis which would reveal the "embededdness of linguistic (and other) signings in large-scale communicative events."[75] Only through such positioning, he believes, are we open to examination of the unique power and potential of each of the sign systems employed by humans in "the ongoing semiotic *bricolage* of sociocultural life"[76]:

> ...only a holistic and integral perspective on the entire set of significative environmental behaviors can make sense of the synecdochal indications of systematicity in the organization of the variety of modalities in the visual realm. It has additionally become apparent that it is only in such a framework that we may begin to more fully understand the nature of verbal semiosis, and its embededdness among the network of sign-systems defining and defined by culture. [77]

Language is certainly implicated in important ways in all meaningful structures that we create around ourselves, but it seems that the goal should be an understanding of the interrelationships among the webs of the various layers and modalities of human-constructed environments, and not an attempt at explaining one through the limitations of the other, particularly if the domain of research is that of communication.

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74 Preziosi, *Architecture, Language*, p. 56.
75 Ibid., p. 7.
76 Ibid.
77 Ibid., p. viii.

CHAPTER 3

Communication as Displaced Ritual.

FIGURE 1.3-1

Society exists not only by transmission, by communication,
but it may fairly be said to exist in transmission, in communication.[1]

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[1] John Dewey, *Democracy and Education* (New York: Mcmillan, 1916), p. 5. Cited and discussed in Carey, *Communication as Culture*, pp. 13-14.

James Carey begins his discussion of the cultural approach to communication by pondering the significance of this shift in prepositions emphasized by Dewey: society existing as much *in* communication as *by* communication.[2] Carey's reflections on Dewey's work form the basis of his analysis of two alternative conceptions of communication, the transmission view and the ritual view, and their respective positions in communication scholarship. The transmission view of communication, he argues, has dominated most of the North American scholarship with its focus on the sending of information, signals, or messages over distance. He emphasizes that this extension of messages in space is "for the purpose of control"; we return to this point further in this chapter, but first let us examine the spatial dimensions of communication.[3] Much of the discussion presented in this chapter is based on the essays of James Carey, for two reasons: he addresses the ritual view of communication in considerable depth, and he links his analysis to the time and space-bias elaborated by Harold Innis. Both the ritual view of communication and Innis's positioning of communication discourse within the conjuncture of time and space are particularly useful to the discussion of communication and place that underpins this work.

The arguments presented below probe the ritual view of communication with two somewhat overlapping aims: to bring the ritual aspect of communication to the fore, highlighting its relation to place; and to argue for the complementarity of the two views, ritual and transmission, rather than their opposition. When a strict division is drawn between the ritual and transmission approaches, a number of important dimensions of communication tend to fall between the two.[4] Bifurcation of the discourse is useful in an

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2 Carey in the essay "A cultural approach to communication", *Communication as Culture*, p. 14.

3 Ibid., p. 15.

4 Lewis Mumford in *Art and Technics* discussed the dangers of the conceptual fragmenting of discourse within specific perspectives where complex processes are analyzed through the focus on specialized actions and dimensions, where "a whole human being [is reduced] to a magnified eye, a magnified hand, a magnified finger..." Mumford, *Art and Technics* (New York: Columbia University Press, 1952), p. 65.

initial positioning of the theoretical concepts as an exploration of extreme conditions, as it were, helping us to set the parameters of possibility. The reality of communication (both practical and conceptual), however, particularly in its contemporary complexity, is that binary oppositions (transmission as opposed to ritual, process versus production of meaning schools, space as opposed to time-biased societies, cool vs. hot media, etc.) are becoming less useful. Bifurcation may further obscure some systematic blind spots persistent on both sides of the argument, with cross-verification of analysis prevented by set boundaries and loyalties to a specific perspective. This may indeed be the case with the focus on displacement that seems to pervade both approaches: it is inherent in the transmission view as well as strongly manifest within the ritual view.[5] It is this focus, rather than any major philosophical or conceptual division between the two approaches, that seems to form an obstacle to a deepening of the discourse. Paradoxically then, it is the conceptual similarity of the two approaches rather than their differences that may need to be critically examined.

The transmission view of communication, Carey points out, came into being at the onset of the age of exploration and discovery.[6] Certainly, the connection can be traced etymologically, with the general modern meaning of communication coming into use in the 15th century, its extension to physical facilities (roads, canals, railways) recorded in the early 17th century, and its meaning as the transmission of invisible messages introduced in the 20th century.[7] If we pause at the temporal markers and ponder their significance, an interesting dynamic between the modern meaning of communication and physical place is revealed. And while considerable attention has been focused on the role of the printed text in the development of the modern meaning of communication, with Gutenberg's innovation positioned as a watershed in human

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5 And it seems even more apparent in the perspective of the production of meaning approach as described by Fiske. See Fiske, *Introduction to Communication Studies.*

6 Carey, *Communication as Culture*, p. 15; The OED.

7 See Raymond Williams, *Keywords. A vocabulary of culture and society* (New York: Flamingo, 1979).

communication, the changing conceptions of space that profoundly marked Western societies at the same time have been afforded much less attention. Exceptions are those scholars, particularly Innis and Mumford as we have noted, who persistently pointed to the importance of the shifts in the human relationship to immediate physical surroundings, to place.

If the beginning of the modern meaning of communication as transmission is to be set in the late 1500s, it could certainly be linked to the development of printing technology, and the book, to the age of discovery and exploration and thus the increased need for, and expanding knowledge of, cartographic map production. The book and the map are both effective examples of the possibilities of extending messages in space, but the notion of transmission over distance does not intrinsically define their purpose. They exist as useful objects, as artifacts, containers of social knowledge even when they remain in place. The notion of transmission can be seen more effectively through other milestones in communication, particularly those that are primarily defined by their linkage to place.

Lewis Mumford in *Technics and Civilization* points out that "the cannon was the first of modern space-annihilating devices by means of which man was enabled to express himself at a distance."[8] The cannon only became effective against city walls in the mid-1400s, marking an important shift in the human relationship to immediate place: the walls of the city becoming obsolete, defenseless against the transmission of power over distance facilitated by the machine.[9] Armand Mattelart sets the beginnings of modern communications in the 1700s when a complex system of communication routes and canals was established in the kingdom of France, thus structuring space in new and profound ways, as well as setting in place a new matrix of political power with its

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8 Lewis Mumford, *Technics and Civilization* (New York: Harcourt, Brace & World, 1934).

9 Norman F. Cantor, ed. *The Encyclopedia of the Middle Ages* (New York: Viking, 1999) p. 49.

infrastructure for normalization and reason.[10] Again, the importance of place and locality needed to be reconsidered within this new power dynamic. A third etymological shift in the term 'communication' is marked by the development of the technology that makes the idea of the pure transmission of immaterial, invisible messages possible. Immateriality forces a reconsideration not only of place, but also of the immediacy of presence. These three temporal milestones signal significant shifts in the relationship of communication to place, with detachment from place, context, and locality becoming an increasingly important dimension of its modern meaning.

The notion of transmission began its association with communication at the onset of the modern era. Disenchantment, detachment and displacement often have been used to characterize modernity (as in the work of Weber, Taylor, Borgmann). Albert Borgmann summarizes the shifts in modern orientation responsible for our increasing preoccupation with displacement.[11] He proposes that the pre-modern world and its cosmic unity was shattered by a disorientation introduced by the ideas of Columbus, Copernicus, and Luther. Each weakened the basis of a central system of belief: respectively, the centrality of the Earth in the cosmic order; the spatial centrality of the Medieval order; and the spiritual centrality of the Church.[12] Since then, he further asserts, modern thought has convincingly argued the domination of nature to be invaluable and imperative, and western civilization has concomitantly asserted itself entirely through reason and control. The primacy of instrumental reason embodied in the Cartesian method assumes that understanding can be achieved only through abstraction, dissection, reconstruction, and control. Already the first step of the reasoned approach affirms the necessity of detachment: of the skeptical assessment of a problem, the severing of its essence from its larger context before dissection into its smallest parts, and

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10 Armand Mattelart, *The Invention of Communication* (London and Minneapolis: University of Minnesota Press, 1996), p. xvi.
11 Albert Borgmann, *Crossing the Postmodern Divide* (Chicago and London: The University of Chicago Press, 1992).
12 Ibid., p. 21.

re-construction into a new, logical, rational whole.[13] This indifference to context makes the notion of transmission possible. The "transmission meaning" of communication thus emphasizes a progressive displacement set forth by the new technologies of communication; no longer transit but transfer, a conceptual shift related to the agency of the communicated entity. Moreover, with communication understood as such, as transmission, the directional dimensions of the concept change, and the possibility of one-way, one directional transmission gradually gains ground.

Of course, the conceptual links between communication and transportation (and travel) have much deeper and more complex historical roots. The pre-modern world was as Borgmann argues "locally bounded, cosmically centered, and divinely constituted." [14] Concepts of communication and transport were intricately bound together, rooted in physical place, their material reality imbued with eloquence and meaning.[15] The concepts of transport, commerce, travel, passage, communication with gods and ancestors, the imparting of knowledge, persuasion, orientation, the finding of one's way, measurement of time and distance, were all profoundly inter-related. Is it coincidental that the Greek god Hermes, the messenger of gods, was also protector of roads and travelers, patron of the oracles, as well as, according to some sources, the inventor of language and its deceptive uses?[16] The complex historical links between transportation and communication are followed up in more detail in Part Two of this work, here we

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13 Borgmann, *Crossing the Postmodern*, p. 34.

14 Ibid., p. 22.

15 Borgmann, *Holding On to Reality*. In the pre-modern world Borgmann notes, "Reality spoke powerfully to people; it was overwhelmingly significant and eloquent", p. 10. Meyrowitz sees electronic media as changing the communicational characteristics of place; the association of movement of information with physical movement, communication with travel. *No Sense of Place*, p. 117.

16 Hermes is credited with the invention of measurement, his presence and patronage honored in the form of archetypal signposts, road markers, cairns of stones and *herms*. This is discussed in Part 2, chapter 7. Several sources also explore the links between Hermes and communication, particularly language and rhetoric. For examples see: Bruce Krajewski, *Travelling with Hermes. Hermeneutics and Rhetoric* (Armherst: The University of Massachusetts Press, 1992), p. 7; J. Rendel Harris, *The Origin of the Cult of Hermes* (Manchester: Manchester University Press, 1929), p. 4; Karl Kerényi, *Hermes. Guide of Souls* (Zürich: Spring Publications, 1976), p. 68; Michel Serres considers Hermes the patron of communication in *Hermes. Literature, Science, Philosophy*. This is discussed further below and in Chapter 7 and Part 3.

focus more specifically on the relationship of communication to place from the ritual perspective.

On the surface a focus on ritual may seem counter-intuitive to the project of signage. One would expect the transmission model to accommodate investigation of the dynamic aspects of the built environment, especially the notion of wayfinding: movement through space, directionality, distance, spatial relations. But in the process of transmission, the movement of messages, the "extension of messages in space",[17] is the point. To understand the process of wayfinding, we need to look at messages that have what Preziosi calls "permanence of broadcast".[18] While I am moving past, toward, or among these messages, they must remain in place long enough for me to notice and make sense of them. They also need to provide some context for simultaneous and more ephemeral communication events, as well as indications of some larger orientation, a sense of common understanding. The message in this process is not mobile, rather it remains in place, deriving much of its meaning from its position. Given this, one can argue that the maintenance of the message, its broadcast and meaning in time, is responsible for the mediating dimensions of place. Since ritual and custom reflect social knowledge and its maintenance though time, it seems fitting to turn to the ritual view of communication for an examination of the informational environment constructed to facilitate the process of wayfinding.

Carey argues that "the transmission view has dominated our thought and culture "with the historic religious undercurrent never eliminated from our thought."[19] Transportation and movement over vast distances can be seen as formative activities of North American culture, with mobility (both social and geographical) exceptionally highly regarded. Movement in space has been seen as redemptive in North America,[20]

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17 Carey, *Communication as Culture*, p. 18.
18 Preziosi, *Architecture, Language*, p. 4.
19 Carey, *Communication as Culture*, p. 18.
20 Ibid., p. 16.

with every invention of communication technology viewed through the lens of religion, morality and values, and invested with the possibility of bringing about moral improvement.[21] Thus each new medium or technology of communication (like the telegraphic message or press), and each new technology of movement (the steam engine, railway, car, highway) was at some point invested with considerable hope for bringing communities together and improving society as a whole, each considered "a realizable program of Christianized technology".[22]

The ritual view, in Carey's words, takes communication as "directed not toward the extension of messages in space, but toward the maintenance of society in time, not the act of imparting the information, but the representation of shared beliefs."[23] This much older conception of communication deriving from *communicare* (to make common to many), is based on the notions of "community" and "sharing", and "the possession of common faith". As such it also has religious roots, as it invokes the sacred rite, communion; "the sacred ceremony that draws persons together in fellowship and commonality".[24] Raymond Williams points to the very important difference in directionality of the two base conceptions of communication: the notion of *transmission* denoting a one-way action, and the concept of *sharing* involving a mutual process.[25]

Carey suggests that the ritual conception of communication has been unpopular in North American scholarship because "the concept of culture is such a weak and evanescent notion in American social thought".[26] He places the blame for the neglect of ritual (and "the intellectual aversion to the idea of culture" which he equates with it) on obsessive individualism, Puritan disdain for non-practical activities, and the separation of science from culture in North America. Since he argues for a cultural approach to

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21 See Carey's discussion in "The Mythos of Electronic Revolution" and "The History of the Future" in Carey, *Communication as Culture.*

22 Perry Miller. *The Life of the Mind in America* (New York: Harcourt, Brace and World, 1965), p. 91, discussed in Carey, *Communication and Culture*, p. 19.

23 Carey, *Communication and Culture*, p. 18.

24 Ibid.,

25 Williams, *Keywords.*

communication, Carey's discussion understandably focuses on culture. We can, however, consider another explanation for the secondary position of the ritual view of communication, and draw upon Carey's discussion (or rather upon that which his line of argument fails to take into account) to support our assertions. The aim is not to critique Carey's work, but to point to some overlooked dimensions in it and their importance for the notion of communication as ritual.

James Carey repeats, after Ernst Cassirer, that communication is the primary phenomenon of existence, and that the highest manifestation of communication is "the construction and maintenance of an ordered, meaningful, cultural world that can serve as a control and container for human action".[27] This, together with Dewey's insistence on the preposition *in*, [28] form the important argument that what exists around us, what we are immersed in – the cultural world with its physical environmental manifestations that we construct and apprehend around ourselves – is in fact important to communication.

How do we establish the relationship of ritual to place, as well as the relationship of communication to place? Carey discusses the symbolic forms, of which a ritual is a function in his view, as possessing two distinguishing characteristics: productivity and the capacity for displacement. He defines productivity as the faculty of creating an infinite number of representations from a finite number of symbolic elements. He compares this capacity to language, with its infinite set of sentences produced through grammatical combinations of a finite set of phonems. He further suggests that it is only through language and other symbolic forms that the world becomes comprehensible.[29] Are we back to a focus on language then? Apparently we are, since both conceptions of communication give language a principal position, although they may implicate it in a given communication act or a process in different ways. As Carey proposes:

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[26] Carey, *Communication as Culture*, p. 18.
[27] Ibid., pp. 18-19.
[28] That is, *in* communication, as opposed to *by* communication, Dewey (1916) see note 1 this chapter.
[29] Carey, *Communication as Culture*, p. 35, note 5.

> ...in the transmission view language is an instrument of practical action and discursive reasoning, of thought as essentially conceptual and individual or reflective, and of symbolism as preeminently analytical. A ritual view of communication, on the other hand, sees language as an instrument of dramatic action, of thought essentially situational and social, and symbolism as fundamentally fiduciary.[30]

The second parameter of ritual in Carey's view is displacement. He defines this as the capacity to represent some thing when the object itself, the "real" stimulus is not physically present. Here, we appear to move into the domain of semiotics and "the production and exchange of meaning."[31] The criterion of displacement thus also takes the ritual view into the domain of language. It may be, however, that the concept of ritual cannot be examined in a satisfactory way from within the language point of view. Ritual is not merely bound by language, it does not rely entirely on the code, and is not only produced by symbolic forms that have the capacity for detachment, displacement. Because ritual is enacted, it is never entirely linguistic. By its nature, ritual is implaced and multimodal. It is bound explicitly to social praxis, material reality, and historical continuity. Its permanence of broadcast is linked to objects, context (both spatial and temporal), and social knowledge. And it is linked to memory: memory that is itself implaced, embodied or embedded in material form.

Carey sees ritual as a symbolic reality abstracted from its physical 'realness' by way of symbolic constructs.[32] He thus suggests that communication is the process of production of this symbolic reality, reality that is brought into being only by "the construction, apprehension, and utilization of symbolic forms".[33] But why must symbolic forms be displaced to produce reality?[34] And does displacement actually result in a ritual

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30 Carey, *Communication as Culture*, p. 35 note 4.

31 Fiske in his *Introduction to Communication Studies* describes the two approaches to communication as 'transmission' or *process school*, and the 'production and exchange of meaning' or *semiotic school*, p. 3.

32 Carey, *Communication as Culture*, p. 25.

33 Ibid.

34 Mumford in his discussion of the human "capacity for symbolism" writes that "[man] is also capable to abstract and re-present parts of his environment, parts of his experience, parts of himself, in the detachable and durable forms of symbols." *Art and Technics*, p. 17. However, he

or abstracted representation? While Carey asserts that "communication is a symbolic process whereby reality is produced, maintained, repaired and transformed",[35] his relation of symbol to reality needs to be examined carefully. When communication is seen in terms of the production of symbolic reality, a certain conceptual difficulty arises, that of confusion of symbolic form with representation. The example of the symbolic process that Carey cites is a good case in point. It demonstrates how conceptually dependent communication scholarship has become on the transmission approach, and how detrimental this may be to arguments for any alternative or complementary viewpoint. As an example of ritual practice, Carey discusses the concept of the map and argues that "space is understood and manageable when it is represented in symbolic form".[36] The symbolic form that he focuses us on, however, is a notational system rather than a ritual process. A map as an abstracted arrangement of markers transferred to a second medium, forms not a ritual but an informational transmission.[37] There is no ritual in the act of drawing a map for the purpose of explanation. There is no ritual in 'reading' that map for the purpose of way-finding.

Carey argues that "by arranging lines, angles, and names... in a pattern on paper... one transforms vacant space into a *featured environment*".[38] It can be argued that the symbolic features of space, and their relational dimensions, are constructed before it is possible to represent them on paper. Thus Carey overlooks a crucial step in the process of symbolic production: the assigning of importance, hierarchy, and meaning to the actual features of the environment, and the recognition of their semantic dimensions as related

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also emphasizes the importance of embodied experience in the production of symbolic reality, (pp. 9, 60-61) and the importance of durable media which he explored in *The City in History*, p. 569.

35 Carey, *Communication as Culture*, p. 23.

36 Ibid., p. 27.

37 When we extend the ritual to practice (professional practice) of transference, map-making and map-reading can be discussed in terms of ritual. This point was brought up by Brenda Lee in a conversation, October, 2000. For a discussion of practice, see Albert Borgmann, *Technology and the Character of Contemporary Life: A Philosophical Inquiry* (Chicago: Chicago University Press, 1984).

38 Carey, *Communication as Culture*, p. 27 (emphasis added).

to position within the landscape, whether natural or constructed. Only after this step is complete, can we proceed with the representation of the spatial relationships in some notational form (the notational system of a map as one of the number of possible representations).

It is rather telling that Carey dismisses the process of walking through the environment to explain its spatial relationships as mere "imprinting".[39] It seems that such a "walk through" would have more in common with ritual than the "arranging of lines on paper". And the representation of spatial relationships through the ritual of song and dance seem closer to that of a "walk about" than the modes of 'mapping' proposed by Carey. First, why would a dance ritual necessarily be placed in a different category than a walk-through? Are they both not based on successive kinesthetic actions, memory of a sequence of movements, and spatial links (or gestural suggestion of such) between movement and the physical environment within which the action is placed? Perhaps the act of retracing of steps, an individual learned action, does not seem sufficiently symbolic. But communication does not need to mean 'production' of new symbolic reality. It can also mean the calling upon of a symbolic reality "out there", recognition of its dimensions and hierarchies, the assigning of meaning to a reality already present, the marking of that reality in ways that render it meaningful. A walk through is in fact a process of pointing to the meaningful dimensions of the environment and conveying (communicating) their hierarchies of spatial organization, social knowledge. It involves both experience of the environment and the process of communication of social knowledge about it through enactment of that very process, the tracing of a sequence of motions, setting of hierarchies, recognition of patterns, the search for meaningful elements.

Carey weaves together the transmission and ritual views and Innis' space and time-bias, linking transmission to his notions of space-bias, and ritual to those of time-

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39 Carey, *Communication as Culture*, p. 27.

bias. While Innis' concepts of bias are useful as historical generalizations and conceptual tools, they do not necessarily fit the contemporary complexities of communication, and are not useful in defining disciplinary divisions. Innis' idea of the bias of communication involved the processes of "changing the character of symbols (things to think with) and changing the nature of community (the arenas in which thought [is] developed)".[40] These necessarily implicate the built environment, and in fact, are most expressively manifested in this arena. With each improvement in communication we encounter difficulties with the understanding of the emerging communicative milieu, with our orientation within its complexities. Innis argued that the mechanization and standardization of knowledge through the creation of language monopolies inhibits understanding. Monopolized sets of knowledge are created when we become "dependent on an external source of supply".[41] This happens when local knowledge is not accessed, or not accessible, when the near sphere loses its significance and eloquence and cannot be used as a resource for social and personal knowledge. Innis's sentiments about monopolies of knowledge are reflected in the arguments of Manuel Castells and particularly his concept of space of flows: ahistorical flows of power and control that make local places disappear as meaningful entities within the abstraction of a new undifferentiated landscape.[42]

We can speak of monopolies of knowledge in relation to the built environment and the knowledge sets related to its navigation. Innis included navigation within space-biased technologies when he linked it directly to spatial expansion and exploration (the extension of messages in space). Navigation, however, implicates social knowledge and the memory of places and events, and can thus be argued to be linked primarily to time. Navigation, spatial orientation and wayfinding, we can argue, are based on ritual and thus embedded in what Innis termed time-biased cultures.

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40 Carey, *Communication as Culture*, p. 160.
41 Innis, *The Bias of Communication*, pp. 25-29.
42 Manuel Castells, *The Informational City* (New York: Basil Blackwell, 1989), pp. 348-350.

The main reason for its preoccupation with displacement, I propose here, is the time and space split that underlies much of communication discourse. This bifurcation of concepts has two major consequences: first, it fails to allow for a notion of place to come into focus; second, it leads to a conceptualization of both time and space in absolute or abstract terms. We therefore talk of the 'space of discourse', 'social space', the space of flows', each detached from its spatial moorings and embodied experience. We can also conceive of time in purely abstract terms without its anchoring in a spatial context, in experience and events. A problem exists with the conception of time separated from space, however, as time is not conceptualized in its own terms, but rather, in significant part metaphorically and metonymically, in terms of motion, space, and events.[43] If we separate time from its spatial dimensions, the only way we can conceive of it is with the help of technology, through its measurement and display. We must rely on an external source of supply then, hand control over temporal knowledge to the technological domain which measures, defines, describes it for us, thus making it present.

Discussion of changes in the concepts of, and our relationship to, time and space permeates communication discourse. Communication technologies are examined through the perspective of their time and space bias, or through their conquering effect on distance and time. Harold Innis has argued that the "tragedy of modern culture" stems in part from the inherent tendency of technology (electronic media in particular) to "reduce time and place to the service of a calculus of commercialism and expansionism".[44] Other theorists also seem troubled by of the modern conundrum of shrinking or disappearing time and space. Lewis Mumford, for example, talks about the "one-dimensional world of the immediate present unable to remember lessons of the past or to anticipate the probabilities of the future".[45] Innis elaborated the concepts of time and space in relation to the character of human civilization and its dominant mode of

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[43] George Lakoff and Mark Johnson, *Philosophy in the Flesh. The Embodied Mind and Its Challenge to Western Thought* (New York: Basic Books 1999), pp. 136-7.
[44] Innis quoted in Carey, *Communication as Culture*, p. 133.
[45] Mumford, *Art and Technics.*

communication, and argued that the bias of modern technology undermined both space and time, geography and history. The concept of geographical space and the use of space in architecture, he believed, were strongly linked to communication technologies since power and social control were expressed in their physical structures and the physical manifestations of institutions. He argued that each civilization was defined by its dominant form of communication, and its cultural bias towards time and space. Time-biased societies were dependent upon the durable media bound in context and difficult to transport, while space-biased societies were focused on the creation of abstract science and knowledge, on a conquest of space that sacrificed locality, sense of place and community. [46]

This division makes it deceptively easy to conclude that modern societies are disposed to a space-bias.[47] But easy conclusions may not have been what Innis had in mind. His attentive analysis carries us further, particularly if we consider the concepts of bias as tools with which to investigate the transformations of communicational environments.[48] Innis claimed that modern culture, through successive increases in the capacity of modern media and technology to control space, destroys the sense of time by its fragmenting, cutting into measurable and manageable units.[49] But space, towards which modern culture is said to be biased, also increasingly takes the form of the measurable, fragmented, structured technological space of grids. While the concept of time, the loss of which Innis decries in "A Plea for Time", is embodied and experiential,

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[46] Although the elaboration of the space and time bias is illuminating, the strict orality - literacy divisions of communications (as related to time- and space-biased cultures) that Innis proposes is somewhat limiting when one attempts the analysis of the role of the built environment *vis a vis* communication technologies. Innis, *The Bias of Communication*. The difficulty in discussing the concepts as separable, comes from the fundamental collusion of time and space in the notion of place, and the impossibility of conceptualizing time without spatial concepts. See further discussion of spatial metaphors in Chapter 8, below.

[47] By contrast, Edward Casey argues that modernity is characterized by topocentrism: focus on time and the discarding of interest in place. *The Fate of Place, A Philosophical History* (Berkeley: University of California Press, 1997), p. xii.

[48] As Carey argues, it was Innis' intention to use these concepts as "things to think with", tools for examining "the actual historical record". *Communication as Culture*, p. 150.

[49] Innis quoted in Carey, *Communication as Culture*, p. 134.

the concept of space that forms the space-bias seems abstracted, measured and controlled. One may argue that while the concept of time-bias seems positioned within the ritual approach, space-bias is viewed as transmission-based. Innis' examination of communication history through the concept of time- and space-bias is thus particularly useful to our discussion of the role of the built environment as a communication medium. It is so because of the challenges of its application to the subject of place. We also must keep in mind that the concepts of space and time themselves have changed through history, and what from our modern perspective may seem like a spatial parameter, may have been, at some prior moment, deeply rooted in temporal characteristics. Would we, for example, consider Roman planning of cities by way of incantation as purely spatial?[50] Can we see the history of exploration or conquest as only space-biased if space continued to be measured in the temporal dimensions of the space traversed before the exactitude of spatial measurements were scientifically referenced to the precision of time computation? When applied to the context of the built environment, Innis' concepts reveal both the challenges and the necessity of involving the simultaneity of spatial and temporal characteristics in our analysis.

The relationship to time and space clearly preoccupies theorists in many disciplines (Baudrillard, Harvey, Meyrowitz, Lakoff, Borgmann, Casey, Castells, Lynch) and occupies a curious position in late modern discourse. On the one hand, it is argued that space as a certainty has disappeared or become irrelevant in our contemporary society (which is present and future-directed). On the other hand, we seem to be obsessed with the control of space, with proof of its authenticity through simulation, the maintenance of its presence in metaphor. Notions of *space* and *place*, as those of *experience* and *reality*, while constantly re-defined and re-worked, remain ubiquitous and used as the chief referents for a definition of the new areas of human technological endeavor, human way-finding in imaginary and virtual spaces.[51]

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50 See Pérez-Gómez, "The City as a Paradigm of Order," p. 8.

51 Specific examples are discussed in Part 3.

Understandably, such a curious positioning of space would create considerable uncertainty for the built environment and the notion of place. Every built form must be anchored in a landscape; it requires a place. The idea of built environment can hardly be accommodated in a notion of place defined merely through access and control of boundaries; it requires some "landed description".[52] There is a strong relationship between place and social situation, but this relationship cannot be fully understood when the social situation saturates the entire time/space frame. Concern for the dissociation of physical place and social place is strongly represented in communication discourse but is mainly elaborated through a focus on the social aspects of place.[53] Social space, like the space of flows, can make physical place irrelevant; it can make it disappear in social discourse, strip its physicality of presence.

Meyrowitz, for instance, finds the control of space and the emphasis on access is a dominant theme of communication in late modernity.[54] Access and control of boundaries, however, comprise a limited set of tools for an assessment of place; the notion of *sense of place* cannot be fully understood apart from the experience embedded in a physical place that carries with it its inherent temporal dimensions.[55] Defined through access and the control of boundaries (territorial ownership), landscapes, places, and cities fit snugly within the culture of commodity: they form packaged environments that can be bought and sold, marketed, exported, transmitted, and discarded. John Urry points out that "most social theories deal unsatisfactorily with the nature of place because they have not known what to do about time, space, nature".[56] William Mitchell, fascinated with the transformative possibilities of new technologies, describes the

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52 Shepheard, *What is Architecture?* p. 38.

53 Meyrowitz argues that electronic media change our relation to place resulting in "dissociation of physical place and social place," Meyrowitz, *No Sense of Place*. p. 116.

54 Ibid.

55 Certainly, boundaries are fundamental to the notion of place, it is important, however, to include in the analysis the spatial, visibly perceptible dimensions of boundedness. See Pérez-Gómez on the importance of boundaries in the symbolic order of the city. "The City as a Paradigm of Order," p. 8. See also the discussion of differentiation and place, in Chapter 4, below.

56 John Urry, *Consuming Places* (London and New York: Routledge, 1995).

contemporary city as "no longer a geographical place with unique architectural flavor and plan... [but] a collection of services that can be branded and distributed by wire..."[57] Such a vision may be conceivable only with the temporal dimension of space bracketed out.

Our current approach to time is thus similarly ambiguous. Despite often-voiced arguments for the irrelevance of historical time to the late modern condition, we seem to have a peculiar fascination with its passage; we are preoccupied with temporal junctures, discrete "points in time". The end of the millennium, the turn of the century, and predictions for what may possibly await us after them, have been obsessively recurring themes in politics, advertising slogans, professional conferences and academic symposia. We are preoccupied with various concepts and processes that are functions of time: mobility, progress, obsolescence. David Crowley argues that the modern social order is obsessed with the "increasing linkage of cultural forms of communication to the functional values of transportation: quantity, mobility, efficiency."[58] A culture based on mobility, on progress defined by the nomadic not the sedentary, must necessarily sever its spatial loyalties. In societies focused on the control of space, social relationships based on the continuity of place lose their centrality and "concerns for identity and place become subordinate to preoccupations and judgments grounded in technologies of information control."[59]

Within our conceptual world based on the notion of displacement, space and temporality often become collapsed into the single quantifiable function of distance and time: speed. Velocity of movement and accelerated change transform the boundaries of space and time, of geography and history, lifting our understanding and experience from

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[57] William Mitchell, *City of Bits. Space, Place and the Infobahn* (Cambridge, Mass.: The MIT Press, 1995), p. 125.
[58] David Crowley, "Harold Innis and the Modern Perspective of Communication." in Melody, William H., Liora Salter and Paul Heyer, eds. *Culture, Communication, and Dependency. The Tradition of H. A. Innis* (Norwood, N.J.: Ablex Publishing, 1981), p. 237.
[59] Ibid., p. 241.

the framework of culture, memory, and meaning.[60] It leads to the increasing discarding of permanent media in a culture focused on speed, progress and the quick turnover of products and ideas, "the technological culture of sensation and mobility".[61] The importance of the concept of place rests largely on its power to anchor the spatial (the physical, experiential, tactile) and the temporal dimensions (the memorable, and the urgent). Place acts as a stable framework for both the grounding and continuity of human experience. So does ritual, ordering memory and action, anchoring memory in the artifactual world, linking the eloquence of the specific to the larger hierarchies of symbols and systems of concepts.

North American social thought, it can be argued, is characterized by a generally weak attachment to place.[62] Within communication scholarship, and in both conceptions of the domain, importance is placed on the media of detachment and displacement, on technologies promoting the speed and efficiency of moving messages, and the processes that abstract the context of knowledge and information for the purpose of transmission or symbolic representation. Neglect of the role of place attachment in North America should not be surprising. In the New World, newness, the expanding frontier, and the speed and efficiency of progress have traditionally garnered high regard. Of course, various groups of newcomers who settled the land tried to retain some attachment to their previous places of dwelling, landscapes, older traditions and rituals, whether by "importing" place names from "the old country",[63] retaining customs and building traditions, or constructing new places that would communicate some sense of continuity, that would have some permanence of broadcast. But the notion of permanence and

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60 Edward Casey speaks of *dromocentrism* of thecontemporary culture :"topocentrism writ large", a preoccupation with speeded-up time, *The Fate of Place*, p.xiii. See also a discussion of speed as "the form of ecstasy the technical revolution has bestowed on man" in Milan Kundera, *Slowness* (New York: Harper Collins Publishers, 1996), p. 2.

61 Carey, *Communication as Culture*, p. 135.

62 See Chapter 3 in Chmielewska, *Dwelling in Postmodernity*.

63 Numerous place-names (all those Athens, Warsaws, Parises, etc.) scattered across the North American continent are a telling remainder of attachments to place, and bids for continuity of the early settlers. See Lynch's *What Time is this Place* for a discussion of migration and continuity of spatio-temporal manifestations. pp. 163-189.

continuity in the immediate environment was necessarily weakened. Settlers, immigrants carried with them just a few meaningful objects. Building techniques, customs, even languages needed to be modified in order to fit into, and survive in, the new context. At the same time, the indigenous cultures were displaced in their own land with profound social consequences that are still palpable today.[64] So it could be argued that the entire continent has been built on notions of uprooted society and value.

In the new society, social mobility became possible and was facilitated by the physical mobility and sheer vastness of the land, by the many places to go to get away from the shackles of the "old" community. Moreover, newness and mobility – both physical and social – have been generally equated with progress. The intellectual traditions which developed in such a conceptual climate necessarily reflected interest in the more "mobile" (and more technologically-driven) transmission view of communication. If the intellectual tradition focused on notions of detachment and mobility is partially responsible for the secondary position of the ritual view of communication, can the establishing of linkages with place help us to understand communicational environments in a more comprehensive way?

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[64] See Casey's discussion on the disorientation caused by the loss of ancestral land and the values embedded therein "Displacement" in *Getting Back into Place*, pp. 22-39; and Borgmann on ancestral information in *Holding On to Reality*, pp. 35-6.

CHAPTER 4

Implacing Communication.

> The world was so recent that many things lacked names, and in order to indicate them it was necessary to point.[1]
>
> A general description of the world and of history must first take into account the way our house was situated...[2]

We have looked at the preoccupation of communication scholarship with the symbolic world of language and code, and the displacement that lies at its bases. We can contrast this with communication with (and through) the environment, and the symbolic forms manifest in its material reality. We can even argue that such communication predates language.[3] Of course, if we were to consider fossil evidence in the debate, the built and artifactual form would predate language by millennia. It is not, however, the intention of this work to engage in a debate on the chronology of pre-historic events, but rather to consider communication as ritual and its promise for the notion of place.

Reaching for Vitruvius's seminal treatise on architecture, as unlikely as it may seem as a source of reflection on communication, turns out to reveal a text propitious to the task at hand.[4] Vitruvius shows an acute understanding of the way human communication implicates its surrounding context. In his description of the origins of human dwelling, he emphasizes the common roots of communication and the built environment; he sees the beginning of architecture (the creation of shelter) as marked by

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1 Gabriel García Márquez, *One Hundred Years of Solitude*, trans. Gregory Rbabassa (New York: Harper & Row, 1970).

2 Italo Calvino, *The Road to San Giovanni*, trans. Tim Parks (Toronto: Vintage, 1995), p. 3.

3 Mildred Constantine and Egbert Jacobson, *Sign Language for Buildings and Landscape* (New York: Reinhold Publishing, 1961), p. 141. Constantine and Jacobson's work may still be the most comprehensive treatment of signage to date. It is a detailed survey of various types of contemporary signs and an attempt to make signage a focus of urban design. The focus of the work is style and aesthetics, however, important relationships between urban form, systems of movement and various types of signs are drawn, and historical linkages indicated.

4 Marcus Vitruvius, *Vitruvius, the Ten Books on Architecture*, trans. Morris H. Morgan (Cambridge: Harvard University Press, 1914).

the coming together of fire and a community gathered in an act of public ritual.[5] In his narrative, Vitruvius suggests that the human desire to communicate the comfort of the fire provided the stimulus for the advent of language, as well as that of dwelling. Dripps' astute analysis of the origin of human dwelling elaborates the importance of the links that Vitruvius sees in the genealogies of communication and architecture. The common ground of the two domains contains the notions of orientation and ritual, and thus manifests what Dripps describes as "a prearchitectural state of ritual action directed toward establishing orientation, order, and stability in the world".[6]

In Vitruvius' tale, the power of newly discovered technology (fire employed for human action and ritual) plays a catalytic role. The fate of technology, communication and the built form has been inseparable ever since, inseparable from one another and from the arena where the power struggle (conflict or consensus) among the constituents of the triad takes place. The changing power relationships among these elements lies at the basis of the formation of any symbolic reality, even one as seemingly abstracted as language and its notations. In fact, it is only in this relation of interdependence that language and other symbolic forms are fully revealed.

The metaphoric structure of our language reflects the important role of its physical surroundings and our action within it in the structuring of our conceptual world. George Lakoff and Mark Johnson demonstrate the key role orientational metaphors play in this structuration and the conceptual realm expressed through language use.[7] Not surprisingly, the relationship between place and the symbolic form of language has been most eloquently revealed not in linguistic analysis, but in the poetic sensibility of literary texts. Gabriel Garcia Marguez and Italo Calvino, whose words begin this chapter capture the complexities of the permeable territory between language and place in the most

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5 R. D. Dripps, *The First Home. Myth, Paradigm, and the Task of Architecture* (Cambridge, Mass.: The MIT Press, 1997), p. ix.

6 Ibid., p. 3.

7 Lakoff and Johnson, *Metaphors We Live By*, and *Philosophy in the Flesh*.

profound ways. Susan Brind Morrow, in her reflections on hieroglyphs and the Egyptian desert, portrays the links between language and landscape: "In ancient Egypt hieroglyphs were called *medew netcher*, sacred words. Netcher is the picture of a flag on a pole, like flags that mark sacred places throughout the desert even now: tombs and rocks and trees."[8] The sacred word is a marker, a signpost that links the embodied world with a realm of larger meaning and expresses these links through its own form and the ritual of its communication. Communication as ritual is an act of marking, naming, connecting the focused field with the larger cosmos, and recognizing the significance of the links. This ritual is implaced in the physical artifactual world, as it is embedded within the conceptual and symbolic realms. This ritual in its various symbolic forms most powerfully manifests the harmony or dissonance between the directly palpable near-world and the circumambient spheres within which we are immersed, between language, the representation of our conceptual world, and the experienced world of senses and action. We can argue that it is through the analysis of communication modes (marking, naming, recognizing, connecting) that we disclose and understand the ways in which the various conceptual shifts and transformations affect us and the physical world around us. One arena illuminated by the analysis of communication modes is that of technological transformation and its effect on social knowledge, culture, and symbolic reality. It is the communicative dimensions of the built environment that are made most visible, are most manifestly brought to the surface, by technological shifts, and thus reveal important conceptual transformations. The flag poles in the desert described by Brind Morrow may

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8 Susan Brind Morrow, *The Names of Things. Life, Language, and Beginnings in the Egyptian Desert* (New York: Riverhead Books, 1997). Links between marking the road and language are encompassed by the mythological figure of Hermes. Kerényi, for example, speaks of Hermes as the inventor of language, "the word for the simplest mute stone monument, *herma*, from which the name of the God stems, corresponds phonetically to the Latin *sermo*,'speech' or any verbal 'exposition'. *Hermes. Guide of Souls*, p. 88. Kerényi refers to the Homeric hymn to Hermes and the passage "no word was lost on the god Hermes." Krajewski in *Travelling with Hermes* argues that the word *herma* forms the basic verbal root for *hermeneia*, "explanation"; thus Hermes is *hermeneus* ("interpretor") who brings what is hidden out in the open, (and *hermeneus* meant also someone skilled in dealing with text), p. 38.

be a fitting metaphor for communication as ritual: the marking of important junctures where symbol, meaning and experience converge.

As previously discussed, communication research has a rich tradition of exploring these convergences. Harold Innis and Lewis Mumford articulated the intersecting influences between human communication practices and technologies; they developed valuable models for examining historical, social and cultural developments through the perspective of communication technologies. The debates spurred by their analysis within the communication discourse largely centred, however, on text-based domains and the numerous ways in which alphabetic language and, particularly, print culture have effected human understanding and actions. In contrast, analysis of the communicative dimension of physical places, or non-text based approaches to visuality and the production of symbolic reality have not been sufficiently elaborated upon within the discipline, despite the important groundwork of Innis and Mumford, and despite their explicit inclusion of the physical environment and the centrality of a spatio-temporal dimension to their work.

The built environment has always played an important role in the mediation of human actions and the place of human life within the larger orders of nature and the cosmos. Built form, whether settlement, temple or dwelling, has always reflected human creative genius, socio-economic conditions, and human attempts to understand both nature and self. The built environment has been an important force in the development of human civilization, acting traditionally as both container and generator of history and culture. Mumford argues that "as compared with the complex order of the city, our present ingenious electronic mechanisms for storing and transmitting information are crude and limited."[9] In a way, the built environment has served as both the container and the conduit, and in either role it has been resonant with ontological metaphors often used to structure our thinking about major concepts.[10] It has remained the most eloquent, the

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9 Mumford, *The City in History*, p. 569.

10 Lakoff and Johnson, *Philosophy in the Flesh.*

most immediate and lasting means of expressing and recording the human condition. Its significance extends beyond the mere creation of physical structures and environments to, subverting James Carey's description of the respective roles of communication media, the "giving [of] shape to human societies and to the products and processes of the human mind".[11] One can assert that the built environment has been, like the communication technologies described by Carey, "consequential both in maintaining social order and as a powerful agent of change".[12] It can also be seen as a dynamic "structuring structure", a mediating system in itself, and an important social setting that frames the inferences by which we live.[13]

George Lakoff and Mark Johnson demonstrate that most of our fundamental concepts are organized in terms of spatialized metaphors, and that our metaphorical orientation in the world is not arbitrary but rooted in physical and cultural experience.[14] And it is only by virtue of its experiential basis that metaphor can effectively serve as a vehicle for our understanding of a concept.[15] Our conceptual system is grounded in spatial concepts (up-down, front-back, in-out, near-far, etc.), The structure of these spatial concepts emerges from our ubiquitous spatial experience, from our continuous interaction with physical environments.[16] These concepts provide the framework for the organization of our entire system of knowledge and its networks of hierarchies of value (via the spatial concepts of up-down), the ways of conceptualizing temporal abstractions such as future, past, present (spatially ordered along the front-back axis); our ways of

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11 Carey, *Communication as Culture*, p. 87.

12 Ibid.

13 Lakoff's work on metaphors and cognitive categories needs to be noted here. His study of *there*-constructions in *Women, Fire, and Dangerous Things: What Categories Reveal about the Mind* (Chicago and London: The University of Chicago Press 1987). Discussion of orientational metaphors takes place in Lakoff and Johnson. *Metaphors*, and their elaboration on the conceptualization of time can be found in *Philosophy in the Flesh*.

14 Lakoff and Johnson, *Metaphors*, p. 17. Also, see their discussion of physical basis and cultural coherence of orientational metaphors: up-down, in-out, front-back, central-peripheral. Lakoff and Johnson, *Metaphors*, pp. 14-32.

15 Ibid., p. 18.

16 Lakoff and Johnson, *Metaphors*, pp. 56-7.

thinking about concepts, theories, and arguments (through metaphors of constructed edifices, buildings, frameworks, structures).

Our functioning in the physical and cultural environments shapes our conceptual system through metaphor and metonymy, but this structuration is not purely linguistic. The physical world around us abounds in material metaphors and metonyms that structure our conceptual systems through their presence and the code of practices associated with them. The structuring code manifests itself in ritual,[17] with ritual functioning within the artifactual world very much like metaphor within language, making the conceptual world legible, organizing its artifacts, ordering its conventions. To understand the concept of ritual, however, we must look beyond the spatial basis of orientational metaphors and their static relationship to our physical context and body. We need to place it within the dynamics of action and experience. Orientation, because of its static nature, is a necessary but not in itself sufficient condition of understanding. Merely knowing the where we are in relation to other entities, the mere mental mapping of spatial relationships, will not disclose all the clues we need to know to get somewhere, the sequence of events, actions, and steps we must take. Orientation in itself does not necessarily have a temporal dimension; this dimension is revealed only through the sequential ordering of events. Ritual, then, has the capacity to combine the spatial and the temporal.

Lakoff and Johnson's discussion of ontological metaphors is very helpful in understanding the difference between orientation and the concept of wayfinding, whether through the physical or information environment. They argue that the understanding of our experience in terms of objects and substances, of bounded entities, allows us to categorize, group, and value experience and phenomena and to reason about them, think about them, communicate our thoughts, and represent our ideas in meaningful ways.

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[17] Lakoff and Johnson, *Metaphors*, p. 46. Lakoff and Johnson's analysis draws from the anthropological work of Bronislaw Malinowski, Claude Levi-Strauss, Victor Turner, and Clifford Geertz. Lakoff and Johnson, *Metaphors*, p. xii.

"Human purposes typically require us to impose artificial boundaries that make physical phenomena discrete just as we are: entities bounded by a surface."[18] Such a differentiation, the making and the marking of difference, may appear purely spatial but has, in fact, a powerful temporal dimension. In its retention of the memory of specific action and function, it contains the traces of past experience and future purpose.

Container metaphors are pervasive among the ontological metaphors discussed by Lakoff and Johnson. They are particularly revealing of the importance of physical place to language and communication; these are the metaphors of land areas and related notions of boundary imposition, the marking of territory, and notions of dimensionality and surveying. Territoriality and boundedness are paramount to our conceptual systems. For ritual to be fully communicated, however, these concepts need to be understood in their full spatiality and materiality: in terms of making boundaries palpable, legible, and not merely in terms of socially constructed notions of access or ownership.[19] The container metaphor is often used for the conceptualization of the visual field, with our field of vision correlated with bounded physical space and the related dimensions of in-out, within-outside, center-periphery. The idea of container, then, carries not merely the notion of boundedness but also its palpability.

Another metaphor pertinent to our discussion of communication and place is that of the conduit.[20] Lakoff and Johnson argue that this pervasive metaphor obscures two important aspects of communicative process: context and speaker.[21] They demonstrate that language reveals the importance of place in communication through metaphor, that

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18 Lakoff and Johnson, *Metaphors*, p. 25.

19 As noted in Chapter 1, Meyrowitz, in his discussion of the effects of communication technologies on place, focuses on access and control in the social sphere. A fuller understanding of the notion of place and its relationship to communication practices can be revealed when notions of orientation and differentiation within physical sphere are also taken into consideration. Meyrowitz, *No Sense of Place*.

20 The language about language entails the following metaphors: " ideas (or meanings) are objects", "linguistic expressions are containers", "communication is sending". These metaphors seem to underpin the transmission view of communication. Lakoff and Johnson (after Michael Reddy), *Metaphors*, p. 10.

21 Lakoff and Johnson, *Metaphors*, p. 13.

"existence is understood as location in a conceptual space".[22] The temporal dimension of existence is revealed through events, with place acting as container of time.

The conceptual systems of cultures and religions are metaphorical in nature. Symbolic metonymes are critical links between everyday experience and the coherent metaphorical systems that characterize religions and cultures. The metonymic concepts that allow us to organize our thoughts and conceptualize one thing by means of its relation to something else are also grounded in our experience. It is interesting to note how often place (place name) is used to stand for an institution or event (the White House, the Kremlin, Pearl Harbor).[23] Theories and arguments are often discussed as if they were buildings: they have foundations, require support, they hold up, or collapse, we can shore them up, talk about their framework, construction, architecture, structure, etc. Of course every experience takes place within a vast background of cultural presuppositions, with culture "already present in the very experience itself".[24]

Place is a container of time: we cannot observe and experience time itself... we can only observe and experience events. We define time as the successive interactions of events, their sequence marking intervals of 'time'[25] Very little of our understanding of time is purely temporal, rather "[m]ost of our understanding of time is a metaphorical version of our understanding of motion in space".[26] Motion is understood as the change of location over time. According to Lakoff and Johnson:

> There is an area in the visual system of our brains dedicated to the detection of motion. There is no such area for the detection of global time....motion is directly perceived and is available for use as a source domain by our metaphor systems.[27]

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22 Lakoff, *Women, Fire*, p. 543.
23 Lakoff and Johnson, *Metaphors*, pp. 38-9.
24 Lakoff and Johnson, *Philosophy in the Flesh*, p. 57.
25 Ibid., p. 138.
26 Ibid., p. 139. For an imaginative play with possibilities of conceptualizing time, see Allan Lightman, *Einstein's Dreams* (New York: Warner Books, 1993).
27 The metaphor system for time has a spatial structure with the location of the observer signifying present, the space in front, the future, and the space behind the past. Lakoff and Johnson, *Philosophy in the Flesh*, p. 140.

The built environment has traditionally acted as a medium of communication at many levels: as a medium of expression itself; reflecting and making manifest social values, beliefs, norms and accepted aesthetic standards; as an agent mediating the effects of other media, responding to changes in these media and of technologies, accommodating the requirements of these changes and bearing the consequences of these technological shifts; as a stage and backdrop for (and container of) social, cultural and economic processes; as a repository of social and individual memories and rituals; as a source of esthetic pleasure or entertainment; and, finally, as a conceptual and perceptual way-finding system.

Until very recently, it has functioned as a powerful mediating agent between the human world and the larger cosmic order; reflecting, in its architectural and infrastructural forms, the purpose of our social institutions and human life in general, and seeking to communicate the symbolic order of the world around us. Throughout successive technological and cultural developments, the built environment has provided the supporting setting, and visibly structured the hierarchy of their importance. It has also acted as mediating agent for the multitude of social and economic forces that have influenced the development of other media of expression.[28] The styles and forms of the built environment, from cathedral to dwelling and garden, have provided the stage for, and structure of, the power play of various (political, social, artistic) actions and manifestation of the values placed on common beliefs and aesthetic hierarchies. The built environment has been the most ubiquitous and visible reflection of individual desires and public consensus on social and aesthetic issues. Perhaps because of this ubiquity it has been taken largely for granted and increasingly compartmentalized, fragmented and in many ways marginalized. And increasingly, its products have been

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[28] For a discussion of the relationship between mass media and architectural form see Aurora Wallace, *Architecture of News: Nineteenth Century Newspaper Buildings in New York* (unpublished Ph.D Thesis, Graduate Program in Communications, McGill University, Montréal, 2000).

treated either as merely technical or aesthetic, stylistic, manifestations rather than reflections of broader humanistic concerns.

Until modern times, the built environment retained its role as mediating agent between nature and the human world, remaining one of the most solid and permanent forms of expression and a significant marker of shifts in the development of human civilizations. This role was virtually undisturbed by the shift from the oral tradition to literacy and the development of print media. It remained constant throughout the distinct eras of development of other communication media. The forms and stylistic concerns of the domain evolved, but its position between the human and the natural worlds endured. Architectural and urban form prevailed, anchored solidly in the landscape until the last century. Only then, did their power and meaning shift in a significant way.

Because of its role as witness to the shifts in other media, it is particularly interesting to examine the historical context of the built environment as a form of human communication. Since architectural and urban developments do not necessarily follow the traditional division of oral versus literate society, investigation of this domain offers a fresh approach to the history of communication. Conversely, examination of the history of human communication within the context of the built environment can help to explain the puzzling dichotomy in its approach to architecture and the city: on the one hand, its failure to acknowledge the importance of architecture or urban form and its resultant tendency to fragment them into functional components (of structure, construction, the way things work) which are then used to explain other domains (like "computer architecture" or "system architecture", the urban grid); and, on the other hand, a fascination that leads to the mining of the built environment for important metaphors used by other disciplines and forms of communication – metaphors for well-being and a sense of community (like "sense of place"), or political metaphors for public life and democracy (like "agora"). The relationship between the built environment and technology is crucial to communication research. An analysis of the reconfigurations of this

relationship can be helpful in the understanding of the many cultural processes manifested in contemporary media, and particularly in the increasing role played by surface-applied signage and the human–machine interface within the cultural environment.

Paul Shepheard proposes that the major shifts in the trajectory of human civilization occurred at two points: first, the opening up of the walls of cities; and second, the freeing of technology from its "landed description", the loosening of machines from their bonds of gravity.[29] This proposition is interesting because it identifies the point at which cultural changes begin to undermine the mediating role of the built environment. It also suggests the possibility of shifting our communicational discourse from the belaboured orality versus literacy debate into a more comprehensive territory that would include architectural and infrastructural environments and the grounding of physical presences.

In the walled city, all relations were fixed, and the city with its arrangement of buildings acted as a model of society: buildings themselves expressed fixed relationships and beliefs.[30] Such an immutable authority provided the boundaries and structure for social consensus. Until quite recently, the design of machines followed architectural aesthetics and many mechanical objects resembled buildings: furniture, vehicles, clocks, and crinolines (there were times when even fashion seemed to follow design criteria).[31] With the encroachment of modernity, Shepheard proposes, objects and machines began to change, coming in to their own, as it were, while buildings were gradually confounded into ordered neutrality.[32]

The technological possibility of detachment from context (and displacement) unleashed a major shift in the relationship between architecture and technology and

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29 Shepheard, *What is Architecture*? p. 57.
30 Ibid., p. 51.
31 Ibid., p. 58.
32 Ibid.

ended the hegemony of the mother art. Machines moved to the realm of physics and became governed, not by mechanics, but by the invisible forces of electromagnetism; they became dependent on computer speeds of sophisticated calculations; and their scale moved beyond the scope of the human hand and the focus of human vision. As the machine became "subperceptual", the built environment, still governed by the laws of mechanics, by gravity, was left behind.[33]

Shepheard argues that architecture, to retain its position at the vanguard of progress, began to chase after machine imagery, with architects creating buildings that looked like machines. In an attempt to prove its usefulness, architects began to expose its functions, proclaiming the modern spirit with the use of industrial materials and machine aesthetics. According to Shepheard, at the time when "the machines were heading for invisible space" of progress, buildings "remained sadly stunned by their own gravity".[34] Thus, architecture, seduced by "the exploration of the possibilities created by technology", abandoned its mediation of man and nature, its representation of human social structures and values. Instead, it took up the challenge of projecting the modernization process itself and the legitimization of its agenda; it became synonymous with technology.[35] Technology facilitated its detachment from, and transformation of nature; making desirable the replacement of nature with a new, man-made and perfect proxy.

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33 Shepheard, *What is Architecture,* p. 62.

34 Ibid. These two shifts can be compared to the major developments in communications as seen by Mumford in his assertion that the cannon could be considered the first major development in communication technology. Another watershed technological breakthrough, the telegraph, could be compared to the "machines defying gravity" in Shepheard's discussion: the detaching of technology and the message (or the vehicle itself) from the ground, as a force changing conceptual systems and hierarchies of importance for various technologies (building versus transportation technology, for example). For a discussion of the process of detachment from place as related to the notion of dwelling see Chmielewska, *Dwelling in Postmodernity.* pp. 16-24, and fig.19.

35 Aaron Betsky, *Violated Perfection. Architecture and the Fragmentation of the Modern* (New York: Rizzoli, 1990), p. 15.

With the advancement of modernity, technology pushed architecture, and more generally the built environment, from its mediating role and usurped that role for itself.[36] With increasing technological dominance, both the character and direction of mediation began to change. Rather than as a physical bridge between human and nature, a centripetal force for the development of civilization, technology increasingly acted to separate the human from the natural world. In its new role as a mediator, technology was not anchored in context and place, was far less dependent on its surroundings and more footloose than architecture could ever be. It could easily detach itself from the grounding and continuity of human experience. While architecture has traditionally been focused on the anchoring of human experience and the assertion of permanence, technology is now acting as a centrifugal and fragmenting force separating architecture from social context and the city, isolating human agent from nature. The same fragmenting force delineates a discord within each domain, separating: "meat" from mind within the human agent; the physical world from the larger order within nature; the social fabric from urban form in the city; form from function in the domain of architecture; ethics from aesthetics within the realm of human concern.

Architecture has lost its predominant role as reflector of human progress and instead, in an attempt to catch up, has begun to manifest technological progress, to promote technology as a means of expression and the basis for (rather than a tool of) practice. The resulting environments are increasingly mediated through market demands for new artifacts, and more visual consumption; they have become more ephemeral, succumbing to notions of stylistic obsolescence, and the demand for quick turn-over times. They seem bent on accommodating themselves to the mostly anti-architectural requirements of the new technology.

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[36] Ella Chmielewska, "Symbols of Architecture and Technology", proceedings of the Canadian Congress of Landscape Architects, *High Tech – High Touch*, (Edmonton, August 1997).

Technology, especially the increasingly invisible electronic technology, now demands a different kind of mediating platform; it calls for a separate interface that can take on some of the communicative functions embedded previously in the built environment. This new interface is needed for the machines to explain themselves, to make legible the different ways of navigating the environments which they have re-configured. It is needed to instruct us on how to operate the machines, how to convey our instructions to them, as well as how to communicate through the machines, how to make their signals understood by others. Within the last few decades the communicative aspects of technology have gained importance and are perhaps most dramatically seen in the adoption of the many terms previously reserved for human communication practices; like machine "language" and machine "intelligence", notions which have entered our conceptual world and everyday vocabulary. Many other terms previously reserved for human thinking or movement have also been co-opted by computer technology.

The role played by the built environment in the transformations of communicative practices can be traced through an analysis of signage: a multitude of way-finding elements articulated in different ways throughout the history of human communication. Exploration of the wayfinding elements of the built environment can help to articulate a number of issues important to communication research, particularly the changes brought on by the modern re-orientation of society on human communications and the physical sites of communicative practices.

Let us examine ways in which the concepts of communication and place come together in the notion of implaced communication. Wilbur Schramm defines communication as relating to the environment, as addressing the key questions: "where am I? who is out there? how shall I respond to my immediate environment?"[37] None of these questions can be answered in isolation from one another. In any communicative

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[37] Wilburn Schramm and William E. Porter, *Men, Women, Message, and Media. Understanding Human Communcation* (New York: Harper & Row, 1980), pp. 26-27.

act, the positioning where, the identifying, personal who, and the social how are intricately interconnected. Communication is inherently context-bound, and is framed by the personal and the social. Edward Casey defines the concept of place in terms of the same three questions: place establishes, determines not only where I am, but also who I am, and how I interact with others and the world around me, how I fit into the where.[38] Place anchors me personally and socially: the personal who and the social how are intricately fused with the placial where.

One is distinguished by place not merely through its immediate characteristics, argues Casey, but also through its embeddedness in a series of more encompassing places that one occupies simultaneously. These overlapping places position one spatially and temporally; they provide both the multilayered here and the historical now. And one is not merely contained by place, one lives *within* it, and *through* it; it is anchoring and orienting. Place identifies, as the mere name of one's original locale provides an account of personal and social history. Place, as Casey further notes, embodies one's complex collective and personal "concreteness": places are loaded with values, hierarchies, important political and social dimensions.[39]

The pedestrian navigating a busy street combines the great dance of the collision course with the encoding of layers of information, the reading of a multitude of signage systems around her. This complex communicative process enacted within the built environment cannot be analyzed through the study of specialized actions where "a whole human being [is reduced] into a magnified eye, a magnified hand, a magnified finger...".[40] It can neither be fully explained by a decision-making or preference model of behavioral research. The exploration of behavior in space must include some of the basic, if intangible and more difficult to operationalize, dimensions of human-environment interactions. Knowledge is a key element here. It is thus necessary to look

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38 Casey, *Getting Back into Place*, p. 23.
39 Ibid., pp. 23-4.
40 Mumford, *Art and Technics*, p. 65.

at the traditions and modes of storage and presentation of knowledge, of understanding the world, and expressing this understanding through the various modes of information presentation. The history of graphic communication and the canons and methods for concept and information visualization provide some clues to an understanding of the conceptual continuity of the mediating, interfacing dimensions of place.[41]

When we inquire into the experience of place, we need to include simultaneously the two major players: body and landscape. Landscape transcends the parameters of place: it contains place while continuing without apparent end. As Casey notes, "nothing contains landscape while it contains everything". The body, on the other hand, is enfolded within place, situated at "the near edge of a given place".[42] These two elements, body and landscape, collude in the creation of place, and place then acts as an interface between them.

We can encounter landscapes directly, raw as it were, without the interface of any specific place. This happens when we find ourselves in completely unfamiliar territory; at sea, in the desert, in a vast expanse of plain, or even in a new cityscape with no recognizable markers. Our interaction with these "raw" landscapes, our ability to orient or navigate within them depends on both the individual we are, or the <u>who</u>, and the social <u>how</u>. Both collude to determine the <u>where</u>, our notion of our spatial position within various elements of the surrounding environment. Finding the <u>where</u>, establishing an orientation and subsequent trajectories (or possibilities) of movement traditionally used the body as primary agent in the landscape, and place as its interface with environment: both rely on the social <u>how</u> of stored knowledge and the various technologies used to negotiate the surroundings.

According to Greek legend, Daedalus, who built the Cretan labyrinth, was the first architect. Some contemporary theorists suggest a different interpretation crediting

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41 Meggs, *A History of Graphic Design;* Josef Müller-Brockmann, *A History of Visual Communication* (Tefen: Verlag Arthur Niggli, 1971).

42 Casey, *Getting Back into Place*, p. 23.

Ariadne with the first architectural act instead.[43] Ariadne, the argument goes, was the one who interpreted structure, who understood the labyrinth and created its representation. Two interesting and problematic ideas present themselves here. First, it is the labyrinth, according to both interpretations, that is considered the first work of architecture. This is a structure based on the concept of way-finding not dwelling. To posit that architecture did not exist before the labyrinth implies, for one, that architecture is destined to different (superior?) preoccupations than human dwellings, that the object of its interest and intervention carries an element of abstract detachment from human life. It also carries the implication of confinement, rather than accommodation. But could it also mean that the architectural act necessarily addresses wayfinding and orientation? Second, the thread of Ariadne is considered here as a representation of the labyrinth, an interpretation of its structure, while it is in fact a representation of the relative position of Theseus' body in place, its relation to the point of entry (and the only point of escape). Rather than symbolizing the understanding of the structure itself, the thread given to Theseus marks the path, the passage between the two points of destination. Should Ariadne be credited, then, with the design of a way-finding system? a signage system? She did not interpret the structure of the labyrinth as such, she did not understand it better than its builder. She conceptualized a means of marking a way through the structure, a means of wayfinding.

The problem of representation and interpretation is important to this discussion. Beatriz Colomina argues that the thread of Ariadne is more than a representation of the labyrinth, that it should be considered "a project, a veritable production, a device that has the result of throwing a reality into crisis" with an implication that architecture, as distinct from building, is an act of interpretation, a critical act that "has a linguistic condition

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[43] Colomina, *Privacy and Publicity*. Regarding the interpretation of the labirynth, Krajewski also argues in *Travelling with Hermes* that Daedalus could not both know and experience the labyrinth, and that to look at the blueprints of a labyrinth is not the same as being inside a labyrinth. p. 136.

different from the practical one of building".[44] This suggests an equation of architecture and representation, and of a "linguistic condition" as a necessary component of the architectural act. This points to some of the communicative aspects of architecture, but only if we consider them in terms of language. It gives us an interesting point of departure for the exploration of the communicative aspects of built environments. It seems that the interpretation of Daedalus' act may inadvertently reveal a serious deficiency in much of the analysis of both disciplines, architecture and communication. It can be argued that both disciplines overlook the territory of human interaction that exists between the acts of building and linguistic interpretation. Just as interpretation does not need to imply a linguistic project, the practical condition can mean more than the act of building. The territory between actions shaping the physical environment and those of its interpretation implicates communication in its broadest, embodied and experiential sense: it implicates orientation, and navigation, involves ritual, concerns knowledge, and also concerns technology.

The contemporary crisis of time and place is inseparable from the fate of the built environment, from the city, its infrastructure and architecture. Hannah Arendt believed that "the reality and reliability of the human world rests primarily on the fact that we are surrounded by things more permanent than the activity that produced them".[45] Such a permanence of the built environment and the meaning with which we infuse our surroundings anchor us in space and time, in geography and in history. And the built environment has traditionally acted to bridge and anchor time and place. It has functioned as one of the most enduring forms of human expression, the most ubiquitous and particularly expressive. The built environment retains, in its building forms, city patterns and domestic spaces: social memories, patterns of growth, scars of decline, unity or fragmentation. The built environment manifests public goals and individual desires. Most importantly, it embodies time in the physical world, manifesting as it does

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[44] Colomina, *Privacy and Publicity*, p. 7.

relationships of time and place. That sense of time is embodied in the way we experience and read the physical environment.

FIGURE 1.4-1

[45] Hannah Arendt, *The Human Condition* (Chicago: University of Chicago Press, 1959), p. 58.

PART TWO

CONSIDERING LINEARITY: Marking the Way.

> The potentially vast territory of discourse... is so dense with the landmarks of previous explorers that orientation is always difficult to maintain. It is useful to describe such a large world of action by reference to a very small and seemingly simplistic story. [1]

With these words Dripps begins his discussion of the relationship between human dwelling and architecture. The passage also captures the nature of the conceptual terrain claimed here for signage, where in order to begin to uncover its complex linkages we may need to result to a simplified narrative, a story that can anchor and order this immense and deceptively obvious territory. Dripps' use of the navigational metaphor, however curious, also seems salient to this discussion. He refers to the numerous landmarks left by previous explorers as dis-orienting. In his exploration, the abundance of markers makes the search more difficult and confusing. In our inquiry into wayfinding markers themselves, we are faced with a somewhat similar problem. The layer upon layer of signs and sign systems that we encounter in our daily navigations (within built environments and increasingly also within virtual informational environments) are complex, conflicting and disorienting, while at the same time, increasingly universal, homogeneous, and generic. The numerous spatial and navigational metaphors that we employ at all levels of language, from colloquial utterances to the academic lingua, further expand and obscure the territory.[2] It is even difficult, as discussed in the previous

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1 Dripps, *The Fist Home*, p. ix.

2 In fact, in academic discourse, the metaphoric presence of navigational and spatial concepts seems more substantial than that of the actual landmarks. For example, a keyword search through contemporary journals for the terms 'signs', 'navigational markers', 'milestones', 'landmarks' or

chapters, to assess the extent of the theoretical treatment of the phenomenon of signs. Even in its marginal treatment, signage has been annexed by such a disparate number of domains, each claiming ownership and defining its dimensions via its specific disciplinary lens. All this complicates any systematic analysis of the common history and purpose of signage. The territory of discourse undertaken here is not uncharted, but it is so "dense with the landmarks of previous explorers" that a simplified unifying framework would be particularly helpful.

To explain a space of knowledge means to travel its territory, trace out its paths, describe its steps, and mark the way... or one of a number of possible ways. An itinerary may be helpful in describing one's trajectory, identifying the different possible routes and destinations, and the important markers along the journey. An itinerary would reveal the dynamic dimension of space; plotting direction and distance in relation to the changing position of the moving agent. It would form an annotated narrative describing the sequence of way-stations, the progression of marked spatio-temporal events.

We can contrast an itinerary to a conventional cartographic map, the map being a frozen image of spatial organization, the static representation of relationships placed within a conventional system of reference. Michel de Certeau argues that the current geographical form of the map has been arrived at through its slow disengagement "from the itineraries that were the condition of its possibility". He believes itinerary to be "a memorandum prescribing actions" and a map – merely "constituted as a formal ensemble

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'way-markers' yields entries on "signs of the time", "milestones in genetics", "ethnicity markers in linguistics", and the like. Relatively few entries relate to physical landmarks, signposts and actual way-markers, or wayfinding in physical environments.

of abstract places." [3] As discussed in the previous chapters, a map takes the conceptual leap into abstraction, as into detachment from its constituent sequences of immediate events and places, from the moving body to a relational matrix of coordinates. While it rests upon a system of reference, it contains no temporal structure of action in space. By contrast, an itinerary makes visible the dynamic dimension of a journey, the succession of crossroads, decision points, way-stations, places of repose, places of importance and landmarks to look for. An itinerary cannot be enclosed within the concept of mental mapping, within a static conceptualization of spatial relationships, but needs rather to be seen in terms of the mnemonic dimensions of space, narrative sequence, rhythm, and punctuation. It is a description of the route, not the structure of the space around it. If we were to look for an analogy from the domain of language, we would need to think of the realm of punctuation marks: markings that, while representing a conventional system, only gain their specific meaning once positioned within the text. The markers make little sense as a separate group, when detached from their textual mooring. They are topo-sensitive, and they point at the dynamic dimensions of the written language.

Let us pause to consider the following two maps to make these points more vivid. Both depict trade routes around Nuremberg in the 1500s. The first is a conventional cartographic representation showing the route system set within topographic elements and geographic conventions.

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[3] Michel de Certeau, *The Practice of Everyday Life* (Berkeley: University of California Press, 1988), p. 120.

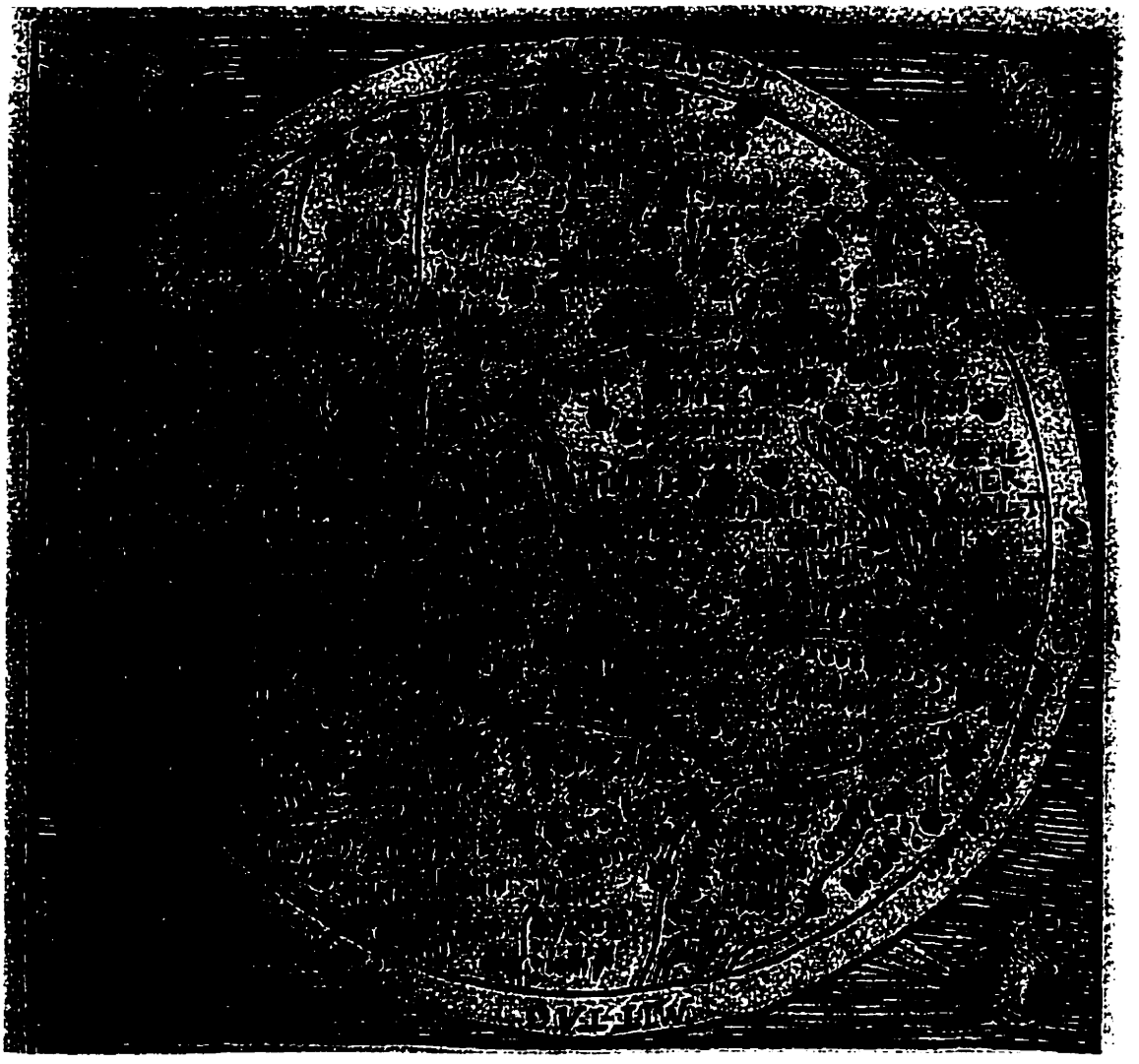

FIGURE 2.i-1: German road map, early 15th century, Nuremberg.

The second figure anchors its orientation in the city of Nuremberg with trade routes related to a centre positioned within its larger geographic order.[4] Though oriented

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[4] Such centred spatial and conceptual ordering of the world is rather typical for early maps. Maps of the Middle Ages would frequently be centred on the Holy City of Jerusalem, as would various theories and explanatory diagrams of cosmologies. See various examples in Kenneth Nebenzahl, *Maps of the Holy Land. Images of* Terra Sancta *Through Two Millennia* (New York: Abbeville, 1986). The pre-modern world was spatially centred; around a specific place (like an important city), *axis mundi*, or the navel of the world (*omphalos*).
For a discussion of modern shift in the certainty of spatial orientation and centrality see Borgmann, *Crossing the Postmodern*, pp. 20-23.

hierarchically rather than geographically, the map nonetheless situates Nuremberg within the cardinal directions. It does not depict the spatial relationships between places (other than in terms of orientation and distance), nor does it represent any territorial or topographic information.

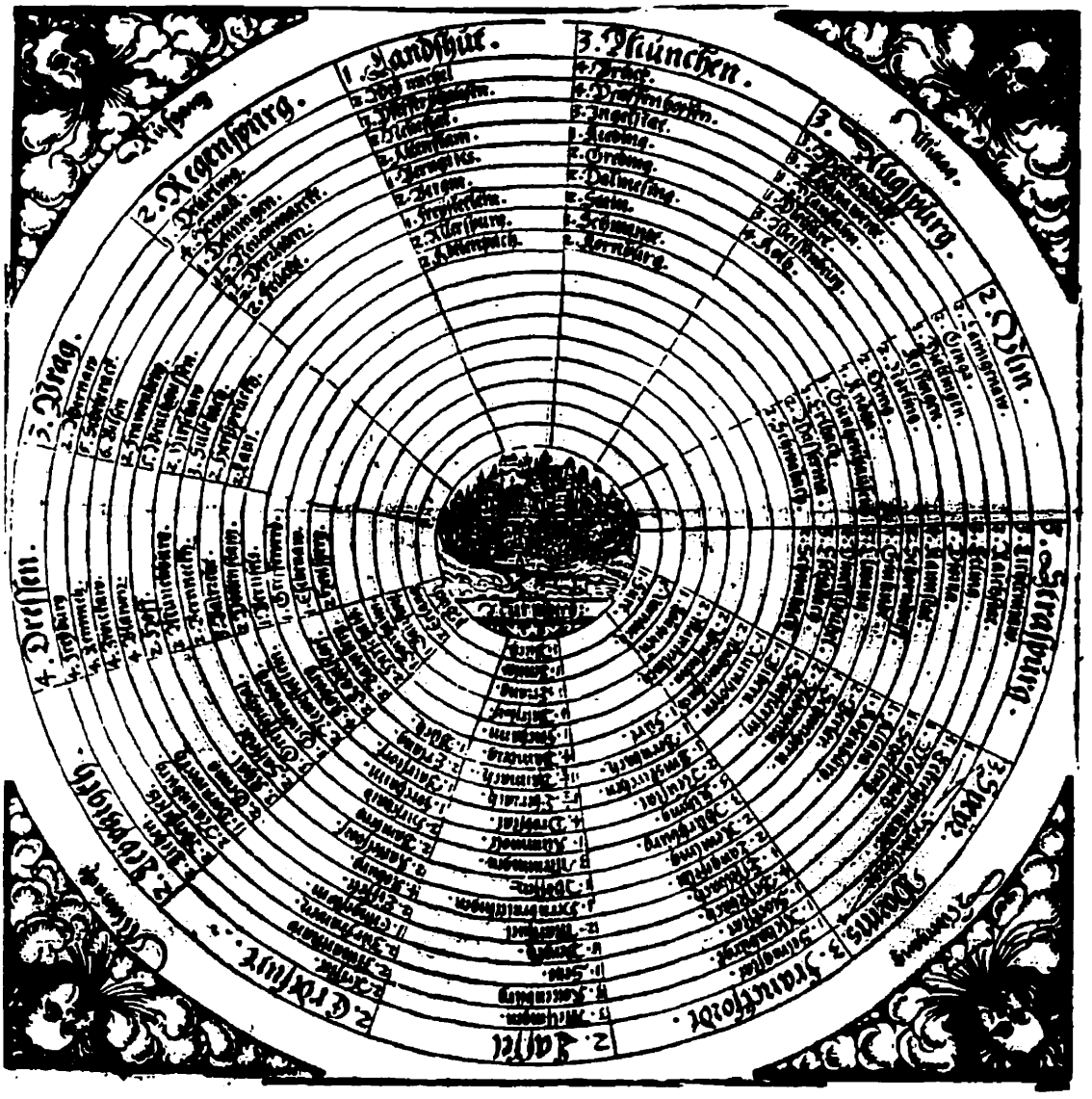

FIGURE 2.i-2: Map of trade routes starting in Nuremberg, 1570.

Rather, it proposes a conceptual matrix of navigational elements, an orienting scheme. It organizes steps in the process of getting to a destination, providing a sequence of places

on a journey, or rather the numerous possible journeys from one point of departure. Each final destination is reached *via* a number of *en route* stops described with a given sequence and cadence of distances. An itinerary, as seen in this example, embodies the notions of movement, travel and navigation,[5] key concepts through which the communicative dimensions of place, the mediating dimensions of informational environments, can be elaborated.

The idea of itinerary is pivotal to the genealogy of signage; it makes vivid conceptual linkages among the processes of wayfinding and linear progression, naming and organizational hierarchies, rituals of path and procession. Itinerary emphasizes the mnemonic importance of place and rhythm. The map, as de Certeau proposes, "collates on the same plane heterogeneous places, some *received* from a tradition and others *produced* by observation", while the itinerary, "presupposing the first category of places and conditioning the second, makes it possible to move from one to another."[6] *Itineraria*, whether in the form of written documents or diagrammatic representations of a route, are important records of signposts, ways of punctuating the route and organizing, marking the space.[7]

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5 The term navigation is used in throughout this discussion to mean: plotting and keeping the course planned throughout the journey (The OED). This meaning of navigation includes using the physical markers on the land as well as larger known or observed reference systems. In this sense, navigation comes closely in meaning to wayfinding. A more detailed discussion of the term is offered in Chapter 9.

6 de Certeau, *The Practice*, p. 121.

7 Itineraries remain important documents of historical information on the physical features of the landscape (natural and constructed). Many medieval maps were constructed based on earlier descriptions of travel whether in text or graphic form (like the *Peutinger Table* referred to below). Descriptions of travel, such as the detailed texts of Herodotus (c. 490 BCE) in Lionel Casson, *Travel in the Ancient World* (Baltimore and London: The Johns Hopkins University Press, 1994), pp. 95-111; Alison M. Devenson in *Small Medieval Towns* notes the importance of itineraries as source material for evidence on the siting of settlements. (upublished Ph.D Thesis, University of Southhampton, 1995), p. 49.

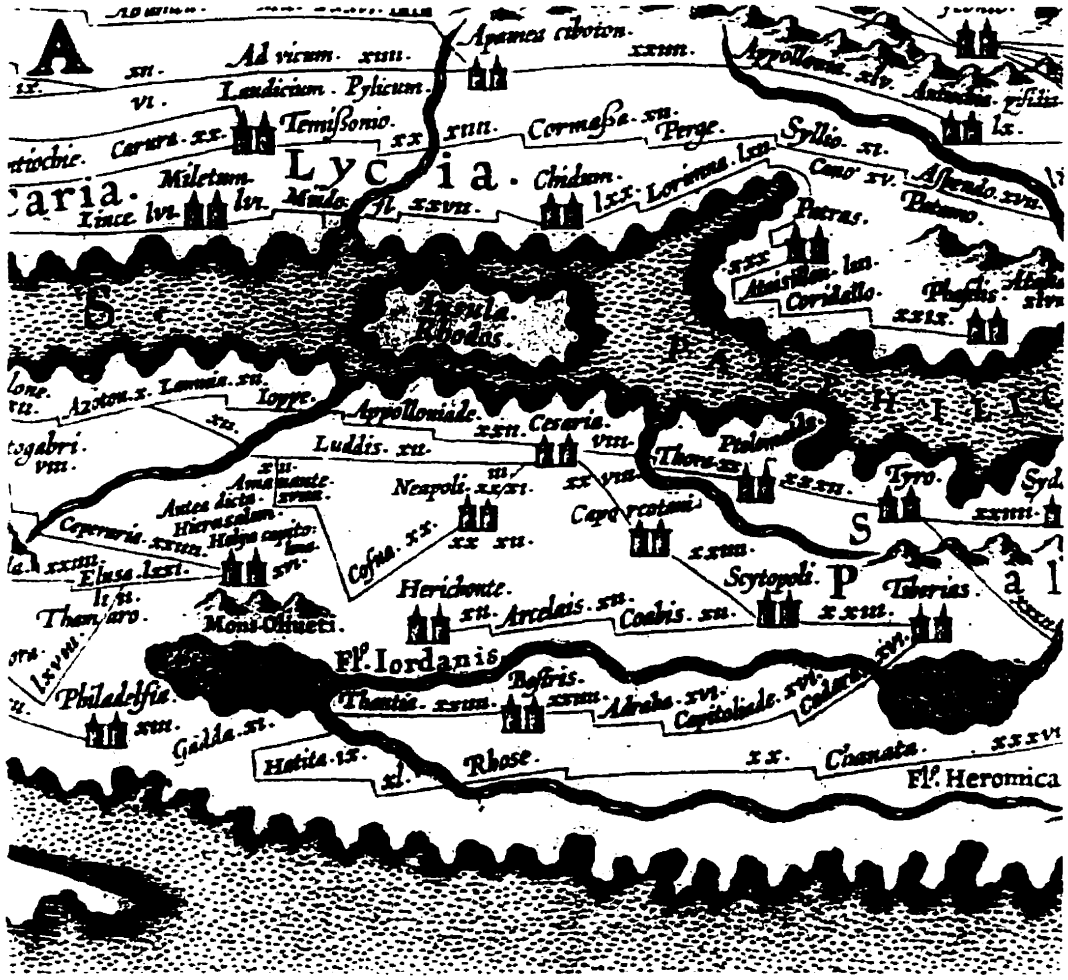

FIGURE 2.i-3: Fragment of *Tabula Itineraria*, a road map of the Roman Empire ca. 450 BC.

The *Tabula Itineraria*, the road map of the Roman Empire could be considered one of the most comprehensive inventories of way-markers and a substantial record of the complexity of the road sign system.[8] Originally compiled to facilitate imperial business, in its later versions it is also said to have probably supplied the needs of the pilgrims to travel through the Holy Land, though the latter function is unclear in so far as one can

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8 The *Itinerarium* is chiefly known as the Peutinger Table in its 1598 copper engraving version, redrawn after the 12th century manuscript recreation of the original. The Peutinger Table (6.82 m long sheets) is housed in the collection of the Royal Library of Vienna. Nebenzahl, *Maps of the Holy Land*, pp. 22-23.

question perhaps the usefulness of the limited number of copies of such *itinerarium* available for the actual purpose of pilgrimage. Still, this document remains an immensely rich record of the historical development of signage. It depicts the expanse of Roman territory from Britain to Ceylon in a diagrammatic form that emphasizes the road network with little regard for scale, compass orientation, or the actual spatial relationships between places (other than linear relationships of distance and sequence). To a modern viewer it is reminiscent of a subway map.

The details are astounding: every milepost and way-station is marked along the route. The *Itinerarium* contains some 3,500 place names, including numerous sacred sites of various religions. Distances between places are denoted, with hierarchies and typologies of all the places along the road clearly marked. Cities and stopping points are labelled with symbols indicating their size. The most important places around which the Empire was structured (the cities of Rome, Constantinopole, and Antioch) are represented by elaborate vignettes, intricately symbolic icons. Some natural features of the landscape are also noted for their importance as orienting devices along the route.[9]

This section examines the road (the archetypal communication route) and its markings (the prototypical signage). Way-markers are shown as an example of the communicative dimension of the built environment most vividly epitomizing the links between place and communication. They mark a peculiar and significant kind of place, a quintessential line of communication. Armand Mattelart emphasizes the importance of roads as structuring networks and infrastructural communication systems, noting their conceptual potential for illuminating the history of systems and theories of

communication. He proposes historical narratives as "an invitation to follow a different itinerary than one marked out by communication in its media modality".[10] Mattelart organizes his reflections around four parallel histories "with their numerous junctions and crossing pathways": the linking of ideas of progress to developments in the technologies of movement; the tracing of the connections between communication links and the idea of the global social bond; the geopolitical implications of communication technologies; and developments in the systems of norms and measures linked to communication technologies.[11]

Mattelart situates "the advent of communication as a project" in seventeenth and eighteenth century France, detailing the development of road and canal networks and their formative importance to the development of new modes of regulation and social organizations.[12] The discussion that follows, though considerably less focused on temporal and geographic boundaries, has the similar aim of positioning communication within the spectrum that, in Mattelart's words, "simultaneously covers avenues of communication, networks of long distance transmission, and means of symbolic exchange". [13]

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9 Landmark features of the terrain like the Mount of Olives, Mt. Sinai, and the "desert where the children of Israel wandered". Nebenzahl, *Maps of the Holy Land*, p. 22.

10 Mattelart, *The Invention of Communication*, p. xiv.

11 Ibid.

12 Mattelart, *The Invention of Communication*, p. 3. Indeed, the development of the road system during the First Empire strove to match the scale and organizational complexity of the Imperial road system of Rome. The system of road markers (columns, '*pyramides*', arches with road names and distances) emulated the Roman system of milestones. See Yves Bonnel, "Bornes et collones indicatives du Premier Empire dans le Departement du Bas-Rhin." *Review d'Alsace (France)*, (110, 1984), pp. 141-154.

13 Mattelart, *The Invention of Communication*, p. xiv.

According to Mattelart, the polysemy of the term communication concerns the notions of community, commerce, propinquity, perpetuity, representation, and display.[14] All of these notions are deeply embedded in the idea of the road as linear space of connection, line of communication, course of progression, and site of commerce and marked importance. We may be, as Edward Casey notes, "beings of the in between, always on the move between places",[15] yet it seems that within these between-places we are not necessarily content with disorienting chaos, or void. Rather, we seem compelled to make each liminal entity into some kind of 'place': either a recognizable place of journeying-between-places, or a portable, mobile (even auto-mobile) 'place'. Thus, whether we are settled, on the move, or simply in repose, we are – in different ways – implaced. This is important to keep in mind as we examine the dynamic dimensions of place and communication.

The road is simultaneously an agent and means of navigation between places; it is a place of connection, a connecting element, and a site for the opportunities that communication entails. It provides an interesting ground for investigation of the relationship between place and communication, and of the mediating dimensions of the environment. The road, both in its 'natural' (incidentally created through repeated passage) and constructed (purposefully built) state, is most revealing of our understanding of the world and place within it, as it is of the many developments in communication modes and technologies. It is also expressive of the polysemic possibilities of the term communication; the very concept of the road as a communication

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[14] Mattelart, *The Invention of Communication*, pp. xiii –xiv. Mattelart points out the semantic dispersal of the term communication noted by Diderot (in his 1753 *Encyclopedie*): "Communication: a term with a great number of meanings".

[15] Casey, *Getting Back into Place*, p. xii.

route can be seen as fusing both meanings of communication, that of transportation (transmission) and that of ritual (sharing, exchange).

The road is also a vivid manifestation of the merged spatial and temporal dimensions of place. Its physical linearity is spatially situated, between here and there, near and far, the place of departure and that of arrival. Its sequential progression implicates temporality, continuity, and movement. And it fuses distance and duration: it has always been described or measured interchangeably in spatial or temporal units (units of distance or time needed for its traversing).[16]

"One of our major ways of getting information is by moving around in the world" note Lakoff and Johnson in their discussion of the importance of metaphors in the conceptual ordering of the world. They point to the persistent use of the metaphor of moving for thinking[17] and that of linear sequences of locations for processes.[18] An argument is often conceptualized as path.[19] The road (and the associated concept of a journey) is a metaphor that underpins major concepts in cosmology; it is a substantial element of the differentiation of the landscape, and a key component of the infrastructure of communication and control. This peculiar place – with its inherent though ambiguous directionality and implied dimensionality, its significance and varied functions, and its ambiguous position between places, landscape and dwelling, between natural and built forms – vividly affirms the multifarious nature of communication in the built

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16 Route length, the distance between places, has been traditionally measured by the time required for passage. This is reflected in the ancient unit of *parasangs* (distance covered in one hour's journey on foot), or in contemporary practice of referring to distance in driving time. The fusion of distance and duration is reflected in the etymology of the word 'journey': distance covered in the course of one day. Casson, *Travel in the Ancient World*; the OED.

17 Lakoff and Johnson. *Philosophy in the Flesh*, p. 236.

18 Ibid., p. 184.

19 Ibid.

environment. The path (trail, route) is an archetypal marker, directional and orienting, both functional and symbolic. And as we will see in the following chapters, wayfinding and trail-marking have been generative processes in the development of the road, as they have been in the development of mapping, although very few arguments in the literature support this claim.[20].

The material presented in this section requires some commentary on the method used for its research. Even a cursory review of the literature reveals a number of methodological difficulties. To begin with, a disciplinary dispersion must be dealt with in order to give the vastly scattered entries some unified treatment. Fragmented threads of the subject are taken up by different disciplines and incorporated into a number of theoretical frameworks and historical narratives. Equally difficult is the long historical axis one must contend with, as examples of way-marking can be drawn from prehistoric to contemporary times, and no substantial historical treatment of the subject has been published to date. Finally, the geographic area is itself foreboding, for similar manifestations of way-markings can be found across the entire geographic field. How can one deal methodologically with these three layers of dispersion? How can we arrive at a simple narrative? My solution adds a forth layer in a form of an organizing framework. This overlay is of a taxonomic nature, a matrix of relations superimposed on the other three fields (disciplinary, geographic, and temporal) which draws out zones of connections and commonalties.

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[20] These sources are discussed in Chapter 5 below: Forbes, Hindly, Adler, Blakemore, *and* Good Morelli. Interesting theoretical developments have emerged from the field of the archaeology of landscape, particularly in the work of Gabriel Cooney, Christopher Tilley, Barbara Bender, David Carmichael, also discussed further below.

Conceptually, this approach is inspired by a number of analyses attempting to deal with "the ambiguous state of the historical semiotic trace, the necessary construction from fragments" and the difficulties with bringing together narratives from a number of different planes (theoretical, cultural, temporal).[21] A number of urban scholars have recounted millennial histories of the city by tracing the changes in specific elements of urban form or patterns, or pausing at the portentous moments that marked them. Lewis Mumford, Arnold Toynbeee and Richard Sennett, for example, used a necessarily selective historical narrative to elucidate a particular relationship between the built environment and human practice. Richard Sennett employs selective sampling and detailed probing of the numerous layers gathered for his inquiry; 'post-holing', as it were, through historical layers at particular places.[22] Sennett's probing is primarily temporal as he examines particular moments in the history of places chosen for significance to his theme.[23] The sample presented in the following chapters was gathered in a different way. To schematize the method, we can draw on the work of Michel Serres, particularly his notion of time as multiple and foldable planes. Serres conceptualizes time as a topological field, and we can schematize the fields of this analysis (disciplinary, temporal, geographic, and taxonomic) in a similar way.[24] Each field is plotted not in a geometric nor linear fashion, but topologically, with peaks and valleys, high places of activity and empty hollows of silence. The points of connection between these layers (places where they come into contact with one another) are thus "polychronic,

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21 From a conversation with David Crowley, December 1999.

22 A good example of this method can be found in Richard Sennett. *Flesh and Stone. The Body and the City in Western Civilization* (New York: W.W. Norton & Company, 1994).

23 Sennett, *Flesh and Stone*, p. 22.

24 Serres. *Hermes*, p. 59.

multitemporal, and ... gathered together with multiple pleats."[25] The narrative proposed below also follows Serres's method, in as much as it "assumes the form of excursion... with necessary pauses at certain crossroads",[26] at certain "points of exchange". [27]

The reasons why Serres' approach is brought into this discussion lies in its encompassing: (a) the idea of the myth understood as the first explanatory principle that weaves the metaphor into the system of knowledge about the world; (b) an epistemology which joins the concepts and territories of science, philosophy, and myth (as in the figure of Hermes, the inventor of language, of measures); (3) the importance of place brought in by the metaphor of Hermes: the protector of boundaries, although constantly on the move, is not disconnected from place, Serres sees him as the "geo-grapher" of space; and (d) the symbolic, mythical importance of the road in Serres's epistemology.

The historic narrative presented here is deliberately selective and provisional. It seeks to disclose "the connectedness of things that seem to have happened: pieced together patternings, after the fact" evoked by Clifford Geertz's reflections on historical analysis and what he has termed the "confusion of histories".[28] It is intended, to use Dripps' words, to be a "seemingly simplistic story",[29] with no ambition to be a comprehensive or continuous account, for that would far exceed the scope of this work.

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[25] Serres actually uses the term "anti-method" for his conceptualization of time. Serres, *Hermes* p. 60.

[26] Harari and Bell in Serres, *Hermes*, p. vii.

[27] Serres, *Hermes*, p. xi. It may be subversive to bring Serres into the discussion of linearity. According to Harari and Bell,"the idea of linear progress and development is fundamentally antithetical to his method of thinking" in Serres, *Hermes*, p. vii. However, with his thought rooted in the idea of journeying, and his alter ego being Hermes, the patron of the road, one can venture to assume that it is chance, rather than simply the non-linearity of connections between the points of passage, that is of importance to Serres.

[28] Clifford Geertz, *After the Fact. Two Countries, Four Decades, One Anthropologist* (Cambridge, Mass.: Harvard University Press, 1995), p. 2.

[29] Dripps, *First Home*. p. ix.

It is not proposed as an exhaustive survey of phenomena, but rather a method for contextualizing the subject's complexity through the patternings of time, space and discourse. Again, we can bring forth Geertz's words on the possibility of adequate treatment of the past:

> One works *ad hoc*, and *ad interim*, piecing together thousand-year histories...[which] must to some extent be soldered into the final construction. So must geography, trade, art, and technology. The result inevitably, is unsatisfactory, lumbering, shaky, and badly formed: a grand contraption.[30]

While this work is not the "grand contraption" formed by more comprehensive analysis, there is much to be learned from constructing "contraptions" as such, particularly for newly emerging fields of knowledge. Examination of past spatial practices and concepts related to environmentally contextualized communication allows us to put in perspective some of the confinements of modern thinking, particularly its detachment of knowledge from place and materiality. Paradoxically, if we are to examine the converging, multimodal tendencies of the new environments of communication, we may be wise to look back at the multidimensionality of historical precedents. The idea of a convergence of communication modalities has strong historical roots and can be thought of as 'emergent' only when examined within the modern specialized mindset trained to detach and fragment. The discussion offered in this section is intended to demonstrate that it is often through the probing of past knowledge, and the questioning of the normalized, that we can gain insight into new developments. The concepts of roads, networks, and communication "were not always perceived as utilitarian in our present-day sense" as noted earlier. [31] Much can be learned about the multidimensionality of contemporary developments through consideration of their layered etymologies and

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[30] Geertz, *After the Fact*, p. 20.

[31] Charles D. Trombold, *Ancient Road Networks and Settlements Hierarchies in the New World* (Cambridge and New York: Cambridge University Press, 1991), p. 7.

conceptual significance, together with their materiality and multiple functionality. New research in the archaeology of landscape points to some fruitful directions in this regard.[32]

One of the concepts that is normalized as limiting, and considered passé within the contemporary discourse, is the notion of linearity. Yet, no understanding exists without some linear progression 'from ... to'. The idea that linearity is confining seems related to the modern scientific understanding that the line is necessarily set within Euclidean geometry and must mean the "shortest distance between two points". Linearity is about progression, thus offering interesting conceptual possibilities for communication. The notion underlays the very concept of development, in communication for example, from the wheel, through print, to telecommunications. No network exists without linear connection, no knowledge exists without its presence. The idea of an itinerary points to the potential of linear concepts in revealing aspects of knowledge that may be obscured by concepts that are non-linear, spatially relational. [33]

The following discussion of way markers is thus intended to highlight the multifarious nature of prototypical signage; to probe the complexity of the various overlapping functions of path-markers, and of the communication within, and by way of, the built environment. It is meant to examine how both the functional and symbolic aspects of place markers have been expressive of the significance of place itself, of its orienting power. What follows, then, is simultaneously a story of travel and of dwelling;[34] of transportation and ritual; of movement and permanence of broadcast. It is a story of

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32 A number of sources are discussed in chapters 5 and 6 below.

33 The term 'line' does not have to carry the connotation of 'straight', though the English language conflates both meanings. Other languages, like Polish for example, may distinguish between *linia* (a line) and *prosta* (an abstract straight line defined as the shortest distance between two points). While *linia*, is a trace that can take different shapes and thickness, *prosta* is an abstract concept that has no spatial dimensions or presence. See the OED; Aleksander Brückner. *Słownik etymologiczny języka polskiego.* (Warszawa: Wiedza Powszechna, 1989).

34 See Casey's discussion of two ways to dwell and the notion of dwelling as wandering. Casey. *Getting Back into Place*, p. 114-116.

wayfinding. The road sign, signpost, it emerges, has been a short-hand for the multitude of articulations of orientation, placement, locality, identity, direction, all entangled with commerce and advertising, religion and ideology, tourism and travel, and superimposed on the multitudinous hierarchies and priorities of communication technologies at their various stages of development. Necessarily complex, it can also be simplified to a story of wayfinding markers placed upon the landscape. And as de Certeau claims, "Every story is a travel story – a spatial practice." [35]

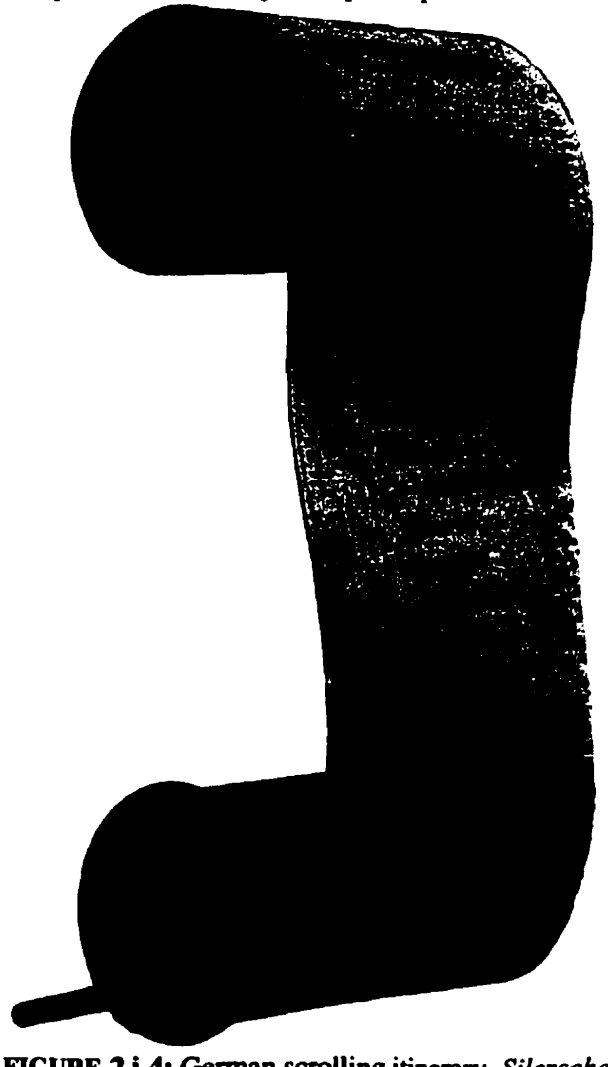

FIGURE 2.i-4: German scrolling itinerary, *Silerschen Itinerarrolle*, of trade routes, 1520. Portable itinerary over 238 cm long and only 6cm wide, written on wax paper. It listed routes in a number of stretches: "from Frankfurt to Nürnberg", or as shown, "from Leon to Antdorff" (Lyon-Antwerp).

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[35] de Certeau, *The Practice of Everyday Life*, p. 115.

This Part consists of four chapters. With its focus on the linear place, the road, it is intended to bring the dynamic perception of space to the fore.[36] Chapter 5 discusses the road as an important cosmological concept with a strong presence in mythology and religion; as a powerful metaphor that to this day carries symbolic richness and meaning. The road remains a place of importance where rituals of procession are enacted and the meaning of continuity and linear progression is manifest (with ceremonial routes, ancient sacred trails connecting sites of cult and religious festivals, enduring in their old forms and in their modern equivalents). The road signifies a place of passage and a link between places. It is a place of connection: a link for trade, communication, exchanges through trade-routes or communication networks. The road also functions as an important element of the infrastructure of control, with territorial measurement, surveying and marking ensuring command and imposing order. It is a differentiating element of the landscape, and a directional and orienting sign, a landmark. The road itself can serve as a boundary, can trace out and delimit the territory. The road delineates sacred ground, gives shape and meaning to important real estate, creates places of significance. The side of the road is also a place of high visibility to passing traffic, a fitting place for advertising, and for commemorating fallen heroes and great deeds, a worthy place indeed for communicating with gods, ancestors, and contemporaries.

. Chapter 6 focuses on the complexity of the links between the marking of a landscape and the very concept and history of the road. Explicating these links is important to the understanding of communication within the environment. Marking is discussed here as the differentiation of the surroundings; the process necessary for understanding and organising environmental information, for wayfinding, orientation,

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[36] See a discussion of the linear (dynamic) perception of space in nomadic cultures, as opposed to the static, or radial perception of space found in the cultures of settled peoples. O.V. Ovsyannikov and N. M. Terebikhin, "Sacred space in the culture of the Arctic regions," p. 48, in David L. Carmichael *et al, Sacred Sites. Sacred Places* (London and New York: Routledge, 1994), pp. 44-81.

and navigation. The road sign, an archetypal element of place marking (and place-making), thus differentiates, identifies, points, makes discernible and familiar. As an example of signage, the way-marker is therefore particularly rich in its multi-dimensionality: it combines directional, informational, symbolic, and technological aspects in one form of artifact (as well as in one symbol, one metaphor).

Chapter 7 presents a story of the way-marker revealed through several vignettes, each representing a particular type of marking; each characteristic of some generalizable process or historical force and human purpose. A provisional typological matrix organises examples of way-marking into groups according to their relationship to place. A focus on the different relationships between markers and their sites allows us to by-pass the functional groupings of signposts needed to bring into one narrative a wide range of manifestations: sites of cult, infrastructural elements, boundary markers, orienting landmarks, directional signs, signs of warning and prohibition, and advertising and identity signs. The simplified typological triad used here is related to the functions of the road, but its focus on place brings about a broader, less instrumental and utilitarian perspective that may be used to extend discussions previously limited by disciplinary fragmentation and the scientific orientation of modern approaches to the environment and related knowledge and discourse

Chapter 8, which concludes this section, offers a discussion of the relationship between specificity of place and the communicative dimensions of the environment, between informational environments and way-markers. The idea of implaced communication is brought back into focus and the linkages between physical environments and their interfacing layers of messages are highlighted. This chapter also suggests a provisional framework for examining the interplay between navigational modes and their manifestations, communication technologies, and the physical place.

CHAPTER 5

The Road and Its Marking.

FIGURE 2.5-1: a path as a visible marker in the landscape of natural landmarks.

> Road: a strip of ground over which one walks.... A road is a tribute to space. Every stretch of road has meaning in itself...[1]

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[1] Milan Kundera, *Immortality* (New York: Grove Weidenfeld, 1990), p. 223. In this novel Kundera offers an interesting insight into the different spatial meanings of a road and a highway. He further probes the relationship between space, road, technology, and body through examining the notion of speed in the later novel, *Slowness*.

Where and when does the history of the way marker begin? One would assume that examination of the origins of the road itself may reveal some clues. There seems, however, to be little agreement on what is considered the first road. Is it the prehistoric metalled track? The "corduroy" track with its log or twig surface? The chiselled groove or stone pavement that marks the beginning of this built form? A considerable body of literature deals with the history of road-building, travel, and transportation, yet few sources explore the genesis of the road.[2] Many seem to pick up the thread of the historical narrative when the road had already been traced, blazed, or surfaced, when it had been markedly differentiated from the surrounding landscape. Some sources elide the earliest developments with a general acknowledgement, "the [first] 'roads' traced the wanderings of early tribes", and consider the road simply as "a [two-way] route of overland communication between established communities".[3] Within such a definition, the trails of the First Peoples of the North American continent, the stone paths of the Colombian Kogis (path dwellers),[4] or any processional route and sacred trail would be excluded from investigation. Some historians begin their narrative with the appearance of the vehicle for, as Lionel Casson notes in his study of travel in the ancient world, "A

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2 Some of the important sources: R. J. Forbes, *Notes on the History of Ancient Roads and Their Construction* (Amsterdam: Adolf M. Hakkert,1964); Hermann Schreiber, *The History of Roads. From Amber Route to Motorway* (London: Barrie and Rockliff,1961); Geoffrey Hindly, *A History of Roads* (London: P. Davies, 1971); Hans Hitzer, *Die Straße: vom Trampelpfad zur Autobahn* (München: GDW Callwey, 1971); M. G. Lay, *Ways of the World. A History of the World's Roads and the Vehicles that Used Them* (New Brunswick, N.J.: Rudgers University Press, 1992); and Trombold, *Ancient Road Networks*. Some of these historical accounts, Schreiber, Forbes, and Hitzer, for example, and Adler in his seminal work in history of cartography, each within his sphere of interest, explored the genealogy of the road.

3 Hindly, *A History of Roads*, p. 1.

4 Ricardo L. Castro, "Sounding the Path: Dwelling and Dreaming" in *CHORA: Intervals in the Philosophy of Architecture 3*, Alberto Pérez-Gómez and Stephen Parcell, eds. (Montreal & Kingston: McGill-Queen's University Press, 1999), pp. 26-44.

walker or animal needs only a track. A vehicle needs a road."[5] Charles D. Trombold, in an essay on the history of road networks notes that "roads prior to the vehicle [are] considered of little significance, or curiosities at best".[6] This comment is related to the pre-Columbian tracks of the New World, but it also sheds some light on the neglected narrative of the ancient roads of the Old World. Since histories of technology and transportation have placed emphasis largely on the development of the wheel and vehicle, the very idea of the road would often be associated with wheeled traffic and its significance, with the progression of technological development.[7] The historical narrative that leads us from this point on through the development of the various road building techniques and road uses is indeed fascinating, but can we say with certainty that the earlier developments were not related in any causal way to what followed them?

Another difficulty, of course, comes from the fact that little physical evidence remains of roads that were informal, constructed with less permanent materials, or with elements that later historians and archaeologists did not necessary recognise as part of the road structure.[8] Indeed, the "question is raised whether simple route markings such as

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5 The contemporary meaning of the term 'road', particularly in transportation related literature, carries a connotation of the vehicle-road. This may partially stem from the English etymology of the word linked to horse riding and thus differentiated from a 'path' used for traffic on foot, a point discussed further in this chapter. The importance of the difference in meanings between 'road' and 'route' (and consequently a 'path') in different disciplinary literature was brought to my attention by Ron Rice. Casson after making this distinction, however, carefully attends to the history of ancient travel on foot, its dangers, amenities provided along the road, and historical accounts of road conditions and various reasons for travel. In his narrative, he does not come back to the originally stated distinction and he uses the word 'road' in relation to wayfaring. Casson, *Travel in the Ancient World*, p. 25.

6 Trombold, *Ancient Road Networks*, p. 2.

7 Ibid.

8 The scarcity of physical evidence remains a chief challenge for reconstructing a historical narrative of the road and its markings. The physical evidence has been mostly obscured or destroyed by numerous layers of development that often retraced the same roads. For a discussion of how the increasing girth of the roads damaged the wayside hospices and related architectural structures see Laura Good Morelli, *Medieval Pilgrims' Hospices on the Road to Santiago de*

stakes or cairns constitute a path or a road".[9] Is a trail in the forest which obviously involved clearing of foliage to be considered evidence of road construction? Questions that are probed by archaeologists involved with the study of pre-Columbian routes in the New World and the field of landscape archaeology [10] may be useful in the tracing of the early history of Old World roads. Of particular importance is the inclusion of the cognitive and symbolic aspect of routes, although they are the most elusive to investigate, and the emphasis on the idea that "roads were not always perceived as utilitarian in our present-day sense".[11]

This chapter explores the genesis of the road. Its aim, however, is not to fill the gaps in the history of this built form, but to discover how way-marking came about and how it relates to the meaning and historical development of communication routes (the archetypal "lines of communication"). In this regard, we can consider the 1934 study published by the Archaeologisch-Historisch Instituut of the University of Amsterdam a true landmark.[12] R. J. Forbes's history of roads continues to be regarded as a particularly

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Compostela. (unpublished Ph. D Thesis, Yale University, 1998), "Considering how dramatically the automobile has transformed the topography of Europe, the fact that any of the roadside hospices survived... seem nothing less than miraculous." p. 26.

9 Trombold, *Ancient Road Networks*, p. 3.

10 Landscape archeology is the study of civilization's imprint on the natural terrain. "Its basic premise is that the cultural landscape reflects the interplay between technology, environment, social structure, and the values of the society that shaped it." The cultural landscape forming the terrain of inquiry include roads, agricultural terraces, hydraulic works, field systems, and settlement patterns. The field has developed steadily since the advancements in aerial photography. Trombold, *Ancient Road Networks*, p. 1. In the 1990s the focus of research within landscape archaeology shifted considerably to more detailed studies of human imprints on the landscape, see particularly Christopher Tilley, *A Phenomenology of Landscape. Places, Paths and Monuments* (Oxford/Providence: Berg, 1994); Peter Ucko and Robert Layton, eds. *The Archaeology and Anthropology of Landscape. Shaping Your Landscape* (London: Routledge, 1999).

11 Trombold, *Ancient Road Networks*, p. 7.

12 From this study, *Notes on the history*, authored by a chemist of the Laboratory of the Bataafsche Petroleum Maatschappij in Amsterdam, R. J. Forbes, one would expect a focus on the technical aspects of the roads and materials used for their construction. Yet, this work republished

significant contribution to the understanding of the beginnings of the road (and of the road sign, though this has largely passed unnoticed). Forbes, in his survey of road-building techniques, contrasts the "wild animal path" theory often put forth to explain the genesis of human road-making[13] with the somewhat startling consideration that the road sign or landmark should be seen as "the primary cause of the development of paths or roads".[14] While some other authors mention the importance of trail-marking to the beginning of road construction,[15] Forbes is consistent in tracing the development of road markers and their importance to the history of the road itself. While his thesis finds little support in the literature, it may be a key to the understanding of the origins of the road as built form, and as communication route. It focuses on practices prior to the establishment of the road; on the path as a differentiating element of the landscape. The idea of the road, thousands of years in the making, has become normalised and rationalised, particularly in the last two centuries and it may seem counter-intuitive not to think of the road as a causal, generative element in other major developments (particularly the ostensibly subservient manifestations that comprise road-markings).

In tracing origins it is always useful to pause at the etymology of words related to the particular phenomenon, especially when attempting to fill lacunae of knowledge in the face of a paucity of surviving physical evidence. Indeed, as Barthes believed,[16] language permeates everything, though it is the interconnections of the various modalities

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by the Instituut in an unrevised edition thirty years later shows the author's appreciation of numerous conceptual, not only technical, developments in the history of the road.

13 Note continuing research in human geography and environmental psychology into parallels between 'conceptual mapping' and wayfinding behaviour in humans and animals. See Golledge, *Wayfinding Behavior*.

14 Forbes, *Notes on the history*, p. 8.

15 Hindly, *A History of Roads*.

16 This point was discussed in chapter 2, above.

and manifestations of human communication within a larger matrix of linkages and meanings that provides important clues to understanding. As discussed earlier, the modelling of one communication modality after another or discussion of their hierarchies (and one's primacy over another) is of limited value here. Most often developments in language, social practice and built environments act as mirrors for one another, and repositories of historical traces. In a subject challenged by a considerable scarcity of remaining physical evidence, any historical trace is of import. And language itself carries much evidence fossilised in the roots of words, place-names and metaphors.[17]

The etymology of the word 'road' is most revealing of both the communicative and identifying dimensions of the concept. In the Sumerian language (2600 BCE) the word-symbol for 'road' resembles a crossing of two paths. It represents a point of connection, a crossroad, an intersection.[18]

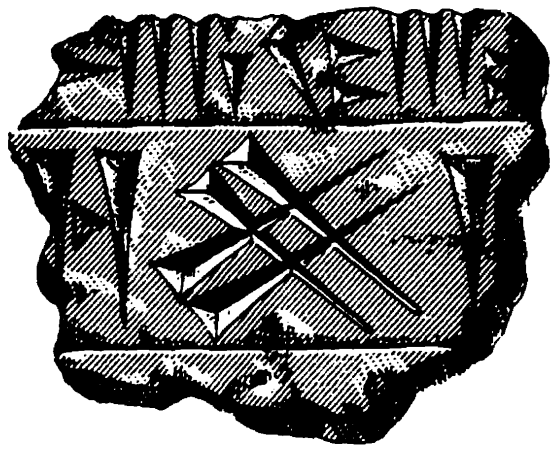

FIGURE 2.5-2: Sumerian glyph for 'road'

Similarly, the Egyptian hieroglyph indicates that 'road' was seen as a connecting element. In this case it is not a singular point where paths cross, but a path of junctures

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[17] For a discussion of relationship between place-names and ancient road functions and way stations see Casson, *Travel in the Ancient World*, p. 201.

[18] Hitzer, *Die Straße*, p. 10.

themselves, what seems like a collecting place for a number of streams feeding into its main course.[19] Hitzer suggests that this sign may be a kind of cartographic symbol for a straight road with trees growing on both sides. One can speculate, however, that the symbol was related to the defining role of the river in the conceptualization of travel and communication in Egypt.[20] Still, the idea of the road is pictured as a place of connection, a spatially defined locale, rather than simply a linking element or a channel (a simple line, for example).

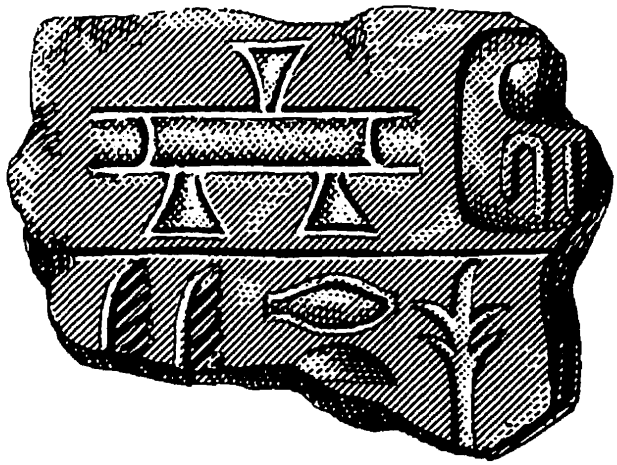

FIGURE 2.5-3: Egyptian hieroglyph representing 'road'.

The Greek roots of the term reveal the communicative aspect of the concept in a different way. It has been suggested that since all Greek words associated with the road have feminine roots, they imply a link with the idea of the first road as groove, furrow, depression in which the wheel was lodged.[21] The Greeks also speak of 'cutting' a road, as a pair of chiselled wheel tracks with no constructed surface between them was

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19 Hitzer, *Die Straße*, p. 21.

20 This is not to challenge Hitzer's interpretations; even if the symbols represent trees along the road, that the word for the road encompasses the wayside is still very interesting for this discussion.

21 Schreiber, *The History of Roads*.

considered more practical and efficient than a surface of fully constructed road.[22] So it is a trace, groove, an elongated mark and not a paved surface superimposed onto the landscape that forms the roots of the Greek concept. It is possible to speculate then that the first road constituted a marking of the surface of the landscape.

The links of the root of the word 'road' to 'marking' are strong in many languages. 'Road' originates from 'tract', and 'tracing': marks, grooves in the terrain, whether purposely made or existent and recognisable depressions in the landscape. Traces of both meanings are manifest in the Slavic languages, for example. The Polish *droga* (or Slavic *droha)* comes from *slad*, *rysa*, *bruzda* , meaning groove, elongated mark, or etched-like line, a trace made in the ground (in grass, sand, etc.). The Serb *draga*, is etymologically related to 'valley', Slovak *draga* - to 'a ditch'. This would likely reflect the nature of many natural routes, where landforms themselves marked the route-ways: river beds, valleys, passages.[23]

The English *road* has a different trajectory. Its first uses (going back to the late 800 CE) are related to a journey on horseback. Only in the late 1500s would the word begin to be used in the sense of 'way', or 'course taken'.[24] This may account for the later differentiation between the road as an intentionally constructed way for vehicles, and the path as an informal way formed incidentally by passage. The word path (in a sense of a trodden way) has existed in the English language since c. 700 CE. According to the Oxford English Dictionary the earlier Scottish word *rod* (path) is connected neither to the English 'road' nor to the Old English, Anglo-Saxon *rad* (as in *hweolrad*, a wheel track,

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22 Ibid.

23 Brückner. *Słownik etymologiczny.*

24 The OED.

or *streamrad*, the course of a stream). There is apparently "no evidence that it had any influence upon the history of the English word".[25] Certainly, hard evidence of language influences are not easily obtainable. The tracing of 'road' back to 'riding on horseback' does not necessarily account for its continuing figurative usage as "any way, path or course" (for example, in a way, a direction taken, a course followed in a journey or to some end). One can suspect that the old Scottish *rad* crossed paths with the English *rode* at some point, at least on a conceptual terrain.

Indeed, links between the words 'path' and 'road' are strong and can be traced in many languages. In Northumbrian the word *peth* was used to mean the Latin *vallis* (*vale*, *dene*) and abyss, gap; hence, in the northern dialect it was retained as a hollow or deep cutting in a road.[26] *Sciezka*, path in Polish, comes from the old-Slavic word *stig*, related to the German *steigen*, and the Greek *steicho* (to tread, to pace, to stride) and *stoichos* (a row), as well as the Old German *Steg*, and the Goth *staiga* (a road). The word 'path' has a number of important connotations. It implies a course, a line along which a moving body travels, and can indicate both the made or marked way as well as the imaginary line, the continuous mapping of an object (or a real integral in mathematics) in a space. It also implies the more general and figurative meanings of line of conduct, way of behaviour, and a conduit of transmission (as in neoropathways). The connotation of a body moving along a set course is visible in the word's roots in the Romance languages: *chemin*, *cammino*, from *camminare* (to stroll).

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25 The OED.

26 Ibid. It is also interesting to look at some derivative words that also attest to strong linkages of both 'road' and 'path' with other spatial concepts: *drożny* (an adjective form of *droga*, a road) in Polish means 'open to passage','clear', and an older word *oscież* (with roots in the word path, *ścieżka*) means "farther away" and is used with a connotation of an opening into something that lies beyond. Brückner, *Słownik etymologiczny*.

The OED links the word 'path' with its Greek root, meaning "trodden or beaten way", a track formed incidentally by passage between places, rather than purposefully constructed to accommodate traffic. It is thus a foot-way, not a road for vehicles.[27] It is likely that the differentiation between the words 'road' and 'path' made in contemporary English scholarship (landscape archaeology, transportation history) is pronounced in some languages and opaque in others. The association of 'road' strictly with route for vehicles, may be relatively modern and not necessarily reflective of its generative meanings. This is important to keep in mind for historical investigations as it explains certain preoccupations with types of roads and their selective histories (those of roads related to wheeled traffic only, for example).[28] Some threads noted in the OED point even further into the entanglement of these words, not easily separated by contemporary definitions. The word path is after all used in the sense of "a track specially constructed for some part of machinery to run upon". This relates not merely to surface preparation and the practice of its non-incidental construction, but more specifically to the shape of the track: a groove, a hollowed line. In this context, the sophisticated Sacred Trail in Babylon constructed purposefully for the vehicle that carried the chariot of the great lord Marduk,[29] would be considered a 'path': a carefully constructed groove for the smooth running of sacred machinery.

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[27] The OED.

[28] Note several discussions on the history of pre-Columbian tracks and landscape archeology: Trombold, *Ancient Road Networks*, pp. 1, 29.

[29] The Sacred Trail along which the festive chariot of the god Marduk rolled was a particularly splendid example of a processional route. Built by the greatest ruler of Asia Minor. Nebuchadnezzar II (605-565 BCE) from the Gate of Ishtar to the High Temple of Babylon near Etemenanki, fringed by two rows of lions in relief, approx. 20 yards wide with a smooth median in the centre paved with flagstones with specially constructed grooves for the chariot's wheels. Schreiber, *The History of Roads*, p. 102.

Another associated term, 'street' (a paved way that has evolved to mean an urban road) is also worth mentioning because of its interconnections with the word road. The German word *Straße* is the same for 'road' and 'street'. It stems from the late Latin *strata*, used later as *via strata*, paved road. However, the reference to surface is not consistent across languages; in some it is, rather, the way the road relates to landscape that is of significance. The root of the Polish 'street' *(ulica)* connotes a more spatially bounded term, coming from both 'gate' and 'ravine'.[30] Indeed, in the early days of travel, valleys, ravines, and mountain passes (called 'gates', *bramy*, in the Polish) formed and bounded the first roads. The first roads traced out the typographic features of the landscape, following river banks, valleys, ridges, and highlands between water sheds.[31] The road, then, is simultaneously a trace within the landscape made by human action, and a specific locale; a place of significance. It is where communication "takes place": simultaneously a connecting "where" and the "where" of connection.

Historically, the idea of the road is intricately joined to the conceptualisation of the world that each civilisation held and expressed through its ideas of place, types of settlements and changing understandings of the human position within the cosmos. The concept of the road is embodied in the understanding of place, and in its spatial and temporal order. To paraphrase the words of J. B. Harley, intended for maps, the road is

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[30] Brückner, *Slownik etymologiczny*.

[31] Trombold, *Ancient Road Networks*; Gabriel Cooney, "Social Landscape in Irish Prehistory" in Ucko and Layton, *The Archaeology and Anthropology of Landscape*, pp. 46-64; Zofia Hołub-Pacewiczowa, "Oblicze ziemi polskiej" in Henryk Paszkiewicz, ed. *Polska i jej dorobek dziejowy w ciągu tysiąca lat istnienia* (Londyn: Księgarnia Polska Polonia, 1956), pp. 7-26; Schreiber, *The History of the Road*. Later, the term developed to mean a road within a settlement (in a town or a village) and, in a more contemporary meaning, a road together with the adjacent houses. See the OED.

the visual embodiment of various conceptions of place.[32] The essence of the road itself is understood and perceived in dramatically different ways in different types of societies (a nomadic contrasted with a settled society, for example), in different types of travel (migration or pilgrimage), in different relations to dwelling (homecoming and homesteading).[33] The word may have developed differently in various linguistic cultures; different belief systems have infused its meaning with distinct symbolism. Still, the road is an ever-present and immensely significant force in most cosmologies, in most religions and myths.

Lakoff and Johnson demonstrate the importance of the concept of path. They discuss how existence is manifest in language in the form of a location metaphor and how time is conceptualised most often as a sequence of locations in space, typically in the metaphor of the moving observer.[34] They also explain how the idea of process is conceptualised as movement through a linear sequence of locations.[35] The metaphor of a journey along a path pervades most concepts of the world, of human life and its purpose, with the journey typically thought of as punctuated by way-stations, decision points along the route before the final (or an interim) destination can be reached.[36] In many religions, the human place within the cosmos is seen as a transitional moment of travel within a larger network of destinies and powers; human life is envisioned as a stop-over (of varying significance) on the road to spiritual salvation and some final, or just other,

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32 J. B. Harley, "The Map and the Development of History of Cartography" in Harley and Woodward, *History of Cartography Volume 1*.

33 For an extensive discussion of two notions of dwelling and their relationship to movement and place see Casey, *Spirit and Soul* and *Getting Back into Place*, pp. 109-145.

34 For metaphors of time, see Lakoff and Johnson, *Philosophy in the Flesh*, p. 159. For the discussion of the existence and location metaphor, see p. 205.

35 Ibid., p. 184.

36 Lakoff and Johnson, *Philosophy in the Flesh*, p.193.

destination. This particular leg of a larger journey, life on earth, is navigated through a distinct system of markers and passages, with rituals usually framing and designating distinct biological and spiritual events. Passages are marked differently, and there are different rules of the road and rights of way; still the metaphor of travel along a road (with its crossroads, obstacles, dangers and temptations) underpins most cosmologies.

Ricardo Castro proposes in his essay on Colombian path dwellers that "[f]ollowing a path means following an already established order, or at least acknowledging such an order – hence, the importance of the path as an agent in certain myths." [37] The idea of procession, of a road, of movement along a path appears pervasively in the customs of many societies, whether modern or pre-modern, across the entire geographical field and linguistic spectrum. In contemporary cultures (whether urban or rural), processions and parades continue to play an important role in public life; they form elements of civic holidays and cultural festivals, political demonstrations and religious processions.[38] Whether festive or activist in character, the carrying of messages along the road, or conversely, their display from the sidewalk to passing traffic, is a time-proven method for making presence visible.

Reaching back into history and mythology, we can trace some of the aspects of the road and its prominence in cosmology. Greek mythology provides numerous examples of the road's importance, both as connecting path and place of important events. In the

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[37] Castro, "Sounding the Path", p. 26.

[38] An interesting discussion of urban parades could be found in Henkin, "Words on the Streets" *City Reading*, pp. 69-100. Henkin's historical look at antebellum New York links parades with the display of words (signs) in public. Similar linkages can be found in the discussion of Irish murals, urban signs and parades in contemporary Dublin, Neil Jarman, "Intersecting Dublin" in Barbara Bender, ed. *Landscape: Politics and Perspectives* (Providence/Oxford: Berg, 1993), pp. 107-138.

ancient world, however, the road was not a simple metaphor for life as a journey. The road itself was sacred.[39] To the Greeks, the power to blaze a new trail was attributed to the gods; the gods themselves had once walked the roads.[40] The sacred nature of the road was manifest in its view as a line of communication that carried messages of destiny; communication between the human and the divine presence, between the present, the past and the future (a connection with the ancestors, with the Underworld).

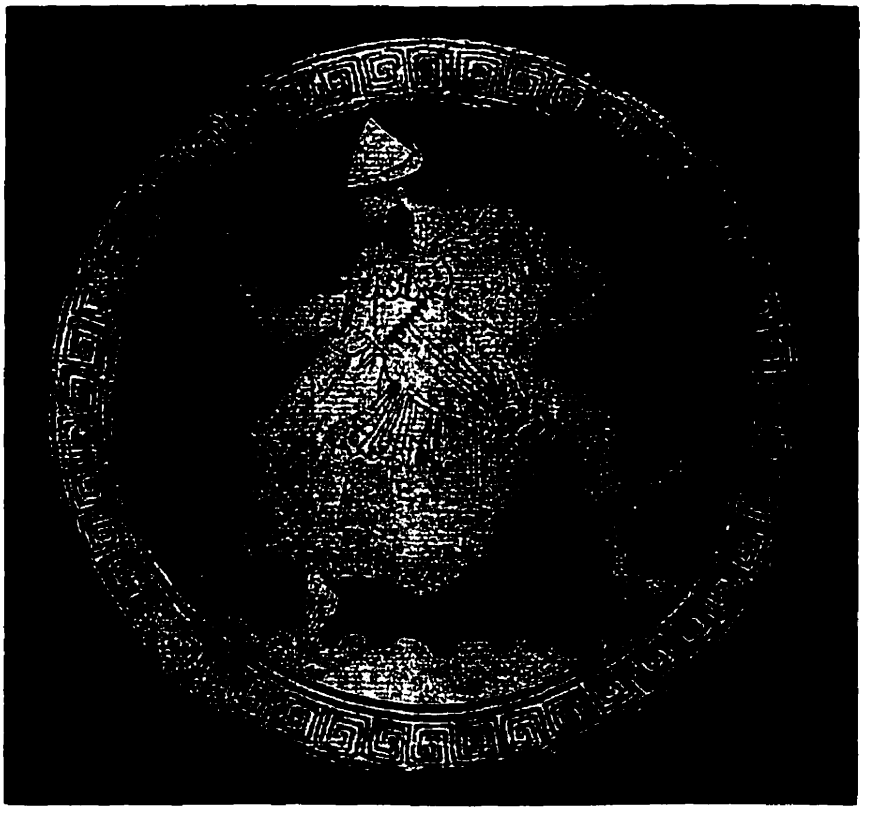

FIGURE 2.5-4: Hermes, the messenger of the gods, the guide of souls, protector of the roads and travellers, patron of thieves, merchants and oracles.

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[39] The sacred nature of the route is revealed in pilgrimages, processions, and perhaps most powerfully in cultures of path dwellers, like the Columbian Kogi described by Castro in "Sounding the Path" pp. 28-35

[40] According to legend, Dionysus linked most remote countries of the orient with the west and bridged dividing streams; Apollo had wandered around playing his lute along the ancient ceremonial road from Delphi to Krissa, a sacred road. Delphi, the center of his worship, was not his original home, but rather a destination of his travels. For a further elaboration of the sacred aspects of the road see Schreiber, *The History of Roads*, pp. 97-113; for a discussion on links between travel and religious festivals see Casson, *Travel in the Ancient World*, pp. 77-84.

The figure of the god Hermes embodies the complexity of the sacred nature of the road; this messenger of the gods and guide of souls to the Underworld was also believed to protect the traveller, ensuring the right choices at crossroads and finding the way.[41] The theme of travel, of journey as a metaphor for life, has a strong presence in ritual, literature and visual art throughout the ages. In Greek art the theme of the journey is often represented by the figure of Hermes who accompanies various gods in their travels, leads them to destinations, carries messages between them, finds those who are lost, and guides souls to the Underworld. He is featured with attributes symbolising travel and communication: his bifurcated stuff, *caduceus*, a heraldic attribute, symbol of peace and safety on the road;[42] winged sandals symbolising speed and transcendence; and the triangular hat of the traveller. The attributes of Hermes continue to re-appear throughout Western culture, signifying the making of connections, travelling, pilgrimage, speed, finding, and searching.[43] And the very name of Hermes, and the Roman Mercury, came to symbolise speed, movement, travel, and communication.[44]

We have seen that the idea of the crossroad was embedded in the Sumerian word-symbol for road. Crossroads and passing points on roads have always carried a particular significance. This importance is manifest in physical artefacts and mythology.[45]

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41 See Kerényi, *Hermes. The Guide of Souls*, p. 83; Harris, *The Origin of the Cult of Hermes.*

42 Among ancient Greeks and Romans, *caduceus* (Greek *kerykeikon*) was regarded as a badge of heralds and ambassadors, signifying their inviolability. Originally, it was represented as a bifurcated branch decorated with ribbons and garlands. See Kerényi, *The Guide of Souls*, p. 77.

43 Saint James of Santiago de Compostala is often depicted wearing a three-cornered pilgrim's hat, similar to the hat of Hermes. Nancy Louise Frey, *Pilgrim Stories: On and Off the Road to Santiago* (Berkeley: University of California Press, 1998), p. 11.

44 Serres believes that Hermes personifies communication. Serres, *Hermes*, p.xxxv An insightful and amusing discussion of the contemporary metaphoric uses of Hermes can be found in Stan Nadolny's novel *The God of Impertinence* (New York: Viking, 1997).

45 For discussions of the manifestations of the importance of crossroads and places of transition see: in neolithic Ireland, Gabriel Cooney, "Sacred and secular neolithic landscapes in Ireland"

Crossroads and passing points were of special significance in Greek mythology. Oedipus kills his father in a road-rage at a passing point. On the ancient roads, passing points were not frequent, serious negotiations were necessitated when two vehicles (or travellers) met on a single-track.[46] Passing points were thus obvious sites of conflict. Crossroads are quintessential sites of decision-making, signifying competing forces, possibilities of different outcomes, chance. The element of chance is connected to the conceptualisation of road in other ways as well. Travel has always been associated with danger, for unforeseen forces could be encountered on the way. Numerous literary works describe the trials, temptations, choices and encounters "along the road". Life's journey is not typically portrayed as an uninterrupted flight; it is normally a passage punctuated with way-stations and places of conflict and decisions: Homer's *Odyssey*, Dante's *Inferno*, Cervantes' *Don Quixote*.

In the fifteenth century, Ages, Hieronymus Bosch powerfully expressed the idea of journey, of travel on the road of life. In his *Path of Life* (the image framing his 1484 panel *The Hay Wain)* [47] travel forms the work's central subject. Many other paintings depict the rich details of travel in their background scenes.

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pp.32-43; the Arctic regions in the culture of Nenets - O.V. Ovsyannikov and M. Terebikhin, "Sacred space in the culture of the Arctic regions," pp. 44-81; contemporary Saami (Lapp) - Inga-Maria Mulk, "Sacrificial places and their meaning in Saami society," pp. 121-131; Wintu tradition of Northern California Dorothea J. Theodoratus & Frank LaPena, "Wintu sacred geography of Northern California," pp. 20-31; Old Slavic and contemporary Polish Catholic tradition - Katarzyna Marciniak, "The perception and treatment of prehistoric and contemporary places and sites in Poland," pp. 140-151. All in Carmichael, *Sacred Sites, Sacred Places*.

[46] There were of course practical considerations; one needed to remove a vehicle from the grooves and place it back after giving the right of way, obviously not an easy task. Casson, *Travel in the Ancient World*, pp. 70-71.

[47] Franco de Poli, *Bosch*. (Warszawa: Krajowa Agencja Wydawnicza, 1987), p. 45.

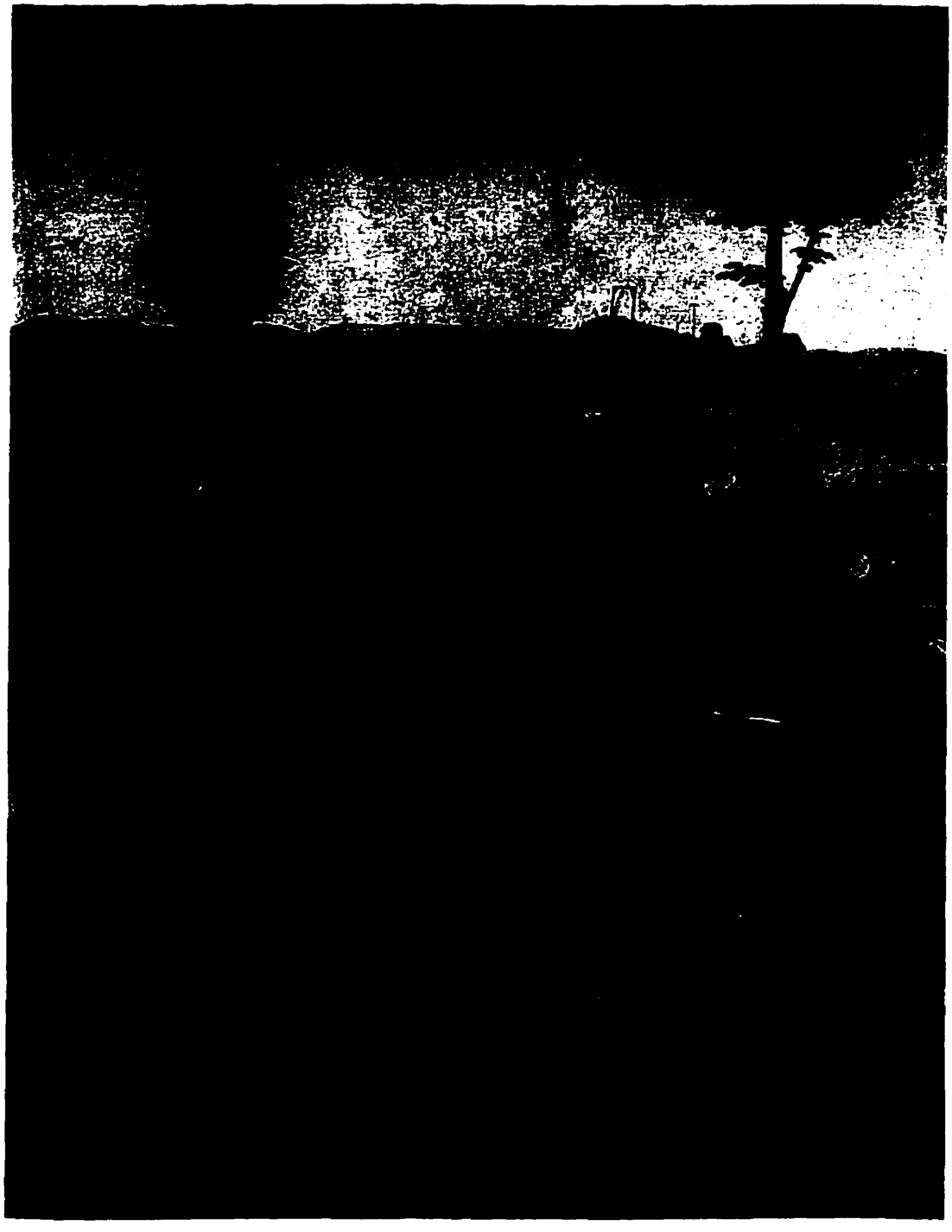

FIGURE 2.5-5: Bosch's paintings depict rich details of the physical markers along the road.

Bosch portrays life's passage as a journey along a path strewn with physical obstacles, places of peaceful repose, erotic temptations, way markers, and various (real or

symbolic) dangers and a forbidding landscape. It is a road marked both by the natural elements of landscape and by man-made landmarks, specific, highly visible, and imbued with significance and symbolism.

The idea of the road as metaphor and organizing principle for life does not only reflect the ancient or medieval mentality. The concept of the road remains strong in our modern mindset as well. The road, a journey, the path taken, important stations along the way are prominent in numerous contemporary rituals and practices (processions, parades, walks for or against a cause), with contemporary pilgrimages and travels perhaps the most vivid examples of the enduring power of the path. Much has been written about the rituals of religious pilgrimage, with an entire body of literature devoted to the famous Camino, the road to Santiago de Compostela in Spain.[48] The Camino underscores the importance of the road as sacred place, and the enduring power of this idea in contemporary times. The Camino has become a destination in itself, with Santiago de Compostela principally the final stop on the journey.[49]

For most pilgrims, and authors fascinated with the phenomenon of pilgrimage, the Camino represents a ritualistic trajectory punctuated by stations or milestones. The road itself has a progressive structure, a rhythm akin to a liturgical act; it is defined by its intermediary points and discrete ends to various phases of the journey, stations along the route.[50] The terms used in describing the pilgrimage reveal the importance of the concept of the road as a metaphor for life: contemporary pilgrims, for whom walking the Camino is often a personal journey and secular experience, speak of a sense of being guided

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[48] Frey, *Pilgrim Stories*, Good Morelli, *Medieval Pilgrims' Hospices.*

[49] The Camino remains an important site of a thriving tourist industry, as do many other pilgrimage sites and routes. Good Morelli, *Medieval Pilgrims' Hospices;* Frey, *Pilgrim Stories.*

towards a goal, a sense of direction, and feelings of accomplishment as they reach the stations on the way.[51] The Camino with its strong one-way directionality, is comforting in its assertion of a singular purpose and a struggle towards a goal. For many pilgrims, it is not a strictly religious experience that they seek, but this very palpable sense of direction, of perceivable continuity. In contrast, the world outside the Camino may not be as clearly purposeful; it may be discontinuous, fragmented, difficult to comprehend and to find connecting points within. Virtually every culture has its pilgrimage sites, defined as much by the destination points as by the way-stations along a route and the ritual of progression towards a goal embodied in a particular location, a specific place of significance.[52]

The importance of the road as a concept and as a place, I propose, lies not merely in its function as a conduit but in its power to mark the connections between language, the embodied experience of journey and the meaning of place. It is the marking and orienting power of the road that continues to structure our conceptual systems. Plato may have alluded to the importance of the road in his metaphor of the cave; the shadows he describes are not just moving about in space, they move along a road marked specifically

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50 Good Morelli, *Medieval Pilgrims' Hospices*, p. 99.

51 Frey, *Pilgrim Stories*, p. 102.

52 The mythical status of the highway in American culture and iconography can bee regarded as an extension of the importance of the road, rather than a mere fascination with the vehicle travel. Kundera in his novel *Immortality* discusses the difference between the road and highway focusing on the way each treats space, p. 223. A rich body of literature exists on the American highway and related architecture, advertising and symbolism: from Venturi and Scot Brown work on the commercial vernacular, through numerous sources describing the landscape and attractions along the road. Anderson's *Vanishing Roadside America* needs to be mentioned because it contains, beside a unique documentation of the disappearing signs along older highways, a discussion of some of the changes within the landscape of signs and billboards.

by a defining wall.[53] In many cultures, conceptual systems are visibly and experientially linked with the road and movement along a path (path dwelling cultures, the Australian Aborigines, nomadic peoples such as the Roma, Beduin, or Saami). But the importance of the road is also prominent in cultures with a less direct relationship to movement. And late modern cultures may not be detached from the spatial continuity of the road and passage, either. It is enough for our purpose to consider the prominence of road-related metaphors in our everyday language, and our contemporary preoccupations with movement, mobility, speed, commuting and communication.

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[53] Plato, *The Republic*. Book VII in Scott Buchanan, ed. *The Portable Plato* (New York: Penguin: 1976), p. 546: "there is a raised way, and you will see, if you look, a low wall built along the way,... men passing along the wall..."

CHAPTER 6

Wayfinding: Marking the Landscape.

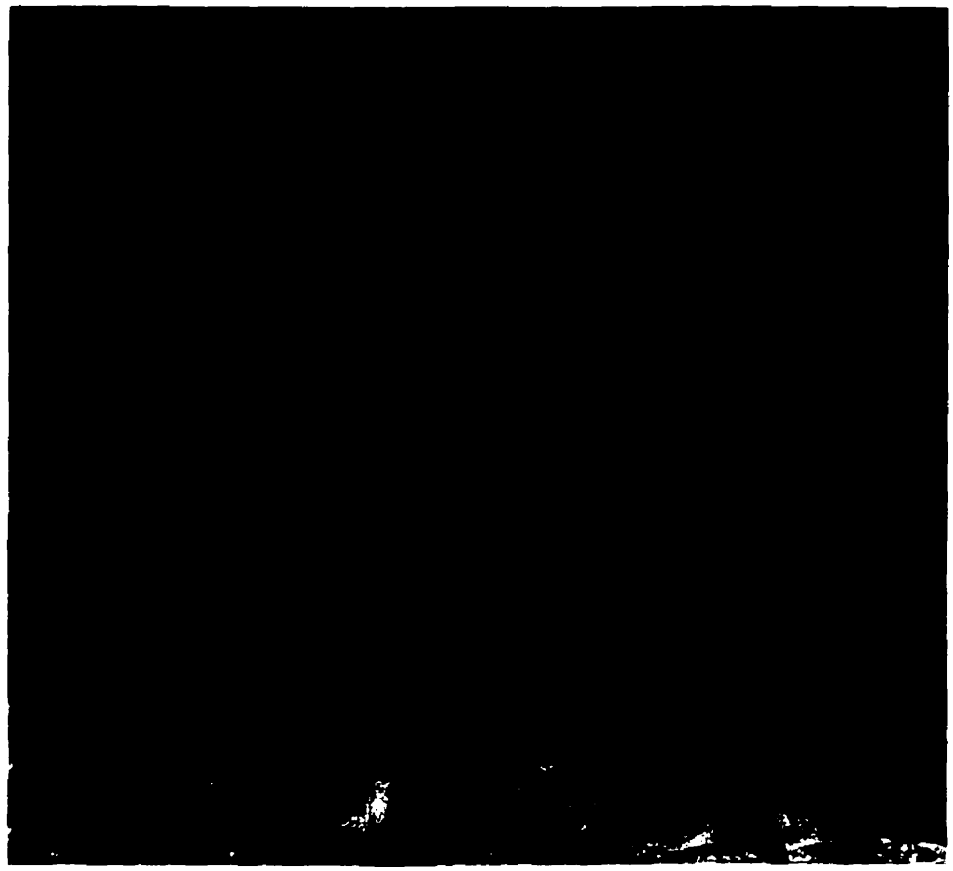

FIGURE 2.6-1: Inukshuk, Yoho National Park, B.C.

> ...it is more than a matter of belonging to a specific family or village; it is standing in a specific spot that has been recognisable since the beginning of time by the same unchanging spatial markers... inspiring to acknowledge permanence, to worship it...[1]

We have considered the marking of the landscape as a generative act in the process of road-making. Let us now examine the different ways in which place specificity is revealed indexically through marking. To begin, we need to acknowledge the act of marking, of designating, differentiating the surroundings, as fundamental to the process of any creation. Most creation myths emphasize this generative force of differentiation and marking of the previously undistinguishable. The beginning of the world is explained

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[1] Rhodes, *Architecture and Meaning*, pp. 17-18.

(conceptualized) as the bringing forth of order by way of specifying form. Verbal denotation (naming) or physical imprinting (marking) are essential components of any act of conception.[2]

In discussion of the importance of place in the creation of order Casey argues that "for creation to proceed differentiation must occur".[3] In many creation myths differentiation of the landscape is the primordial act that introduces spatial order into the world, distinguishing one place from another, circumscribing cosmic regions, making places specific, delimiting and naming them.[4] The Pelasgian narrative of creation (3500 BCE) described by Casey places the generative force directly in the act of creating order through "primordial scission": "In the beginning, Eurynome, the Goddess of All Things, rose naked from Chaos, but found nothing substantial for her feet to rest upon, and therefore divided the sea from the sky, dancing lonely upon the waves."[5]

Marduk, the master builder of the *Enuma Elish*, sets out to create by surveying the expanse of Tiamat, the depth of her being, measuring out and marking the abyss before creating new order. He then marks the spatial and temporal positions of the various elements of the universe, conferring a directional pattern upon the world, and delineating the entire landscape, assigning positions, directions, and determining specific places for the gods and cosmic forces. Marduk differentiates the terrain with specific topographical markers, distinctive elements of the landscape, mountains, valleys, bodies of water: "He crossed the sky to survey the infinite distance; he stationed himself above apsu, that apsu built by Nuddimud over the old abyss which he now surveyed, measuring out and marking in."[6]

Borgmann discusses differentiation as necessary and sufficient for the creation of any conceptual or symbolic systems; both a principle of generation and the basis of

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2 Mircea Eliade, "Sacred Space and Making of the World Sacred" in *The Sacred and the Profane* (New York: Harper Torchbook, 1961), pp. 20-65.
3 Casey, *The Fate of Place*.
4 Ibid., pp. 4, 25.
5 Ibid., p. 8.

structure whether in a system of religious belief, mathematics or language.[7] For Leibnitz, binary notations of numbers formed the essence of creation, the very image of being (*Imago Creationis*), whereby the divine unity (one) and formless zero gave rise to "a wonderful order and harmony which cannot be improved upon".[8] For de Saussure, the concept of difference was necessary and sufficient for the structure of language: "in language there are only differences".[9]

Naming, marking and ordering are inseparable in any conceptual world, though they may be enacted in different ways, given their material reality through different means. Much has been written about the Australian Aborigines and their "walk-abouts", rituals of enacting and verbalizing (singing) place-difference, and meaning. In this culture, the singing out of the names of objects, beings, forces and places is used to circumscribe the world and its relationships, thus fixing the positions of its constituent elements, asserting and confirming human place within the cosmos.[10] Names, objects, and places are thus linked through a sequence of incantation and movement.

Ricardo Castro in his discussion of the Colombian Kogi and their path dwelling practices emphasizes the importance of inscribing space and pronouncing cosmic relationships in the world view through movement and hodological space, the liminal space of the path.[11] He argues that for the Kogi, stone paths, not houses, are places of dwelling, and that their landscape is mediated predominantly through path-making

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6 Casey, *The Fate of Place*, p. 28.

7 Borgmann discusses the Genesis and the first act of creating/dividing described there: dividing the light from darkness. He also points to an important subtlety of labels: "a *distinction* when made by the mind, a *difference* when found in reality." *Holding On to Reality*, p. 141.

8 Borgmann, *Holding On to Reality*, pp. 141-142, for a specific discussion of differentiation in mathematics see Anton Glaser, *History of Binary and Other Nondecimal Numeration* (Los Angeles: Tomash, 1981)

9 Ferdinand de Saussure, *Course in General Linguistics*, ed. Charles Bally and Albert Sechehadye, (New York: McGraw-Hill, 1966), p. 120.

10 Bruce Chatwin, *The Songlines* (New York: Penguin, 1987); Claire Smith, "Ancestors, place and people: social landscapes in Aboriginal Australia." in Ucko and Layton, *The Archaeology and Anthropology of Landscape*; R. M. Berndt and C. Berndt, *The Speaking Land* (Ringwood, Victoria: Penguin, 1989); Howard Morphy, "Colonialism, History, and the Construction of Place: The Politics of Landscape in Northern Australia" in Bender, *Landscape: politics and perspectives.*

elements such as steps, stone surfaces, bridges, and retaining walls. Castro links this hodological space of the Kogi to a conceptual world based on the symbolic importance of weaving. He describes how weaving not only represents the "web of knowledge", but sets the pace, rhythm and organization of the space of the path dwellers.[12]

Weaving and walking are inseparable in this "web of knowledge", with the rhythm of chanting, remembering, making objects, setting the pace of thinking; all intricately implicated in language.[13] What binds together the ideas of weaving, walking and language is the continuous progression of steps, actions and words. Thus naming, and marking come together along the path. The linkages among naming, tracing, and placing are not necessarily confined to culturally distant times or lands. The naming of places, the making visible of their specificity, the highlighting of their history and symbolic dimensions continue to preoccupy contemporary minds as well. Casey notes how the basic question "Where are you from?" indicates the defining power of place in our contemporary lives, as well as the importance of entanglements between language (naming) and place (placing).

Toponyms not only carry geographical coordinates, but are profoundly imbued with history, social meaning, and personal memory.[14] Place-names continue their original broadcast, continue to reveal the features of landscape that were used to guide and orient earlier travellers, their knowledge of, and their movements in the world. Many sacred sites and places are still known by their descriptive place names, even if their original connection with the features of the landscape are lost or obscured.[15] Some toponyms

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11 Castro, "Sounding the Path."

12 Castro describes the spindle as representing the a*xis mundi*, the loom with its four corners a map of the universe, and the cross-bars representing "pathways of the souls". Castro, "Sounding the Path," p. 29.

13 The concept of weaving is not very distant from associations with language in the Western culture either. The word 'text', as noted earlier (Chapter 3), comes from the Latin *textum* meaning a web. The OED.

14 Tilley, *A Phenomenology of Landscape*, p. 19.

15 The names of places in aboriginal languages of the land remind us of the significant connection between naming and specific locale. Like these names from the Arctic territories: Labakhei-to ('lake with steep shores'), Khaktsyarka ('hill like a man's ears'), Sivngevak ('seven-

carry the memory of the original shape of the wayside, even the material from which the wall skirting the road was constructed, like Fosseway, Wattling Street.[16] Many places still bear witness to their original importance, as when over hundreds and even thousands of years traders/travellers used the same mountain passes and crossed rivers by the same fords. Names of settlements that grew at points of intersection and the main river crossings still attest to their original purpose and specific relation to the features of the surrounding landscape: from Bosphorus (Cowford) to Oxford, from Klugenfurt to Herford.[17] Many modern place-names carry the memory of the important amenities (first inns or taverns, for example) around which the original settlement grew: from Strassbourg, Metz, Saverne to Taverns.[18] The spatial distribution of holy places and sacrificial sites can be reconstructed with the help of place-names.[19] And toponymic legends continue to carry the spatial and topographical information of historical sites.[20]

In the modern world, the relationship is no longer tangible between place names and places as such, and is becoming increasingly difficult to disentangle from visually and verbally manifested labels. Often no longer expressing the specificity of a site, the label has become a sign in itself, or as is the case of Hollywood, the specific articulation of the label, the very lettering and placement of the sign has become a symbol of the

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headed hill'). O.V. Ovsyannikov and N. M. Terebikhin," Sacred space in the culture of the Arctic regions", p. 46. Tilley cites the descriptive names of the Apache in *A Phenomenology of Landscape*, p. 19.

16 Hindly lists several places in England and Germany that bear the information on the materials of the original roads, Hindly, *A History of Roads*, p. 8.

17 Schreiber, *The History of Road*, pp. 2-3.

18 Casson, *Travel in Ancient World*, p. 201.

19 Mulk, "Sacrificial places and their meaning in Saami society", p. 127.

20 Most older places have legends, stories of siting the settlement. Legends of famous places have become part of general knowledge, like the story of Romulus and Remus. Many are carried only in local memories, the local landscape and its landmarks. O.V. Ovsyannikov, "Sacred Space", p. 63. Many newer places (towns, villages) associate their names with known stories, famous personalities and events (real and invented). Paul Bunyan, one of the great folk legends of America, marks many places along the American highway, as do numerous claims to local fame: "the home town of...", "the world's biggest....". A survey of America's roadside attraction is a telling indication of the importance of asserting "here". See John Margoies, *Fun Along the Road* (Boston: Bulfinch Press, nd).

place.[21] Thus the display/advertising sign is attaining the status not only of landmark, but of the very symbol of identity of the specific place.

But why, apart from some obviously functional reasons (like marking a ford, passage, source of water for example) have specific places been given importance and marked as such? Why has it been paramount to physically manifest the 'here' in the landscape? The relationship between place and its physical markers (as between architecture and site) has not been sufficiently explored in the literature.[22] The multidimensionality of this relationship forms a major difficulty for such explorations. Any place that can be considered of 'importance' in our contemporary understanding would have originally been imbued with sacred meaning and power. In scholarship, as in conventional thinking, we often categorize traditional places of ritual as sacred, as holy spots, associate them with religious practice (or magic and myth in pre-historic times) and examine them from this particular perspective. It has been rather typical of earlier scholarship to assign the label of "sacred rite' to practices or manifestations that were not understood within the newer world view. Greek and Roman scholars thus believed Egyptian hieroglyphs to be nothing more than magical symbols for sacred rites.[23] We continue to make similar claims about prehistoric communication, about cave paintings, petroglyths and prehistoric mapping. Philip Meggs, for example, in his history of visual communication, notes that cave paintings could not be considered as manifestations of 'art' for "these early pictures were made for survival and were created for utilitarian and magical purposes".[24] Rather than simply assigning the specific and incompletely

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21 Arnold Schwartzman. *Designage. Art of Decorative Sign* (San Francisco: Chronicle Books, 1998), pp. 7-8.

22 Vincent Scully makes this claim in *The Earth, the Temple, and the Gods* (New Haven and London: Yale University Press, 1972), pp. 187-188; Edmund Bacon focuses on the dynamics of the relationship between architecture and site in *Design of Cities*; Robin F. Rhodes explores this in much depth in *Architecture and Meaning of the Athenian Acropolis* (New York: Cambridge University Press, 1995) and claims that the theme has little presence in architectural scholarship. A similar assertion is made by Maurice Lageaux, *A typology of the building-site relation in architecture* (LSE Discussion Paper 5, Cities Programme, 2000).

23 Meggs, *History of Graphic Design*, p. 10.

24 Ibid., p. 5.

understood mode of communication to the sphere of magic, let us probe the ways in which these special places were revealed within the landscape, and seek possibilities for understanding the complexity of communication within that environment. We may not immediately grasp the signification of these relationships, or see their relevance to our present communication practices; still, we need to acknowledge their palpable significance.

Let us bring back into this discussion the notion of ritual, as it may be that the sacred dimension associated with ritual manifestations clouds our view. R. F. Rhodes argues that ritual is a major component of cultural memory, and that its enactment acknowledges, commemorates and orders significant moments, myths and places: "it makes the unfamiliar, the irrational, the unpredictable, the unknowable accessible, less terrifying through familiar, predictable, patterned incantations."[25] Through specific practices enacted in designated places (places associated with these practices), ritual provides a certain discernable order and a consistent access to the spiritual.[26] Ritual typically develops at sites of transition between people, places, and spiritual conditions, at sites of liminality, the betwixt.[27] Through ritual formula, metaphor, and incantation, the uncertainties associated with the actual transitions are diminished.[28] Typically, these sites of transition, located at the margins and thresholds (crossings, passes, shores, mountain summits, cliff edges) were regarded as special, sacred.[29] These specific landscape sites, Rhodes proposes, "exuded a godlike sense of permanence" and compelled people to react with acknowledgement and respect, marking and indicating

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25 Rhodes, *Architecture and Meaning*, p. 7.

26 Ibid., p. 9.

27 Victor Turner argued the importance of liminality to ritual and symbols. See Victor Turner, "Variations on Liminality" in *Blazing the Trail. Way Marks in the Exploration of Symbols* (Tucson & London: The University of Arizona Press, 1992), pp. 48-65.

28 Rhodes, *Architecture and Meaning*, p. 6.

29 Holy places could also be sites of transition between summer and winter pastures, crossings between the mainland and the isles, like the Kozmin Copse, a pathway sanctuary of the Arctic Nenets. In the grove along the passage, offerings are still made on sacred trees. See Ovsyannikov and Terebikhin, "Sacred space in the culture of the Arctic regions," pp. 58, 71.

them. "These are the holy places, where gods alight."[30] And these were, in Borgmann's words, the focal points of an encompassing order.[31]

These were places of communication; of connecting the known and the unknown, the human and the divine, the living and the ancestral, the present moment and destiny. These were places of vertical connection, as it were, they marked the "here" of communication. They also indicated the "here" of temporality. When Kevin Lynch, in *What Time is This Place?*, gives examples of how time is revealed in built form, he resorts to a pictorial essay: "signs of time" show signposts, signs, markers, posters and graffiti; all changing surface layers of the cityscape. Beginning with a 1734 stone marker indicating "Boston 8 miles", Lynch narrates a story of "time signals" in the urban landscape.[32] The marking of place, he argues with images, reveals in the landscape these temporal expressions (whether signs of permanence or temporality), and makes the change, the transition, visible. Like the relationship between landscape and temple, discussed by Rhodes, temporal expression in the landscape, Lynch claims, remains largely unexplored. Rhodes argues that "few who spend time considering ancient architecture will deny the power of the landscape in Greek holy spots, or the crucial relationship between it and the Greek temple".[33] In the same way, it can be suggested that while the importance of signs and markers of place has not gone unnoticed, the problem of their relationship to the landscape has largely evaded scholarly attention. Equating the two (the marking of the sacred and the marking of time) may not be as far-fetched as it seems, especially when we consider how prominently place is featured in both. Rhodes notes how the siting of temples often happened on particular long-used sites, with the original inspiration or religious impulse derived from the landscape, from the particular place. Even if forgotten by successors to the first temple on a site, the site

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30 Rhodes, *Architecture and Meaning*, p. 26.
31 Borgmann, *Holding On to Reality*, p. 25.
32 Lynch, *What Time is This Place?* pp. 135-162.
33 See also Scully. *The Earth, the Temple.*

itself would continue to broadcast its importance.[34] The siting of later temples, particularly on long-used sites, may be thought of as reflecting a more contemporary notion of adherence to architectural or religious 'tradition'; still the specific locale continues to communicate the temporal dimension of place.

Often places naturally and dramatically distinguished within the landscape, vivid landmarks, would be considered to be imbued with special powers: an unusually shaped stone or a rock, a large tree, a hill, a grove, waterfall, a spring. These places would be "marked" by their prominent presence, they would be natural landmarks, nature's way of saying "here". As such, they would be considered to be animated with spiritual being or divine force.[35] Borgmann describes such a naturally marked ancestral landscape as "profoundly coherent because of the regular interplay of signs and things".[36] Often prominent, dramatic elements of the landscape were seen as markers of special place, in Borgmann's words, "focal points of an encompassing order".[37] These often would be features that were out of the ordinary, strangely looking stones, trees, mountain tops or ranges, sometimes resembling human figures or animals, elements that fired the imagination, that were memorable, that singled out specific places by their very presence as landmarks. The anthropological literature cites numerous examples of sacrificial places, places of ritual located near outstanding features in the landscape, with choice locations primarily governed by topographical considerations.[38]

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34 Rhodes, *Architecture and Meaning*, p. 88.

35 Tilley, *Phenomenology of Landscape*; Mulk, "Sacrificial places and their meaning in Saami society".

36 Borgmann, *Holding On to Reality*, p. 24-37.

37 Ibid.

38 For a discussion of patterns of tomb-siting and orientation see Cooney, "Social landscape in Irish prehistory." Detailed case studies of the significance of the siting of linear monuments along the Ridgeway in South Dorset are provided by Christopher Tilley, *Metaphor and Material Culture* (Oxford: Blackwell Publishers, 1999) Often, not only orientation seemed considered, but specific relationship between the particular monument and skyline sighting: Tilley, *Metaphor*, pp. 215-16. Pennick gives examples of megaliths with horizon-following shapes, Nigel Pennick, *The Celtic Cross* (London: Blandford, 1998), p. 65. Similarly, earlier researchers of ancient monuments and stone crosses of England refer to sitings as a determining characteristic. For examples of specific landmarks see: W. Ormsby Gore, *Ancient Monuments*. Volume II and III (London: His Majesty's Stationary Office, 1936); J. T. Blight, *Ancient Crosses and Other Antiquities in the East of Cornwall* (London: Marshall and Co., 1858).

At points of transition (gates, crossroads, crossings, passes) permanence and the forces of nature and destiny were confronted. De Certeau calls these places "mouthpieces of limits" as they appear both to communicate as well as separate.[39] Strong emotions – of awe and fear – thus resonated there and were made manifest in markings. These matched the drama, the height of emotion that the spot evoked. Megalithic stones, even today resonate with the power of place and the strength of presence in the landscape.[40] Emblematic monsters, gorgons, lions, leopards, were also used to mark entrances, gates, sacred places and trails, directly confronting those approaching. Numerous historical examples could be cited here: from the lions along the Sacred Trail of Babylon, the she-bears marking many pre-historic Slavic sacred sites, to the 11th century St. John's Cathedral in 's-Hertogenbosch.[41] For centuries, gorgons and monsters, wild animals and gargoyles have guarded entrances, bridges and gates. The tradition continued long into the 19th century, when many even quite ordinary buildings, no longer inspiring awe, would feature fearsome ornaments at their gates and entrances, conspicuously present to those approaching.

Often places were marked because they carried specific memories of past events, not only of larger historical significance, but often those quite local or personal: where someone took a fright or died; where something unexplained happened; where someone had a vision.[42] These places would be marked to differentiate them from the surroundings and to remind the travellers of the event each time the place was encountered. Places of executions, suicide, murder and personal tragedy would also be

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[39] See de Certeau's discussion of the paradox of the frontier, *The Practice of Everyday Life*, p.127; "Boundaries are transportable limits and transportations of limits, they are also *metaphorai*," p. 129.

[40] Tilley, *A Phenomenology of Landscape*, see also descriptions of cromlechs in Blight, *Ancient Crosses*, pp. 60-65.

[41] Katarzyna Marciniak for example, lists places of sacrifice on Biala Gora (Southern Poland marked with large stone sculptures of she-bears: "The Perception and treatment of prehistoric and contemporary places and sites in Poland" in Carmichael *et al*, *Sacred Sites, Sacred Places*, p. 14. The roof of the main cathedral in the town of Hieronymus Bosch is lined with figures of gothic monsters evoking as much fear as images that Bosch used in his paintings of human frailty and evil. See de Poli, *Bosch*, pp. 12-13.

marked. These would serve a social function of warning, their presence demanding reflection on the deed, a prayer in someone's intention, a ritual of memory.[43]

Rhodes proposes that "our only meaningful access to memory [is] through myth, and through the land itself".[44] Myths embodied in architectural manifestations like shrines, temples and grave monuments were responses to divinity and the problem of humanity's relationship to it.[45] Originally these were not vehicles for the expression of aesthetics, nor for the aggrandizement of gods or the individuals who built them. Rather, they marked the points where prayers could be heard, and sacrifices received; points of communication and connection.[46] They demarcated the sites where a divinity could be approached by mortals, where communication with the gods was possible; these markers were "metaphors in stone, ritual in three dimensions."[47] De Certeau emphasizes the importance of the determination of spatial experience through "objects that are ultimately reducible to the *being-there* of something dead, the law of a 'place' (from the pebble to the cadaver, an inert body always seems, in the West, to found a place and give it the appearance of a tomb)."[48]

Important places in the landscape, the holy spots, often functioned as sacrificial places. They could have been associated with healing powers; water sources by outstanding features of the landscape (waterfalls, springs, lakes, wells) were known for their healing properties. Water sources invited many ritual activities: pilgrimage, the taking of water from the spring, rituals of purification. At these special places, marked

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42 Ovsyannikov and Terebikhin, "Sacred space," p. 58.

43 Wayside crosses often functioned in this way. See Tadeusz Seweryn, *Kapliczki i krzyze przydrozne w Polsce* (Warszawa: Instytut Wydawniczy PAX, 1958); Alfred Rimmer mentions several types of "memorial crosses", "weeping crosses', "crosses of mourning", *Ancient Stone Crosses of England* (London: Virtues and Co., 1875), pp. 13-14.

44 Rhodes, *Architecture and Meaning*, p. 13.

45 Ibid., p. 14.

46 Ibid., p. 8.

47 Ibid., pp. 5-6. There are numerous important sites of ritual described in literature. From the ancient Greek world, the Periclean Acropolis, and the Lion's Gate at Myrcenae are perhaps most often mentioned. For a discussion of the Panathenaic procession see also Bacon, *Design of Cities*, pp. 64-73.

48 de Certeau, *The Practice of Everyday Life*, p. 118.

by natural or conventional markers, offerings typically were made. It is interesting to note the specific types of offerings used by a range of cultures: ribbons, cords, strips of cloth or garments. At healing wells, in particular, the traditional meaning of strips of cloth as sacrifices transcends numerous cultures; similarly, the adding of a pebble or a branch is often an offering at a wayside shrine.[49] Frontiers, places of transition, would typically be associated with the making of offerings to ensure safe passage. The offering of a sacrifice was a means of establishing communication between the holy and the secular, the offering itself serving as the material embodiment of that link. Toll booths, city gates, turnpikes are all descendents of these special places and the traditional demand of offerings at points of passage.

These special places, and their visible presence within the landscape, served a mnemonic function; de Certeau refers to this as "implantation of memory in a place".[50] In pre-literate societies it can be argued that they constituted a "holy book" of landscape, preserving memories of a people's history, and individual destinies.[51] Places and their markings recorded and transmitted information over the course of time; they had a permanence of broadcast. Thus, their destruction meant not only desecration, but the destruction of culture, knowledge, the wiping out of an annotation system of place-marking. The symbolism of this change was powerful for early societies, and it remains so for contemporary societies. The superimposing of another layer of markers on previous symbols makes visible and immediate these political, territorial, religious, and linguistic changes. The power of the language of signs can be traced far into the history

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[49] Ovsyannikov and Terebikhin, "Sacred space," p. 69. Wayside shrines, crosses, maypoles are also typically decorated with ribbons, and garlands. See Seweryn, *Kapliczki przydrozne*, and a more specific study of architectural history of Polish *kapliczki kryniczne* (sacred wells and shrines) Wiktor Zin, *Piekno utracone* (Warszawa, Krajowa Agencja Wydawnicza, 1985); Marciniak, "The Perception," p. 148. On marking trees in sacred groves with offerings see: Ovsyannikov and Terebikhin, "Sacred space". Also, see Walter L. Brenneman, Jr. "The circle and the cross: Loric and sacred space in the holy wells of Ireland" in David Seamon and Robert Mugerauer, eds. *Dwelling, Place and Environment. Towards a Phenomenology of Person and World* (New York: Columbia University Press, 1985), pp. 136-158.

[50] de Certeau, *The Practice of Everyday Life*, p. 86.

[51] Ovsyannikov and Terebikhin, "Sacred space," p. 59.

of signposts, guideposts, wayside shrines and trail-markers. Ancient stone crosses in England and Ireland show pagan roots overlaid with Christian symbolism: Christian crosses crudely carved into the phallic monoliths of the pagan culture attested to the changed system of marking, the new Christian tradition of reference.[52] Similarly, the wooden crosses that replaced holy stones in the tundra landscape of the Nenets, changed their sacred symbols.[53] Wayside crosses in Poland were erected on the sites of pagan statues of the crossroad gods when the Christian religion was accepted in the first millennium.[54] Centuries later, many wayside crosses, which had become a strong symbol of Polish culture, were removed after czar Peter the Great's edict in an attempt to wipe out signs of local culture within the recently annexed territory.[55]

I want to stress that it was not necessarily the sacred nature of the markers that was at issue, but the act of making the specificity of place manifest in a constructed, "institutional" marker of specific beliefs. The differentiating and appropriating characteristics of these markers made them most vulnerable to changes. Signs of inns and taverns perhaps best exemplify the susceptibility of signs to various historical shifts.[56] They often would be painted over, changed with every changing political tide: like the head of Charles I on signs of taverns in England, which was promptly repainted to represent Cromwell when the king was executed, only to have Cromwell's features covered by the likeness of Charles II several years later.[57]

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52 See Blight's survey of ancient crosses East of Cornwall, *Ancient Crosses*; and Pennick's discussion on "re-dedication" of ancient crosses. *The Celtic Cross*, p. 71.

53 Ovsyannikov and Terebikhin, "Sacred space," p. 71.

54 Seweryn, *Kapliczki i krzyże przydrożne.*

55 Seweryn, *Kapliczki i krzyże przydrożne*. The edict of 1722 was later complemented with signs appearing in offices and government buildings that proclaimed, in Russian Cyrillic letters, that "it is forbidden to speak Polish" (*govarit' pa polski nie vospraschiaetsia*). Exterior signs of buildings, place-names, and street names were also changed to Russian in the early 1800s, and remained so until 1918. Marian Sokolnicki, "W niewoli i u progu wyzwolenia" in Paszkiewicz, *Polska i jej dorobek*, p. 434.

56 Edward C. Guillet, *Pioneer Inns and Taverns. Volume I* (Toronto: University of Toronto Press, 1964).

57 Guillet documents a fascinating history of the changing faces and names of the tavern and inns signs in England. He cites one story that exemplifies the phenomenon: "An alehouse-keeper, near Islington, who had long lived at the sign of the French King, upon the commencement of the

It is important to note that within the changing religions, changing traditions, and often against the wishes of the consecutive rulers, the power of places themselves seemed to endure. The markings may have changed to conform to the current acceptable canon of symbols. The same places remained marked, however, and the same landmarks retained their importance. Local history was still being inscribed and remembered in the landscape. And one could see that religious symbolism was often exactly that: a canon for the artifactual manifestations. As an example, one can look at the use of crosses in the Arctic territories by the Nenets. They form places on gravesides that, given our contemporary ideas on the function of symbols, would seem appropriate. But they also demarcate fishing places, much like the *inushuks* of the Canadian North. They signify territorial claims when used as boundary markers on fields, in addition to the more sacred function as places for thanksgiving for plentiful harvest or the successful hunt.[58] Typically, numerous examples of successive temples, built or successive markers placed, on the same site can be found in the literature.[59]

As proposed in the previous chapter, the path or road can be considered a way-marker in its own right, and indeed cannot be separated from the genealogical survey of signage. A path can in itself be a visible, differentiated mark on the landscape, a mark of passage. To become such, it needs to be traversed over a period of time; many footprints need to be layered repeatedly over its surface. It needs to be frequently re-traced. But first, it needs to be recognized as a route. Long before its surface becomes discernible through repeated use, the road exists as a track constituted of markers alone. Its course is determined through numerous navigational, orienting signs, cues placed inadvertently or

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last war pulled down his old sign and put up that of the Queen of Hungary. Under the influence of her red face and golden sceptre he continued to sell ale till she was no longer the favourite of his customers; he changed her, therefore,... for the King of Prussia." Guillet, *Pioneers Inns*, pp. 8-9.

58 Ovsyannikov and Terebikhin, "Sacred space," p. 73.

59 Rhodes, *Architecture and Meaning*, Ovsyannikov and Terebikhin, "Sacred space".

deliberately. Thus Forbes considers road signs, as "the first traces of human activity in road building".[60]

Yet another way of differentiating the path from the surrounding landscape is through the marking of its surface: either through clearing, grading, paving[61], building an elevated surface (causeway), or the creation of grooves (tracks) for vehicles. It is the surface, particularly the paved surface not just "any surface indication that people traversed a given route", that for many historians, as noted earlier, becomes the true beginning of the road. [62] This is not surprising; there is ample tangible archeological evidence of such differentiated roads (both networks and processional routes). Some sources, especially within landscape archeology and transportation research, make a clear terminological distinction between roads which are "formally constructed", and mere paths defined simply by the passage of many people, and in some cases animals, creating a visible route on the land's surface.[63]

But even when the path is not distinguishable from its surroundings by the continuous trace of previous passage, it can exist as a series of signposts alone. The earliest "man-made tracks", it is often noted in the literature dealing with the history of roads "consisted of little more than a series of observed landmarks and man-made route-markers."[64] For early humans, to follow a trail meant to carefully observe changes in the face of the landscape, and to "read" its distinguishing features. Sometimes it was the terrain itself that clearly suggested the course: ridgeways that followed high ground,

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60 Forbes, *Notes on the history*, p. 3

61 Paving depended on soil conditions and available material. Pre-Roman roads in many parts of Europe, especially in low-lands and lake areas, were log roads. It is considered that the earliest made road network in Western Europe is Somerset Level, west of Glastonbury in England. This neolithic trackway (dating to 2500 BCE) is a log road, a similar, but much later, road was found in Hungary in the Pagola swamps. See: Hindly, *A History of Roads*, p. 9. Like construction was used for wooden pavements of the "lake" villages in Switzerland dating from about 1700 BCE. Hindly, *A History of Roads*, p. 10, and in well-preserved log settlement of Biskupin in north-central Poland, dating from about 620 BCE, Paul G. Bahn, *Lost cities* (London: Weidenfeld & Nicolson, 1997), pp. 60-1.

62 See J. Hyslop, "Observations about research on prehistoric roads in South America" in Trombold, *Ancient Road Networks*, p. 29.

63 Ibid.

riverbeds, valleys, clearings in the woods. Many such natural tracks are discernible today and can be described as the listing of the successive natural landmarks and topological features of the traversed territory.[65] Many existing roads followed the original pathways set down within natural features of the landscape and can be examined with the help of aerial photography. In many places that experienced less extensive development over the centuries, traces of the original roads are still legible (many pre-Columbian roads are still clearly inscribed in the landscape and their relationship to the natural features of the surroundings can be examined).[66]

Roads in the Old World, though overlaid with numerous developments, still show the patterns of natural tracks leading through mountain passages, major river valleys, ridges and escarpments. The ancient amber routes leading through the valleys of Moravia toward the Baltic sea can be described even today by referring to major landscape formations and features. Adler, in his extensive study of mapping and way-finding techniques among early people, notes the numerous natural markers used.[67] In addition to larger-scale elements of the landscape, he mentions "compass-plants", plants and growth that specifically point in cardinal directions. In highly repetitive (like dense forest), or poorly differentiated landscapes (desert, tundra, plains), however, it was not always possible to fix one's course or position through reference to conspicuous natural landmarks (landforms, hilltops, trees, rocks). In addition, various important places (fords, safe passages through marshes, good fishing spots, etc.) needed to be specifically identified for future reference. In those instances, early humans needed to ensure their

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64 Hindly, *A History of Roads*, p. 8.

65 Historical North American Indian overland travel-ways, for example are described in this manner in: Chester B. Price, "Historic Indian Trails of New Hampshire," *New Hampshire Archaeologist* (March, 1958); W. B. Hinsdale,"Indian Overland Travelways", *Wisconsin Archaeologist* (9, no. 2. 1929), pp. 114-119; William Paul Corbett. *Oklahoma Highways: From Indian Trails to Urban Expressways* (Ph. D Thesis, Oklahoma State University, 1982).

66 The field of landscape archeology focuses on such marks imprinted in the landscape by historical developments. Trombold, *Ancient Road Networks*.

67 Adler, *Karty*, pp. 24-26. See Borgmann's discussion of information about reality and the role of natural and conventional markers within the ancestral landscape, *Holding On to Reality*, pp. 24-37.

orientation through landmarks of their own making, through artificial (conventional) markers.

It is often argued in the literature on the history of travel, road building and cartography that so called "primitive people"[68] had a powerful sense of orientation and that their navigations (whether inland or at sea, though the latter is not part of this discussion) were guided by an "unparalleled sense of direction", a largely intuitive familiarity with the territory.[69] But early peoples relied on numerous markers, many of them no longer existing as part of our social knowledge and conceptual systems. These studies in fact illustrate the importance of way-markers, of cues from the landscape for peoples who were often assumed to have "intuitive" way-finding and orienting abilities. The intricate overlay of sign and marking systems is rarely examined, yet these signs attest to road marking as a pre-condition for road-making; evidence exists that later roads, and even major auto-routes, followed the early trails marked in subtle ways by the First Peoples. [70]

Hindly argues that "from learning the sequence of natural landmarks and the setting up [of] his own road signs, Man took his tentative steps towards the science of road building."[71] Physical historical evidence of early way marking is sparse, particularly in the Old World, where numerous layers of consecutive developments have obscured or destroyed previous traces. Even where the evidence exists, the original function of the artifacts is often not readily recognized, as was the case with what was termed in early literature the "Indian Trees" of the North American Middle West. In the 1940s, several studies were conducted on these curiously deformed trees growing in the Mississippi Valley and the Great Lakes region. The trees were in fact surviving guideposts, made by

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68 For a thorough examination of the notion of the "primitive" (the Noble Savage) in relation to wayfinding, mapmaking and spatial orientation see Blakemore, "From wayfinding to mapmaking".

69 Schreiber, *The History of Roads*.

70 Some examples can be found in: Price, "Historic Indian Trails of New Hampshire"; Hinsdale,"Indian Overland Travelways"; Corbett, *Oklahoma Highways*.

71 Hindly, *A History of Roads*.

bending saplings at right angles about three or four feet from the ground.[72] Earlier last century, hundreds of such deformed trees could still be found and were described in several studies and popular articles in the forties. They marked trails through the forests and in intervals of from about two hundred feet to a half mile, their trunks paralleled the trail's direction; they would be referred to as "Indian trees", or "Indian trail markers".[73]

Several different techniques were used for conventional marking: bent or broken boughs, incisions on the trunks of trees, sticks driven into the ground, poles and flags, stone cairns in open country, a single stone strategically placed.[74] Adler's extensive study of way-finding techniques among aboriginal peoples describes a number of different techniques used in different cultures and climactic, geographic conditions.[75] Many of these are still used in present times in some cultures, or under certain conditions, so these are not mere anthropological relics. They are used to mark the landscape without necessarily differentiating the course of a path itself. Rather, they suggest the path of movement through the provision of a sequence of reference points, orienting markers. The *inukshuks*, for example, have changed their material composition over the centuries (in addition to stones, man-made objects like car tires are often used nowadays in their construction) but both their basic structure and purpose have endured.

A contemporary hiker travelling in a heavily wooded terrain, unless s/he resorts to the use of positioning technology (such as a compass or GPS device) is likely to employ techniques of landscape marking, or to look for available cues from the surroundings, similar to those used by the early peoples in similar terrain.[76] Way-markers have always been site-specific: they reflect the particular climactic conditions of the site and have been typically constructed with materials available in the place. They can also come in

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72 Horace Kemble, "Indian Trees" *Southwest Lore* (Gunnison Colorado, 1947), pp. 78-79.

73 Kemble in "Indian Trees" refers to several other sources from the 1940s.

74 Adler, *Karty*; Forbes, *Notes on the history*; Kemble, "Indian Trees"; ways of marking pre-Columbian roads are noted in Trombold, *Ancient Road Networks;* flags in the Egyptian desert are noted in Brind Morrow, *The Names of Things*.

75 Adler, *Karty*, p. 28.

more ephemeral forms, like footprints or trail tracks, particularly in the snow bound tundra, that would be re-traced by a hunter on his way back. Casey tells a poignant story of the difference in spatial and way-finding concepts of an explorer in Alaska and his Eskimo guide in the early twentieth century.[77]

The markers needed to be recognizable by those who were intended to follow them (members of the same group), and yet possibly missed by those for whom they were not meant (the enemy or competition). Prehistoric roads of the Etruscan overland trade were mostly rough tracks, often "no more than narrow paths, about which one trader learned from another, or which he blazed for himself with small and frequently hidden signs".[78] Even trade routes were guarded this way. About 330 BCE when the Romans interrupted Etruscan trading, the amber routes were lost together with the Etruscan knowledge of their navigation. The Romans were forced to find new ways of accessing the gold of the sea.[79]

The path-finding skills of the native guides used by European explorers in the New World are legendary. They allowed their guides to follow trails that to the untrained eye simply were not there. Rather than their instincts, however, the guides were following trails "reading" the landscape through the use of their complex knowledge of the territory and ability to detect the nuanced traces left (intentionally or inadvertently) by previous travellers. Markings that were left intentionally would most often employ a code that would allow them to remain hidden from those who were not meant to notice or understand them. Such codes, notations of the particular language of the path, can be encountered in our contemporary world in the symbolic markings used by the Scouts, or those used by nomadic peoples, like the Gypsies, or sub-groups like hoboes. The

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[76] See Borgmann's discussion on hiking with global positioning system devices in the wilderness of Montana, Borgmann, *Holding On to Reality*, p. 217.
[77] Casey, *Getting Back into Place.*
[78] Schreiber, *The History of Roads*, p. 2.
[79] Ibid., p. 7.

symbols employed to denote specific concepts are very similar across codes, the language of the path. [80]

Another way of marking the trail was a continuous differentiating of its shape and direction, making the side of the path into a marker. This differentiation was made in the form of lines of cairns or even low walls that skirted the road and served to mark it more precisely. Some early roads were skirted on each side by a wicker or wattle fence, or by a fosse or a ditch, and the names of roads frequently retained these origins.[81] Hindly also notes that many of the German ancient ways had wicker or wattle fences built along them. Studies of pre-Columbian roads in the New World are a particularly rich source of examples of marking a path's course: with the use of curbs, low walls, high walls, sticks, lines of small stones.[82]

Victor Turner uses the term 'way markers' metaphorically in his exploration of symbols in *Blazing the Trail.* The complex connections between ritual and places of transition, between the symbolic world and the marking of the landscape form a continuous theme in his work. He begins his discussion of ritual and symbol with a description of the Ndembu term for a ritual symbol which is a landmark, *chinjikijilu*, derived from *kujikijila*, to blaze a trail by cutting marks on trees. Marking, he believes is "a means of connecting known with unknown territory", thus the ritual symbol functions like the trail which a Ndembu hunter marks to find his way back from the unexplored bush to his village.[83]

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[80] Various sources on graphic symbols refer to symbols of the Roma or hoboes. For example see Rosemary Sasson and Albertine Gaur, *Signs, symbols and icons: prehistory to the computer age* (Exeter: Intellect Books, 1997).

[81] Hindly, *A History of Roads*, p. 8.

[82] For examples of different road types and surface differentiation see Colleen M. Beck "Cross-cutting relationships: the relative dating of ancient roads on the north coast of Peru" in Trombold, *Ancient Road Networks*, pp. 66-79.

[83] Turner, *Blazing the Trail.*

CHAPTER 7

Way Signs in History.

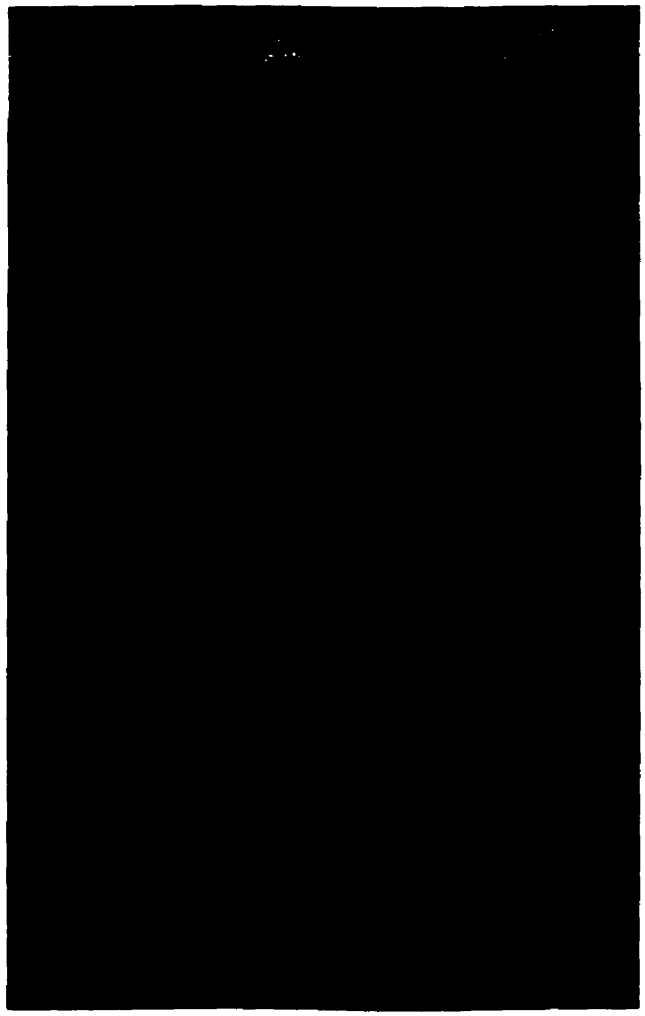

FIGURE 2.7-1

We have traced the generative role of way-markers in road-making, in establishing archetypal routes of communication, and looked at the importance of place marking in constituting systems of cosmic order. Throughout human history, the significance of place has been made manifest in both ritual practice and the physical marking of the landscape. The markers were intended to identify places and remain in the landscape broadcasting the place specificity over time. These markers of location denoted relationships between place and systems of knowledge, power, and

understanding; they made visible and permanent the meaning with which a particular place was imbued. In addition to being signs of location, then, they carried other information which may have related less to the specific site, and more to its spatial relationship to other locations or the opportunities for exposure that the site provided.

Early markers would combine all these functions in complex ways that are difficult to disentangle, particularly from our contemporary perspective. It may seem counter-intuitive, for example, to think that a crude stone slab or a cairn by the wayside would be invested with the power of myth generation. Yet, some scholars of classical Greece and mythology argue that certain ancient gods "began their ritual life as *hermae*", "those stone pillars or *herms*, which were used as way-marks or boundary-stones in Greek lands".[1] Karl Kerényi, in his discussion of the cult of Hermes, posits that "from the signpost grew the God of the road" and "Hermes is a *herm*".[2] This suggests that *hermae* were markers of the worship of place itself and the ideas associated with its specificity and power (orienting, protecting, providing) before any particular deity was assigned to represent these concepts. *Herm*, the archetypal signpost and way marker, originally signified its siting, with the mythical figure of Hermes brought into the scene

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1 Harris, *The Origin of the Cult of Hermes*, pp. 5, 49.

2 Kerényi, *Hermes. Guide of Souls*, p. 45. Kerényi refers to Hermes as first a mere "gravestone or a signpost spirit". He cites Deubner's argument that the god of the road was no more than the spirit of the signpost, L. Deubner, *Der ithyphallische Hermes* (Stuttgart, 1937) pp. 201, 203. W. K. G. Guthrie also suggests this direction of progression: from the signpost to the myth and the figure of a god: "we are back again at our primeval upright stone from which so much of Hermes' nature seems to have taken origin." *The Greeks and their Gods* (Boston: Beacon Press, 1950), p. 92. More recent sources , on the other hand, seem to deny any relationship between the *herm* and Hermes, as in "the god has no original connection with the *herma* or cairn of stones, as was once thought." See curiously assertive entry by Madeleine Jost in Simon Hornblower and Anthony Spawforth, eds. *The Oxford Companion to Classical Civilization* (Oxford and New York: Oxford University Press, 1998), p. 336.

later to embody the depth of meaning already present and made manifest in the marked place.

FIGURE 2.7-2: Hermes as a *herm*.

It is often mentioned in the literature on antiquity that these "shrines to Hermes", no more than heaps of stones, were used as primitive road signs, on which each passerby was expected to add another stone as an offering to the deity. Casson describes the Greek roadside as featuring "no road signs as such, but at least at crossroads or boundary lines there was a serviceable substitute, the *hermeia* or shrines of Hermes".[3] Some argue that as time went on, the *hermeia* became more sophisticated and in some places the simple heap gave way to arrangements of hewn stones. Harris, suggests that the post (first a branch, a tree trunk, later an upright stone) was originally a structural element of the heap, or a device which rendered the cairn more prominent, and later developed into a

[3] Casson, *Travel in the Ancient World*, p. 71.

single post, a *herm*.[4] Harris also suggests that this was originally a wooden post, and links this to tree trunks often later represented in sculptures of Hermes.[5]

FIGURE 2.7-3: A typical *herm* from 6th century BCE, Aegean island of Siphnos.

Kerényi, on the other hand, argues that the *herm* developed not from a heap of stones, but from the simplest conceivable monument or a marker, an upright stone, "a phallus-monument that was the primordial symbol of life".[6] There seem to be no agreement on the sequence of the development; what is, however, more important to this

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[4] Harris, *The Origin of the Cult of Hermes*.

[5] Harris notes the often used motif of a tree trunk with its lower limbs lopped away. He links this tree trunk to the wooden post in herms and to the bifurcated stuff carried by Hermes. Harris, *The Origin of the Cult of Hermes*.

discussion is that both manifestations, the cairn and the upright stone, endured as markers of places along the road and in points of transition. While the tradition of cairns continued along the country roads as informal and highly interactive signposts, the more sophisticated pillar *herms* would be posted at the gate to the city, in front of the house, at crossroads.[7]

Early markers of the road, boundary markers, and grave markers were similar in their form and placement. The association of grave markers with the road is noted, for example, by Mumford in his discussion of the foreshadowings of human settlements.[8] This relationship is strongly manifest in the Greek mythology by the figure of Hermes and his role as the guide of souls to the Underworld.[9] Kerényi argues that Hermes is both, "a gravestone of signpost spirit" and the "God of the road"[10] thus explaining the siting of graves along the roads and the use of the phallic form in road markers, boundary stones and grave stones. But, as Kerényi also notes, the traditions of placing phallic stones on graves could be found in many early cultures.[11] In some discussions of ancient stone crosses in England and Ireland, the phallic shape of many of the megalithic

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[6] Kerényi argues that *herma* is not the name not of a "stone heap" (*hermax* or *hermaion*, both derived from *herma*) but a single stone. *The Guide of Souls*, p. 78.

[7] In later forms *herm* featured partial arms (tenons) used for hanging wreaths or other decorations. Its phallic form was retained either in the shape, tapering towards the base, or in the detail of a sculpture of a phallus at the front of the pillar. and later developed into an element used in the design of formal gardens. Achter Band, *Meners Konverlations – Lexicon* (Lepzig und Vien: Bibliographisches Institut, 1890), p. 428. see also Władysław Kopaliński, *Słownik mitów i tradycji kultury* (Warszawa: Państwowy Instytut Wydawniczy, 1988), Karl Kerényi, *The Gods of the Greeks* (London: Thames and Hudson, 1951).

[8] Mumford, *The City in History*, p. 7. For a discussion of the lines between burial sites and early roads and landmarks see Tilley, *Metaphor and Material Culture* (Oxford: Blackwell, 1999).

[9] This role is also present in the identification of Hermes with Thoth the Egyptian god of wisdom, and as Harris suggests, also a guide of souls. Harris, *The Origin of the Cult of Hermes*, p. 4.

[10] Kerényi, Hermes. *Guide of Souls*, p. 45.

[11] Ibid., pp. 70, 67.

monuments and Celtic crosses is related to the concept of *omphalos*, the navel of the world, the centre of the holy place, or sacred area.[12]

The phallic form of these early markers was the primordial symbol that, together with the four-corner base typical of *herms* and many road side and graveside monuments in traditions distant in time and space, is linked to the "archetypal expression of totality, inasmuch as it is rooted in the very foundation of the world."[13] The Celtic monuments, often phallic shaped stone "crosses" set into a rectangular base, are a group of well-documented wayside markers. They were typically re-dedicated in medieval times and transformed into Christian symbols.[14] These early stone markings functioned as boundary stones, memorial sites, "crosses" of mourning, indications of sources of water (holy wells or springs), etc. These functions would, of course, converge in complex ways, and at times a specific function could be seen as predominating; still, what remained constant was the specific relationship to the landscape and the siting in places of transition or

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[12] Pennick, *The Celtic Cross*, p. 24.

[13] Kerényi, *Hermes. Guide of Souls*, p. 78. He links both the phallic form and the quadrangular base to the primordial, life affirming qualities of Hermes. He links the cult of Hermes to the number four, and thus the four-corner base: *quod quadratus deus solus haberatur* ("let the four-square God alone possess this"), p. 67.

[14] Blight in his 1856 and 1858 surveys of ancient stone crosses in Cornwall and East Anglia shows several examples of phallic crosses re-fashioned into Christian symbols, *Ancient Crosses and Other Antiquities*. Pennick discusses the various re-consecrations on numerous sites, *The Celtic Cross*. pp. 67-68. Also, see Rimmer: "the earliest preachers of Christianity... pointed to the groves and holy wells, and dedicated them in another name. Crossroads were also held particularly sacred in the earlier times, and even as far as the period of the Druids they were marked by upright stones, not dissimilar top those we see at Stonehenge though, of course, much smaller, and these stones were chiselled on the upper part with a cross in relief... the numbers of them near ancient wells is very great." *Ancient Stone Crosses of England*, p. 11. Rimmer links the custom of wayside crosses with traditions in Christianity and cites "the habitants of Canada across the ocean; these are one and all Roman Catholics, and very simple and devout. They descended from the old French families who first peopled Canada, and adhere fondly to their language and ancient tradition. There are many road sign crosses along the lanes leading to Montreal." p. 56.

passage.[15] The prehistoric Slavic pillar-god Światowid whether rendered in wood or stone, carried features similar to those of Greek *herms*, with the four-corner pillar related to the cardinal directions emphasized by the god's four faces carved into the sides of the pillar and "watching over the world". [16] Similar symbolism of form and placement of markers could be found in cultures distant geographically and historically, and associated with different local deities.[17]

The idea of the way sign was that of an orienting and protecting device marking the place where important communication occurred. The way marker then can be considered an archetypal medium of communication. The mythical figure of Hermes embodied the complexities and multitude of communication modes: he was as much the protector of travellers and merchants (of transmission along the route) as the guide of souls, protector of the household, insurer of arrival and safe passage (of ritual). Kerényi emphasizes that the position of the *herm* at the entrance – whether in the yard or on the road – and we could add, the position of a cairn at the crossroad, is that of the mediator:

> Through Hermes, every house became an opening and a point of departure to the paths that come from far off and lead into the distance. Standing at the doorway, he indicated that here is a source of life and death, a place where souls break in, as though he were pointing out a spring of fresh water. [18]

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[15] Rimmer, *Ancient Stone Crosses of England*, pp. 12-14.

[16] Światowid is "the one who sees the world". See: Tadeusz Sulimirski, "Czasy prehistoryczne" in Paszkiewicz, *Polska i jej dorobek dziejowy*, pp. 80-85, p. 81; Pennick, *The Celtic Cross*, p. 33; Zamoyski, *The Polish Way*, p. 11.

[17] Casson refers to remarks made by Strabo, the Greek geographer of the first century that similar stone markers were found in Greece and Egypt, with some of the latter in the shape of large boulders. Casson, *Travel in the Ancient World*, p. 71. Band notes that in Africa *herms* were used as signposts on military roads, see Band, *Meners Konverlations – Lexicon*, p. 428.

[18] Kerényi, *The Guide of Souls*, pp. 83-4.

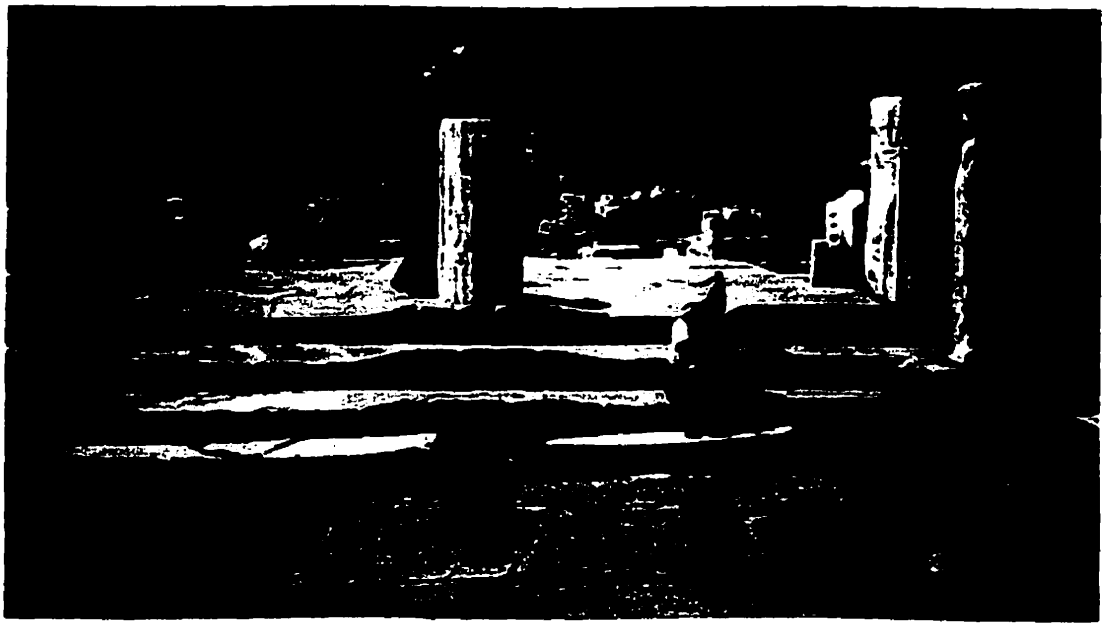

FIGURE 2.7-4: *herm* positioned at the house entrance.

What follows is a brief pictorial survey of way markers that highlights their multifunctionality and their significance, transcending their many different forms and manifestations in cultures distant in space and time. The pilgrims along the Camino still add stone pebbles to the cairn by The Iron Cross.[19] Maypoles, wayside shrines and crosses, are still decorated with wreaths and garlands and celebrated in many cultural practices. Important messages continue to be posted in places of passage, along the road. The road markers thus remain "the artifacts of state of mind along the way".[20] The sample of markers presented below is necessarily limited; it is intended to bring forth the

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[19] Frey, *Pilgrim Stories*. Also see figure 3, in section A. Indicating Markers, below.

[20] Armstrong , *Vanishing Roadside America*, p. 29. Armstrong suggests that signs often outlast what they originally symbolized, and thus continue to broadcast information about the past lifestyle, beliefs, pace of changes, accretion of values: "even derelict sign of a closed theatre carries on the show in its own way," p. 133.

aspects of way-markers that include their generative and communicative power and the enduring importance of their placement.

The examples are grouped into three broadly defined categories, with the typology intended as a provisional organizing structure that highlights the markers' relation to place, and captures their overlapping functions. We must keep in mind that throughout history, the categories, functions and manifestations of the different dimensions of way markers and signposts overlapped in complex ways that cannot be completely disentangled. The typology chosen is intended to focus the discussion of signage away from the strict functional divisions of the phenomena. By demonstrating that the multiple functions encompassed by way-markers cannot be clearly separated, the typology used is intended to underscore the multifaceted nature of the way-sign, and signage in general.

The first group comprises what is termed here, ***indicating markers***: markers of specific places of significance (such as landmarks, gravestones, holy stones or shrines). These markers say, "here", and can be envisioned as pointing to particular spots in the landscape, making vertical connections between place and meaning. The second category groups ***referencing indicators***: signs denoting the relationship of the specific location to other places, a system of reference, organization, or hierarchy (like milestones, directional signs, half-way markers). These can be envisioned as horizontally linking places, points of reference, networks of meaning. And the third group of examples gathers ***display signs,*** markers that opportunistically use the site as a place for exposition of other, not necessarily place-specific information. These markers carry promotional messages that in contemporary terms can be regarded as advertising: self-promotion of

the sign founder, the marketing of a service, a plea for support, a prayer or an offering. We can list here votive stones or crosses, memorial or 'weeping' crosses, inscribed stones, various advertising signs, and contemporary billboards.

The varied expressions of road-marking have often been too narrowly understood in a literature bound by specific disciplinary foci. The modern perspective tends to normalize specialization of purpose, separating specific functions and applying to them an analysis particular to a disciplinary approach. In this way, most specific mentions of road signs in the literature feature the Roman milestones but not taverns, mile-castles or grave markers.[21] The latter would most typically be viewed within the domain of architectural expression or religious symbolism respectively.[22] The standardized marking of distance can easily be related to contemporary concepts of highway infrastructure and its familiar system of signage; the navigational and orientational aspects of buildings or sepulchral markers, however, are not so obviously linked to contemporary functions of the built environment. In the literature related to the history of roads, wayside graves are often discussed either as testimonies to the dangers of travels or strictly as burial monuments.[23] This does not address the relevance of the siting of the grave markers,

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[21] Though *herms* are mentioned typically as "crude", or serviceable road signs, see Casson, *Travel in the Ancient World*, p. 71.

[22] Few sources discuss in a comprehensive way the infrastructure of travel or marking. Casson, in *Travel in the Ancient World*, examines travel and the various elements of infrastructure that supported its purposes, in much detail, although the focus of his discussion is not the physical manifestations of road-marking. Gore, in his survey of ancient monuments in Northern England, offers a thorough examination of the Roman road infrastructure (with the wall itself, and its mile-castles, milestones), and he includes references to numerous other markers and monuments found around the Hadrian Wall on which his analysis centres. *Ancient Monuments*. Vol. I.

[23] For a discussion of the dangers and safety of travel see Casson, *Travel in the Ancient World*, pp. 40-43. Hindly, in *A History of Roads*, suggests the causal link between the danger of travel and the siting of graves along the roads. But certainly, highway robbers would be unlikely to bury the amber tradesmen with their precious cargo or bury the wealthy traveller with his chariot. For a discussion of the importance of siting important monuments and markers in relation to places of passage see Tilley, *A Phenomenology of Landscape*.

which in most traditions would specifically be placed along roads, at crossroads or by important places of arrival, like city gates. Similarly, ancient roadside crosses are often treated in the literature as manifestations of religious expressions and their symbolism is most frequently discussed in terms of religious significance alone (and often only from the perspective of Christianity, whose symbolic language prevailed in many areas from which some of the examples are drawn).[24] Such a fragmentation of discourse leads to a partial understanding of the historical evidence and of the complex connections between various cultural developments and the nature of the environmentally referenced information.[25] In most cultures and religions, waysides featured markers and guideposts curiously similar in their placement, articulation of form and use of symbol. Early posts for example, may have had an ithyphalic form in places as distant from one another as prehistoric Ireland and ancient Greece, they may have featured a symbol of a cross, a representation of the numeral four (four holes, or a quadratic plan, for example).[26] If strictly religious, why would these manifestations be spatially related to the road and/or to other elements of the landscape in a parallel manner across a number of different beliefs and cultures?

The historical axis necessary for a broader discussion of way markers is long ranging, from pre-history to the present-day. Here, we merely look at several examples drawn from just a few specific stretches on the axis. Of course, presenting a history of the road marker, even in a shorthand, would far exceed the scope of this work. The examples

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[24] See Blight's survey *Ancient Crosses and Other Antiquities*; also Pennick's discussion on "re-dedication" of ancient crosses. *The Celtic Cross*, p. 71.

[25] Good Morelli, *Medieval Pilgrims' Hospices.*

[26] Blight, *Ancient Crosses and Other Antiquities*; Kerényi, *The Guide of Souls*; Pennick , *The Celtic Cross;* Rimmer, *Ancient Stone Crosses of England.*

are intended as the preliminary sketch of the themes involved and a demonstration of the continuity of the concepts associated with the phenomenon of way marking.

The few examples assembled below are intended to point to the fertile possibilities of bringing an historical perspective into studying the relationship between the signpost and place. The road and the roadside, as is often noted in the literature, were considered sacred and the property of gods in many religions.[27] The wayside has always been imbued with special meaning; it is a place where connections with the other play themselves out: connections with the gods, ancestors, strangers, unknown forces. The wayside has been a special meeting place where rituals of connection with the other would take place. Wayside markers would thus be used to designate these special places and would most often be associated with a religious ritual. The wayside shrines and sites of worship, holy wells, temples and holy places have always played, however, an important role in wayfinding; they designated the where, often in very practical terms. As we can see in the set of directions from one of Terence's comedies quoted by Casson, where the temple of Diana is referred to as one of the landmarks, a wayfinding element:

> You know that house there, the one that belongs to Cratinus...? Well, when you get past that house, go straight down the street to the left, then when you get to the temple of Diana go right. Then just before you get to the town gate, right by a watering pond there, you'll find a little bakery and, opposite it, a carpenter's shop. That's where he is.[28]

Along the roads, places of worship would remind the traveller of the importance and hierarchy of the forces of nature, and the human position within the cosmos. They also marked the stages of safe passage: places of arrival at the end of a day's journey, "service stations", to use the contemporary term, with holy wells, water sources, taverns

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[27] Schreiber, *The History of Roads*, p. 111.

and places of rest. Markers would reassure the traveller of the direction and distance to the destination, as well as providing a place of protection (if not shelter in a physical sense, a place where the spirits may have been understood to perform this protective function). Material (architectural, sculptural) expressions of these functions in the form of road markers are particularly important to the exploration of the relationship between landscape and architecture. Many wayside markers were, and still are, examples of the specific architectural expression of a religious tradition and specific local history, and they are the most direct metaphors fixed in an enduring substrate, physical agents of commemoration, of memory and myth.[29] To see them as manifestations of one function, whether religious or commercial, may be limiting the possibilities that are embedded in the multiplicity of meaning and function spanning the various examples through their relationship to place. Inasmuch as we do not see the history of the printed word as strictly religious, even though most first texts were produced for religious purposes and would be associated with a religious practice, the communicational dimensions of the markers placed in the physical space need to be examined in a broader context, beyond the most overt symbolism or function. The grouping and the selection of examples is intended to highlight the conventions similar for many of these examples as they are rendered in different substrates, manifested in a different material presence of many "common identities across settings".[30]

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[28] Casson, *Travel in the Ancient World*, p. 86.

[29] Rhodes, *Architecture and Meaning*, pp. 6-7.

[30] Bowker and Leigh Star referring to classification systems, *Sorting Things Out*, p. 16.

A. INDICATING MARKERS

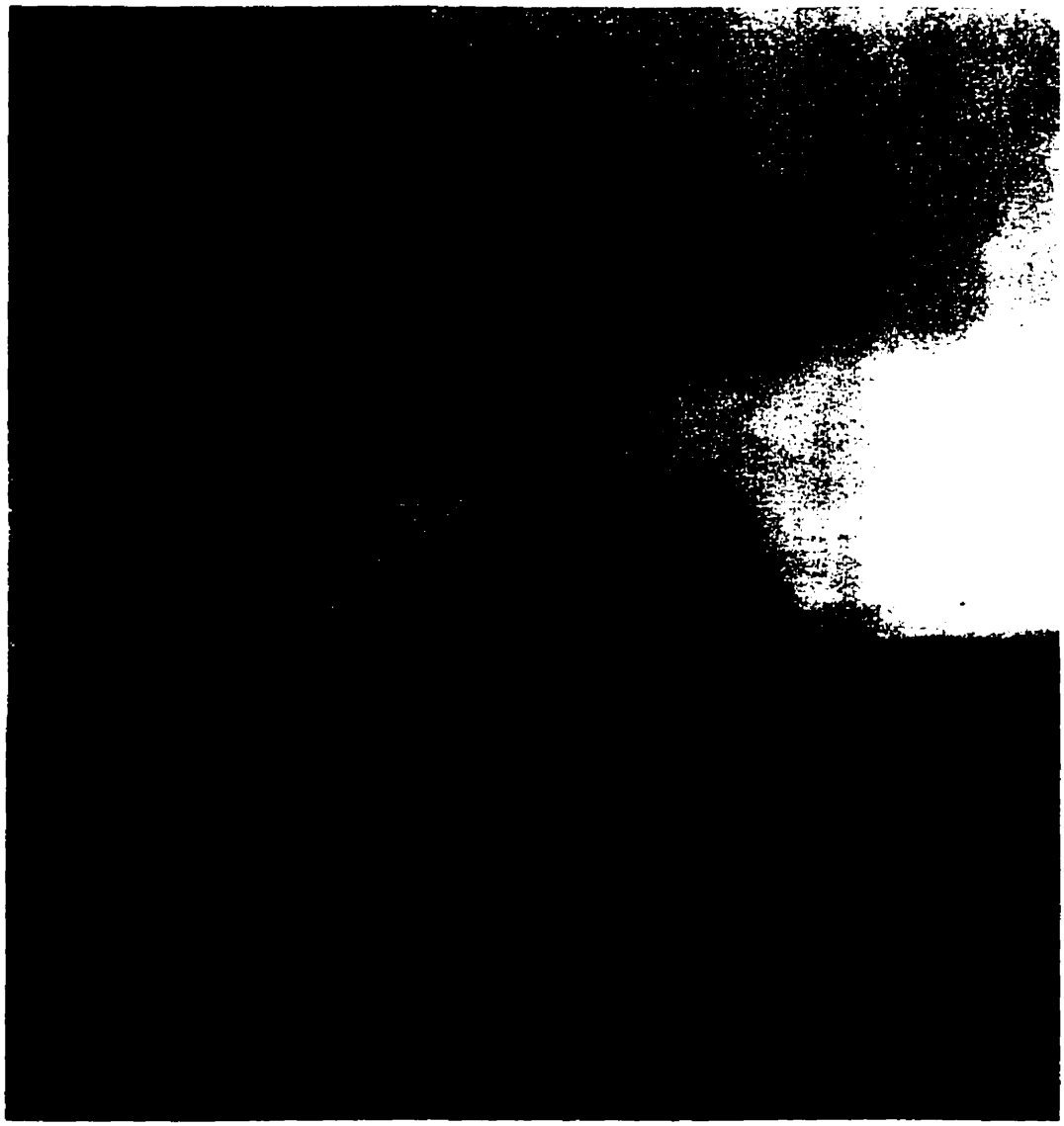

FIGURE 2.7A-1: the holy stone, a natural marker, a prominent natural landmark and a holy spot; a visible marker in the poorly differentiated landscape of the surrounding tundra. Kanin Nos Peninsula.

FIGURE 2.7A-2: Portal Tomb at Gaulstown; the type of Irish megalithic tomb most commonly referred to in folklore as Diarmuid and Grainne's Bed. In the 19th century, surveys of ancient monuments this type of stone monument would be referred to as a flat-topped 'cromlech'. Megalithic stone monuments were specifically sited in relation to the roads, places of passage, or prominent natural landmarks.

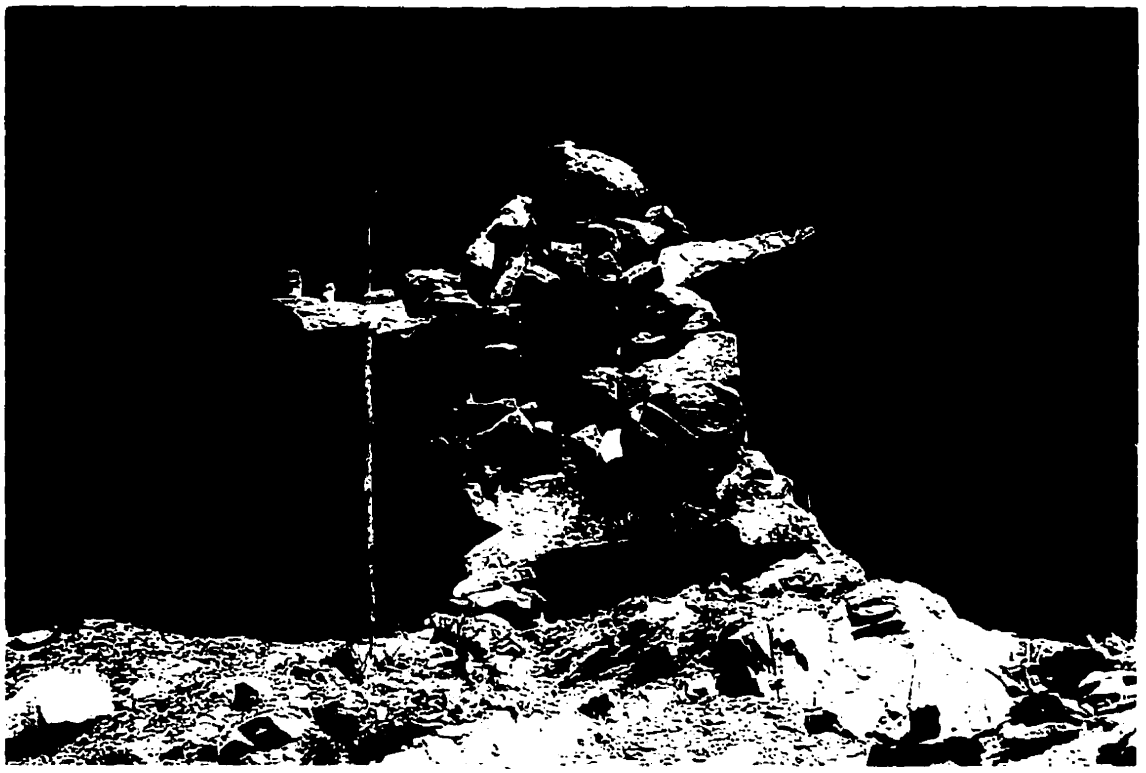

FIGURE 2.7A-3: Inukshuk near Nordegg, Alberta.

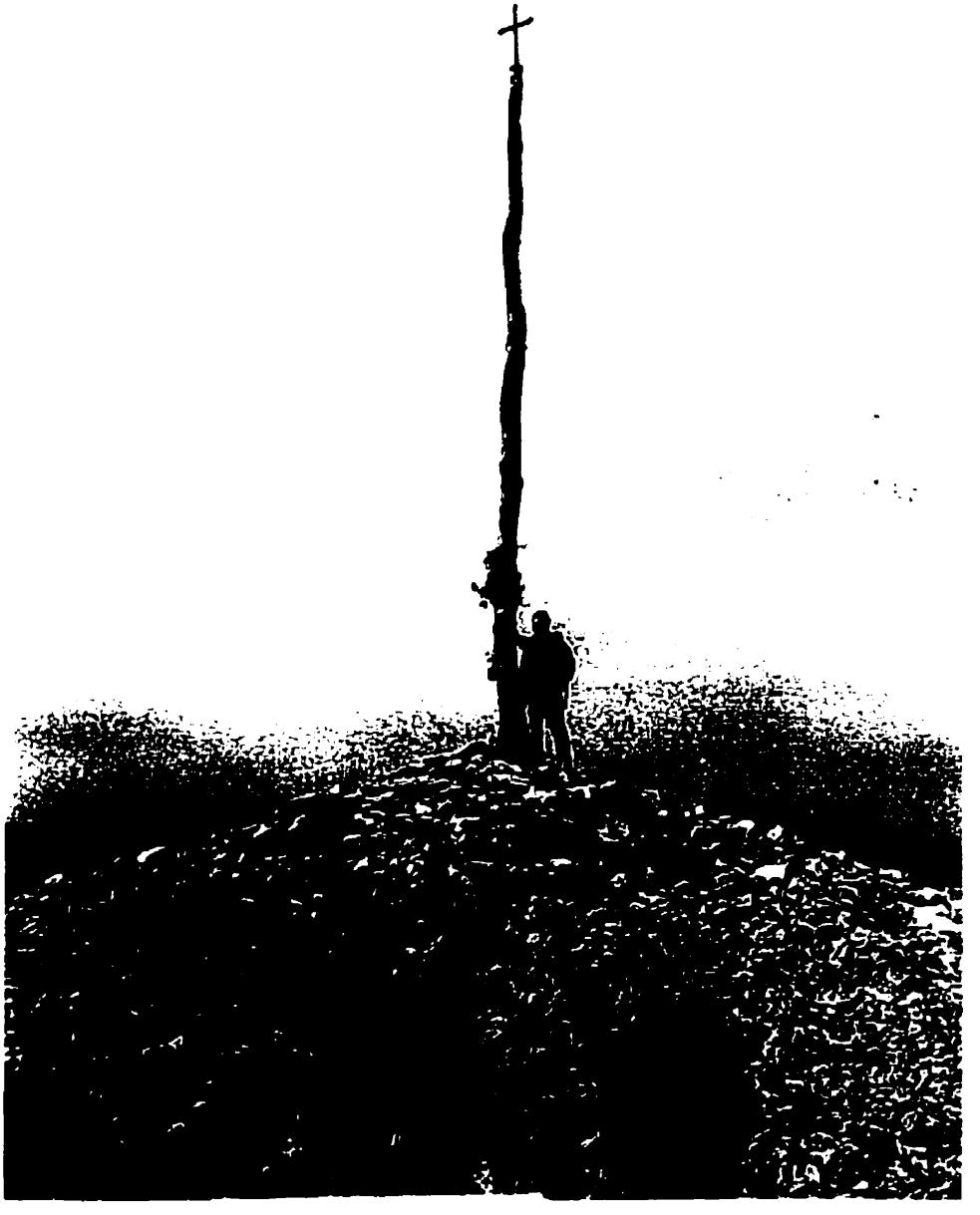

FIGURE 2.7A-4: La Cruz de Ferro along the Camino can be considered an example of a wayside cairn, however untypical considering its size. It remains in use as a landmark and the site of the ritual practice of adding to the heap stones with prayers, a practice originally associated with the pagan wayside shrines to Hermes, where stone pebbles were added to the heap by passersby as a symbolic offering to the deity responsible for their safe travel, safe passage. Many way-side crosses are also "honored" with an offering of a branch or a stone. Cairns would be sited at the crossroads or by sources of water (like springs or wells).

FIGURE 2.7A-5: boundary stones, southern Poland.
The Greek *herma* meant 'stone' or 'rock' used as a boundary marker or landmark. The term combines the multifaceted origins of the concept of waymarker. It overtly links marking a place with marking a boundary. A boundary can be thought of not merely as a territorial property line in a contemporary sense, but a place of transition between different parts of the world; the world of the living and the Underworld, the world of humans and the divine, the world of the known and the unknown. The Old English word *landmearc* also carries the links with the boundary mark, a place where different territories met. Archetypal markers of boundaries, places of worship, and graves were very similar, with a simple stone heap, a cairn, or an upright stone used most frequently across a number of cultures.

FIGURE 2.7A-6: ancient stone "crosses" in England.

FIGURE 2.7A-7: Swiatowid, the four-cornered god-pillar of the pagan Slavs, placed at crossroads, was believed to protect the settlement. The form of these pillars is very typical for many representations of protecting deities (protecting the roads or important places along them).

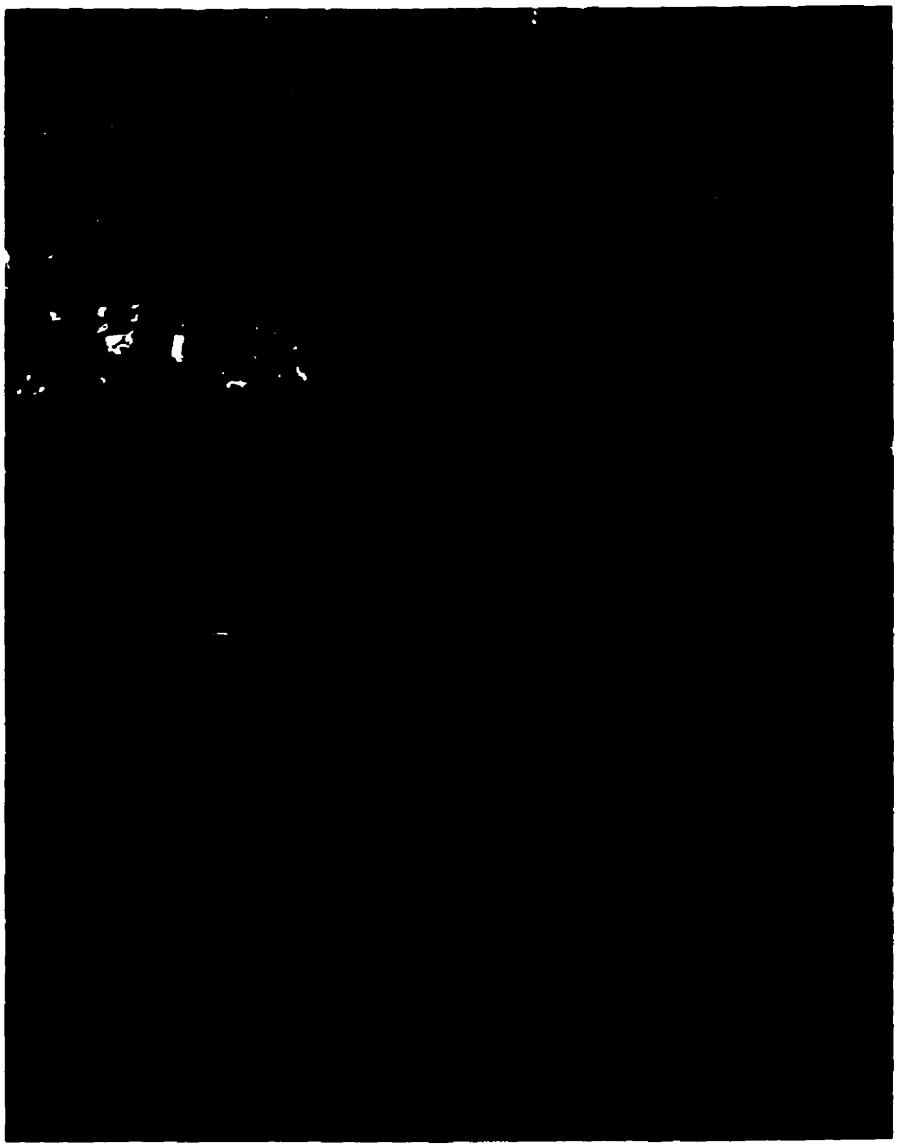

FIGURE 2.7A-8: herm with four heads set on the parapet of a bridge, Tiber Island.

FIGURE 2.7A-9: *kapliczka przydrożna*, a wayside cross typical for Polish country roads.

Typical of this kind of marker is the placement along the road and Christian symbolism. The crosses greatly differ in their construction, materials, and ornamentation. Many stand alone; some are fenced in; smaller crosses and shrines are often attached to large trees at crossroads or special places.

FIGURE 2.7A-10: a wayside shrine, Beskidy, Poland.
Materials and methods of construction differ greatly from one region to the next. And even within the same "type", there would be a number of local variations.

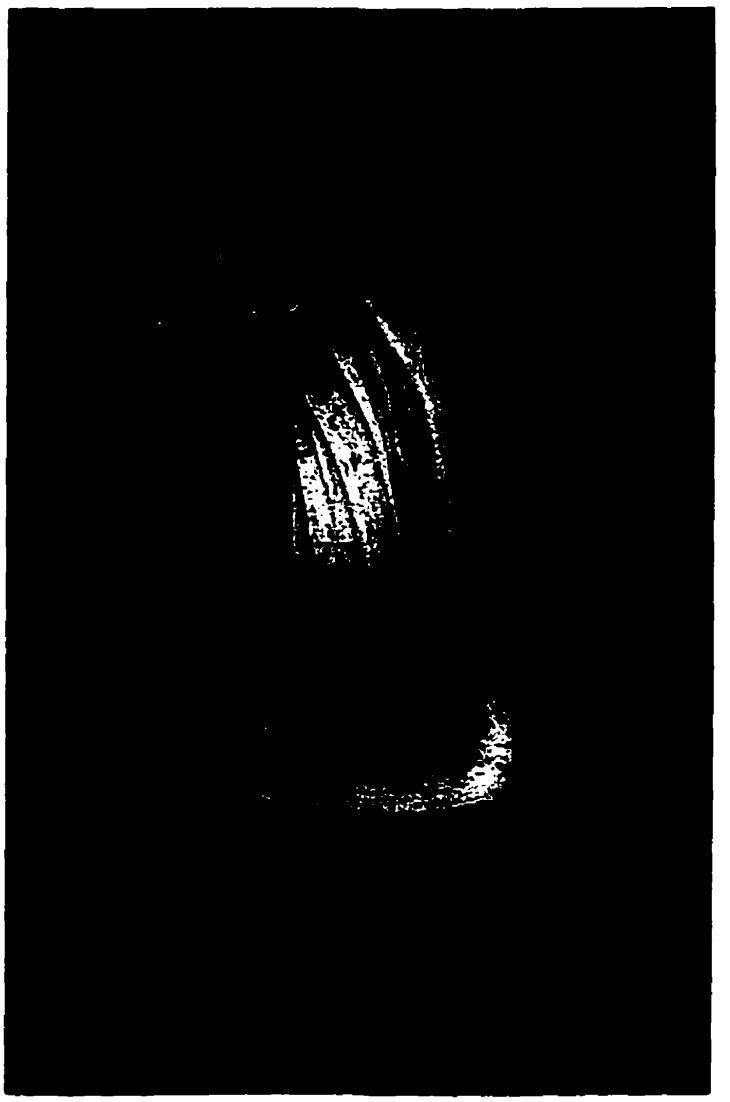

FIGURE 2.7A-11: wayside figure of a locally revered saint, so called *Świątek*, Poland.

..ka ino spojrzeć drogom idącemu wsiowom,
wszędy dojrzy figurę, tu starom, tam nowom,
każda grubso topola, wierzba i przypłocie
wprasa świętom opatrzność znużonej tęsknocie
Chrystuski frasobliwe, Matki Boskie Zielne,
Barbary, Floryjany i swięte kościelne,
Których się wypierają wszyckie kalendarze.[1]

The poem, written in an old local dialect from southern Poland, describes several different types of wayside shrines, figures, crosses one can come across along country roads.

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[1] Emil Zagadłowicz, *Ballada o powsinodze beskidzkim świątkarzu, o Bogu prawdziwym i Chrystusie Frasobliwym...* quoted in Seweryn, *Kapliczki i krzyże przydrożne*, p. 7.

FIGURE 2.7A-12: a field boundary wall, a visible articulation of place.
Walls were not merely defensive, they could be simply demarcating the territory (much like boundary stones), or they could be infused with sacred, symbolic meaning. They were marking specific places and commemorating their specific histories. The Mycenaean Wall in Athens was built with fragments of destroyed temples; with the Caryatids forced to stand and survey the site and the remains of Athens, it is one of the most powerful ancient examples of marked places of importance.[2]

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[2] See Rhodes, *Architecture and Meaning*; Cooney, *Sacred and Secular.*

FIGURE 2.7A-13: a surface-applied place-marker.

FIGURE 2.7A-14: place-marker within the signscape dominated by other types of signs and displays. Times Square, New York City.

B. REFERENCING INDICATORS: elements of infrastructure.

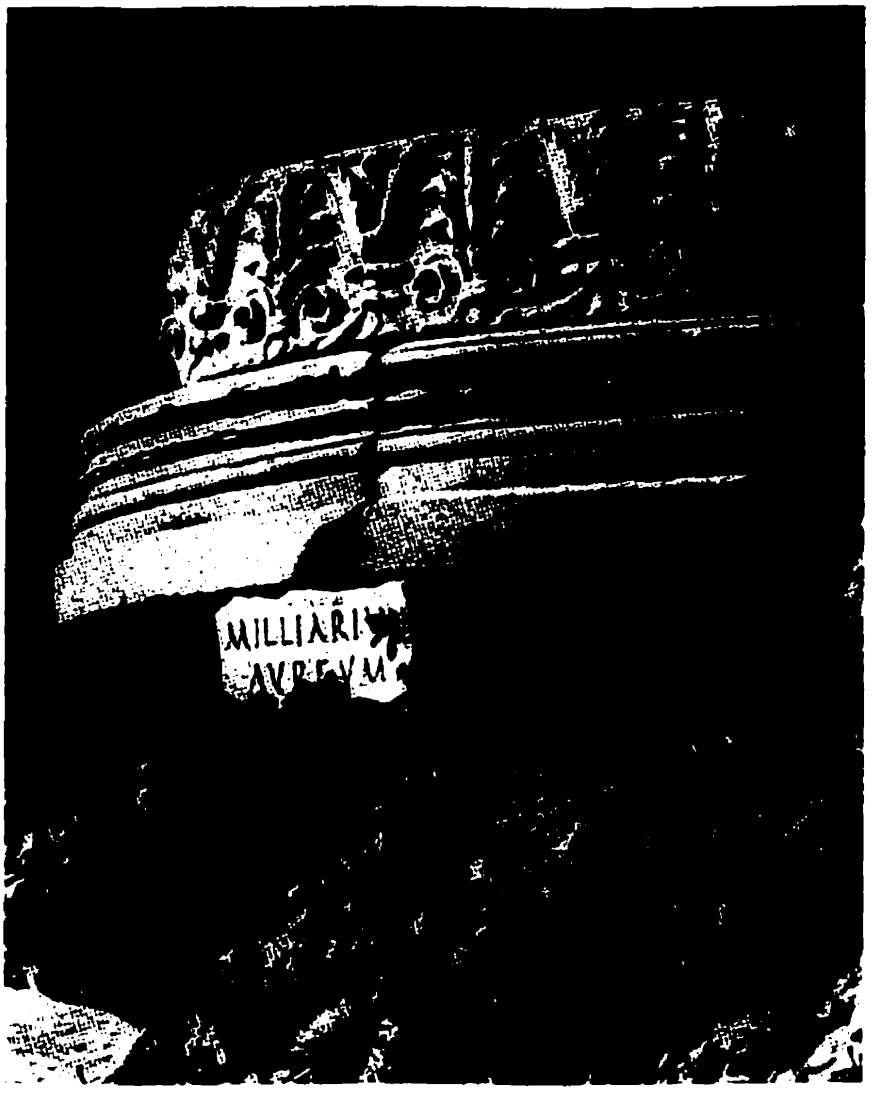


FIGURE 2.7B-1: The base of the Roman Milliarium Aureum, The Golden Milestone, a guilded column that Augustus, the first emperor of Rome (63 BCE-14 CE) erected in the Forum in Rome. The starting point of all imperial roads, the column listed distances to important places that Roman roads lead to.

The use of signposts to label roads and distance is most often associated with the road system of the Roman Empire. The idea of a systematic way of marking, and the very idea of a unit of distance, are both associated with the Roman road-marking and its manifestation in a *milestone*. There must have been many thousand of carefully hewn milestones along the 105,000 miles of the road network. The inscriptions on each stone indicated not only distances, but details on when the road had been planned, built, and repaired, and who funded and initiated the construction

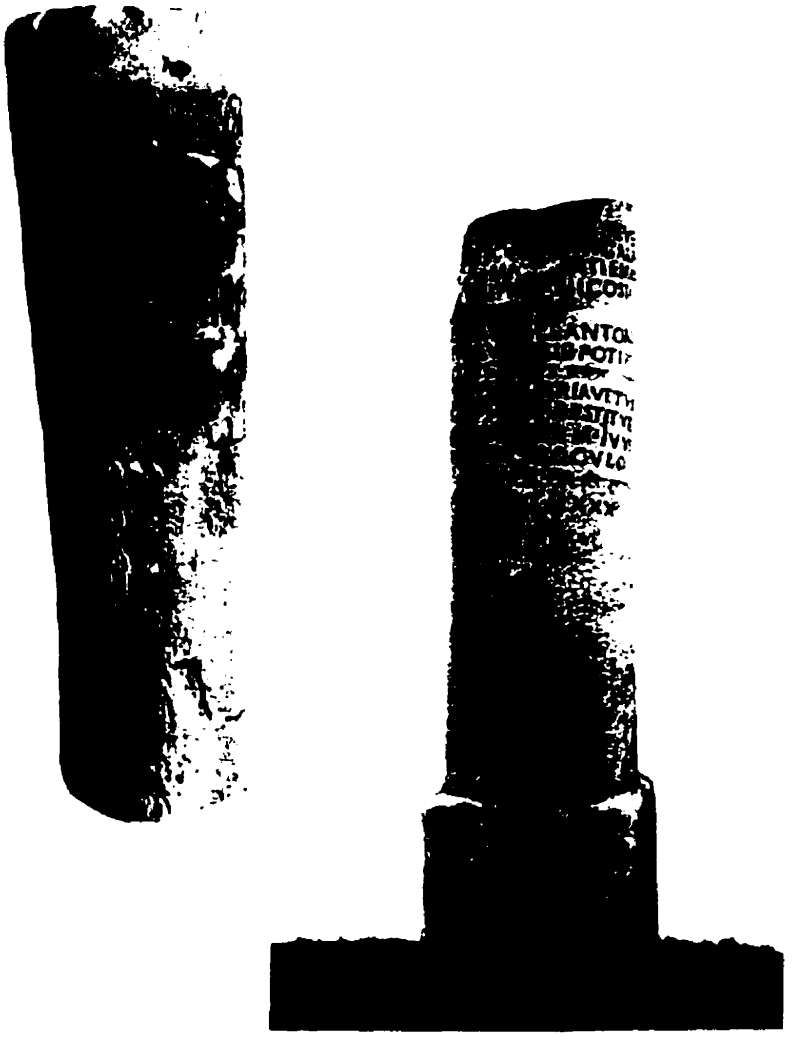


FIGURE 2.7B-2: Roman milestones. At left, from present Germany, near Köln, dated 293 AD, inscription bears the name of Constantius Chlorus and Galerius Maximuanus. At right, from present Austria, the stone is dated 201 and 211 AD. with the names of Lucius Septimus Severus and Marcus Aurelius. Very few complete markers with legible inscriptions remain; most have been lost (used for construction and refashioned for different uses as gate-posts, columns, supporting bases).

The idea of a standard, recognizable built element denoting distance has been used throughout the centuries. Roads built in the times of subsequent European empires, which in many cases followed the Roman road network, also employed an elaborate system of marking that served not merely as a mechanism of measurement, but an important annotating system for the organization of power. During the time of the First Empire in France, for example, an elaborate system of marking was developed for the road network, with large stone posts placed every mile, indicating distance, the name of the provincial capitol from which it was measured, and the entire distance of the stage. In addition, outside the city gates large portals with the names of routes were placed, and *colonnes indicatives* or obelisks (*les 'pyramides'*) marked crossroads indicating the direction and distance to specific places. In much less elaborate versions, many European roads built in the 20th century still used plain stone posts every 100 meters, with a larger and differently colored marker every kilometer.

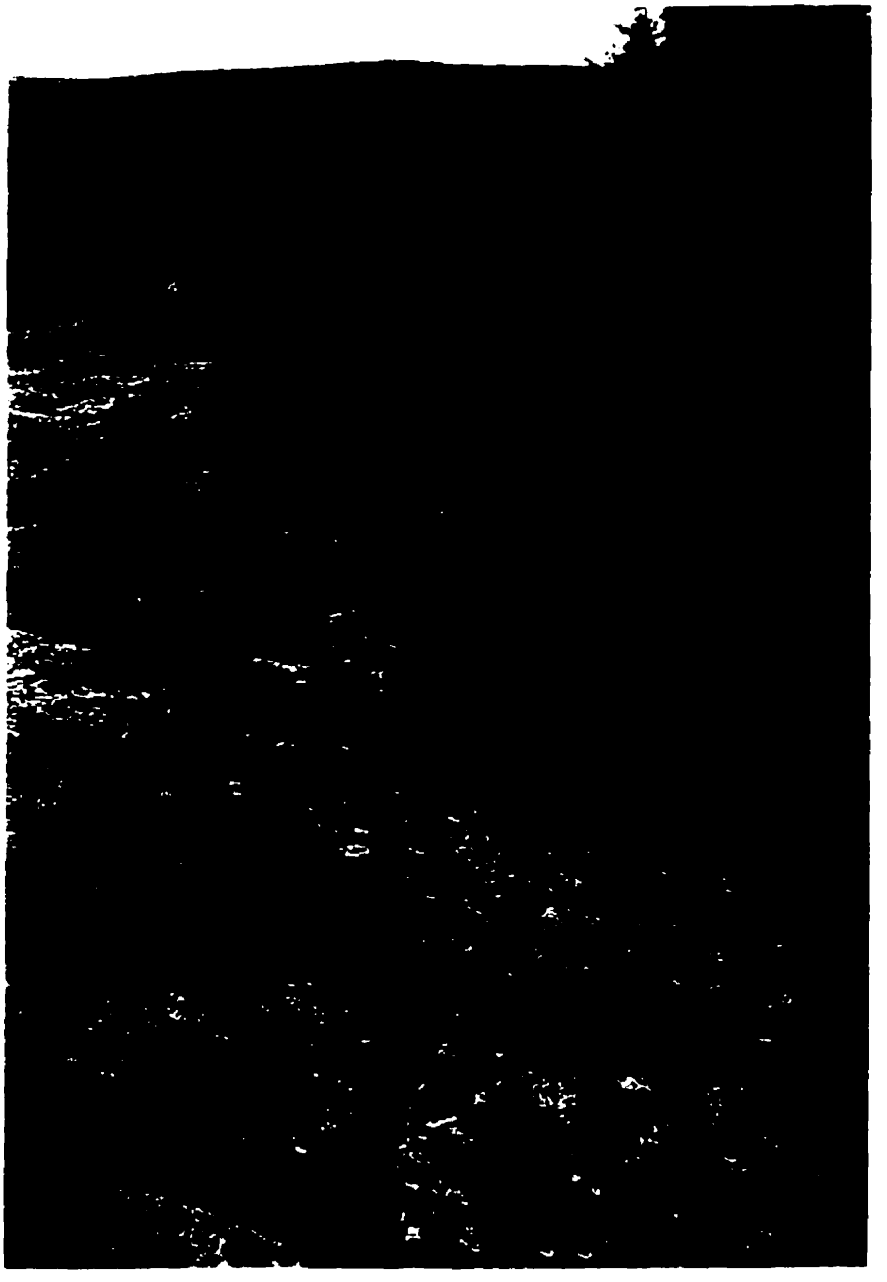


FIGURE 2.7B-3: the Roman road itself was a visible indicator of the infrastructural system.

Throughout antiquity, the roads were measured and marked, though in a less systematic way than in the time of the Roman empire. Itineraries of distances and landmarks, places along the roads were carefully recorded and preserved. Geographic information and measurements may not have been as accurate as our contemporary scientific methods allow for, yet these measurement were used for centuries as the basis of geographic information. Well through the Middle Ages, maps were based on the detailed descriptions of earlier travellers and pilgrims, and earlier records like that of Herodotus. Geographic knowledge was built on distances described in relation to specific markers, natural landmarks, temples, shrines, holy wells, and larger landmarks, settlements and cities, visible elements in the landscape.

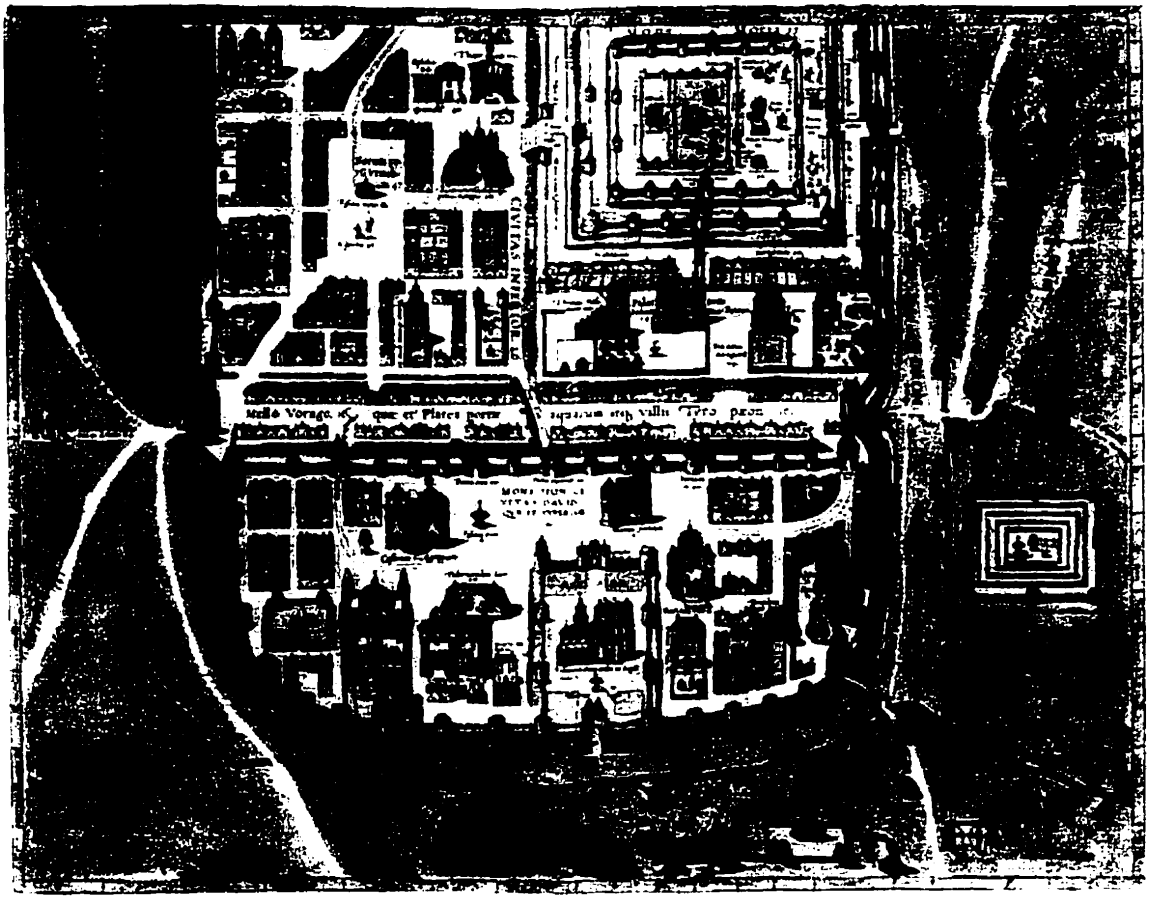


FIGURE 2.7B-4: fragment of the plan of Jerusalem, 1588

Systems of fortifications formed an important component of the road system; as much an element of measurement and indicator of the boundary as defense infrastructure. Limes Arabiae, Limes Tripolitanus, a long system of fortifications bordering the territory of Germania or the Hadrian Wall in northern England. The walls show the complexity of infrastructural marking. At intervals along the wall marking the territory of the Empire, mile-castles were fitted; spaced between the mile-castles turrets, the sentry and signal posts would be fitted.

FIGURE 2.7B-5: Medieval paintings are a good source of information on various road-related markers and amenities. This painting by Bosch depicts in the background an inn along the road, an important marker along the way and a necessary service station in the infrastructure of road networks. Inns were typically located at manageable distances from one another, so the traveller could get from one waystation to the next during daylight.

Many elements crucial to the road infrastructure and geographical knowledge may not be recognized as such from our contemporary perspective. The 1888 directions given in a guide book on the remaining Roman (Hadrian) Wall and its structure notes (quoted by Gore in *Ancient Monuments*, p. 47): "to the north of Twice Brewed Inn. Approach by footpath from the road leading north from the Inn." And "on the south side of the main road from Newcastle just east of the road junction at Heddon-on-the-Wall". Perhaps less specific in terms of distance, but indispensable for orientation. Casson describes directions given in the times of travel in antiquity. Street names, signs and street numbers were not used. In ancient Greece, a character from a comedy by Plautus looking for an address and describing his confusion: "My master said it was the seventh building from the town gate" and a few line later he reports that "he is staying at the third inn outside the town gate." (See Casson, *Travel in the Ancient World*, p. 86)

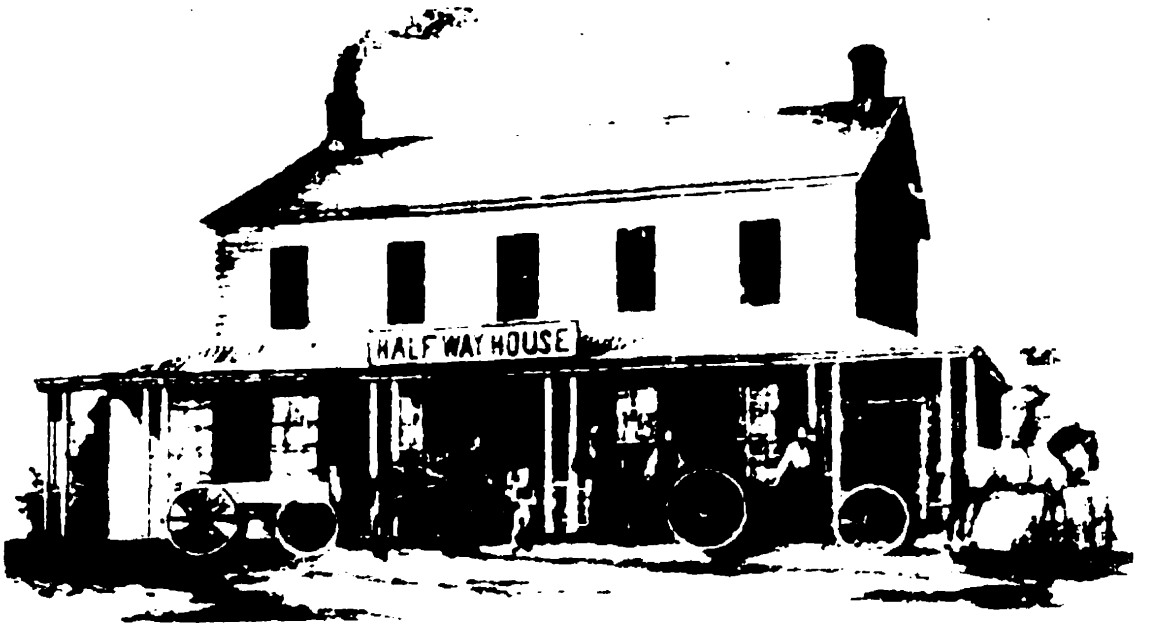


FIGURE 2.7B-6: Service stations would often mark distances, stages along established routes. Freel's Half-way House, a road-side inn in Freelton, 1859.

Even in Roman times, taverns formed as important a component of the infrastructure as milestones. Taverns are noted in most itineraries, for example. Taverns, inns, in their form or siting did not express distances in an overt manner, but were indicative of the intervals of the road. Taverns were also visible markers of stages of the journey. Inscriptions and hanging signs which were displayed on the outside to attract the customers, could be found in Pompeii. There is a rich body of literature tracing the histories of inns, hospices, taverns. The history of graphic design devotes considerable attention to the signs of inns. Signmaking for inns developed into a significant profession in England, and many historians have traced the styles and significance of these markers. Less importance seemed to be given to the importance of inns and taverns to the road systems and their navigational, orienting aspects, to the siting of these amenities and their relation to infrastructure.

The medieval period, with its manifold developments in religious and secular architecture, is not often mentioned for its achievements in road infrastructure building, or creating a system of way-markings. Pilgrimage roads however, formed intricate networks of communication. While distances and stopping places were not based on engineered signs and precisely positioned markers indicating numbers of units of distance traversed, distances were carefully measured and precisely and deliberately marked. A system of hospices, with their specific architectural type and amenities, specific siting in relation to the landscape and settlements (the city), were indispensable elements of the roads, as were places of worship that marked the road between the more important stopping places, waystations. Distance was measured, as in much earlier times, in units of distance travelled by foot in one day (the pace of human walking), like the ancient *parasangs*, the day's journey was important to the foot traveller. Architectural elements were an important part of the system of visible markers, and a system of reference. Cities, with their bounded and strongly articulated presence, were not only visible, but their silhouettes were recognizable from a distance (the rooflines of their buildings, the shape of their walls, their position within the landscape). Other visible elements in the landscape, like taverns, inns, chapels, villages, also served as markers of distance and indicators of direction.

FIGURE 2.7B-7: Some markers were more specific in terms of pinpointing distance. *Slup koninski*, a half way marker on the ancient amber track leading from Jablonkowska passage, Kalisz, Kruszwicz, along the Vistula river to the Baltic sea. The post is dated 1151 and the inscription attests to the true measure of equal distance between two towns, Kruszwica and Kalisz. (The Latin inscription notes on whose orders the road was measured and the marker erected. The passer by is also asked to say a prayer for the soul of the post's founder, Piotr Stary Wszeborowic..)

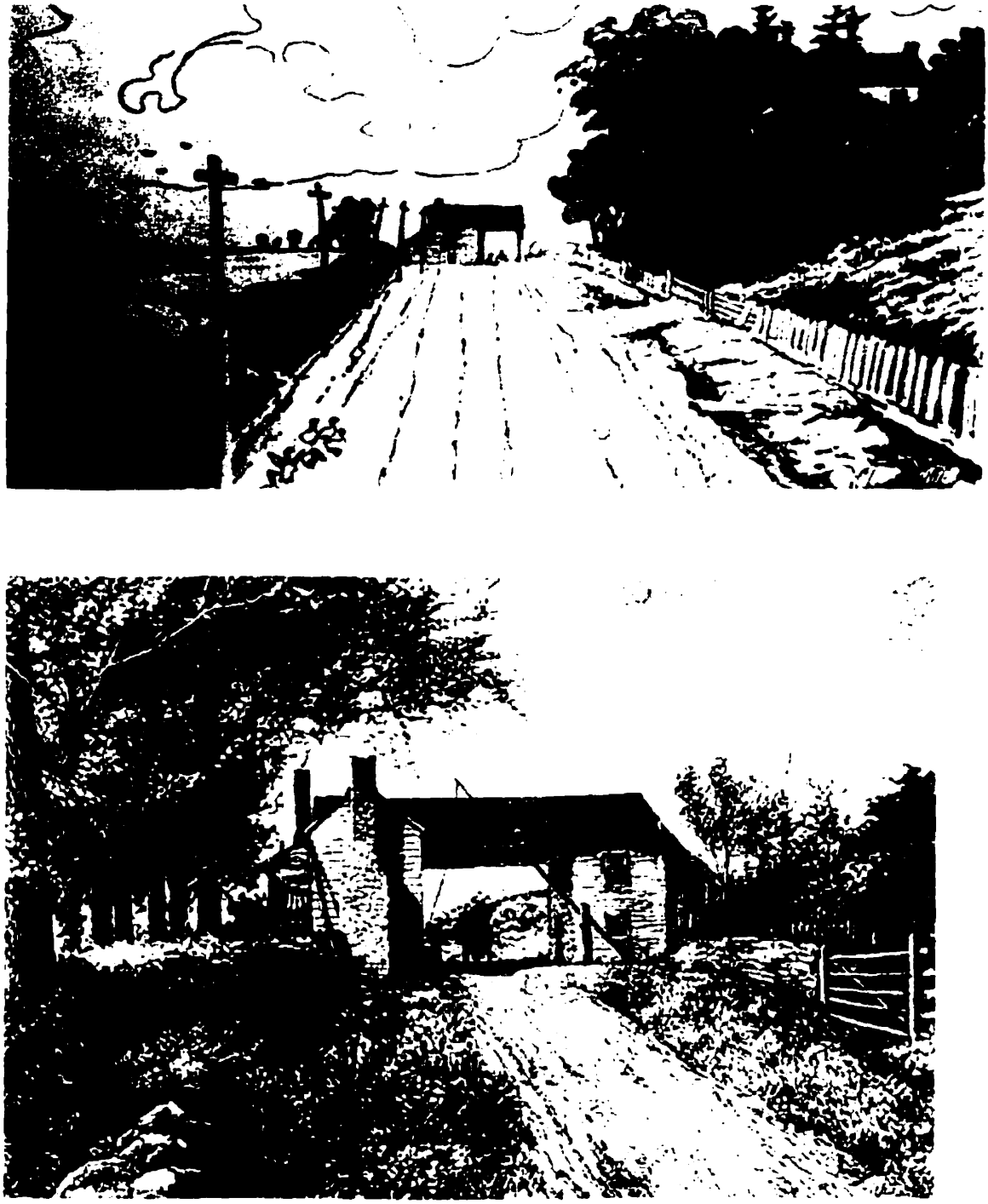
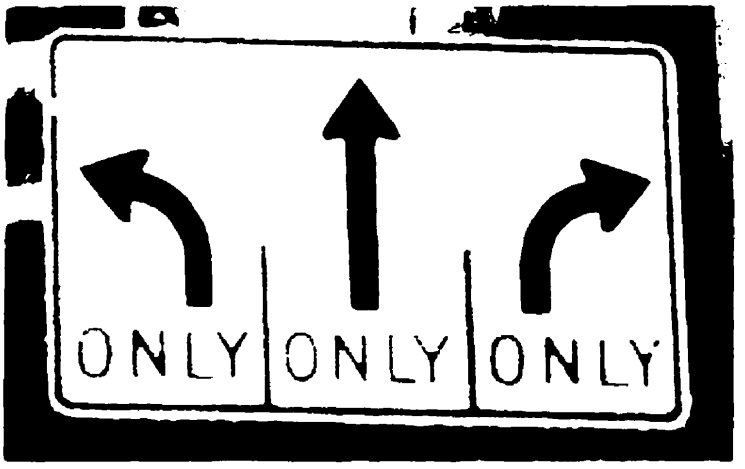


FIGURE 2.7B-8: Points of transition have always served as elements of control: gates, bridges, turnpikes, various territorial markers (border stations). Second toll-gate, a visible marker of controlled passage. Yonge Street, at Hogg's Hollow, 1850.

FIGURE 2.7B-9: a service station along the way, a necessary component of the road infrastructure.

FIGURE 2.7B-10: complex infrastructural referencing systems within the modern urban setting.



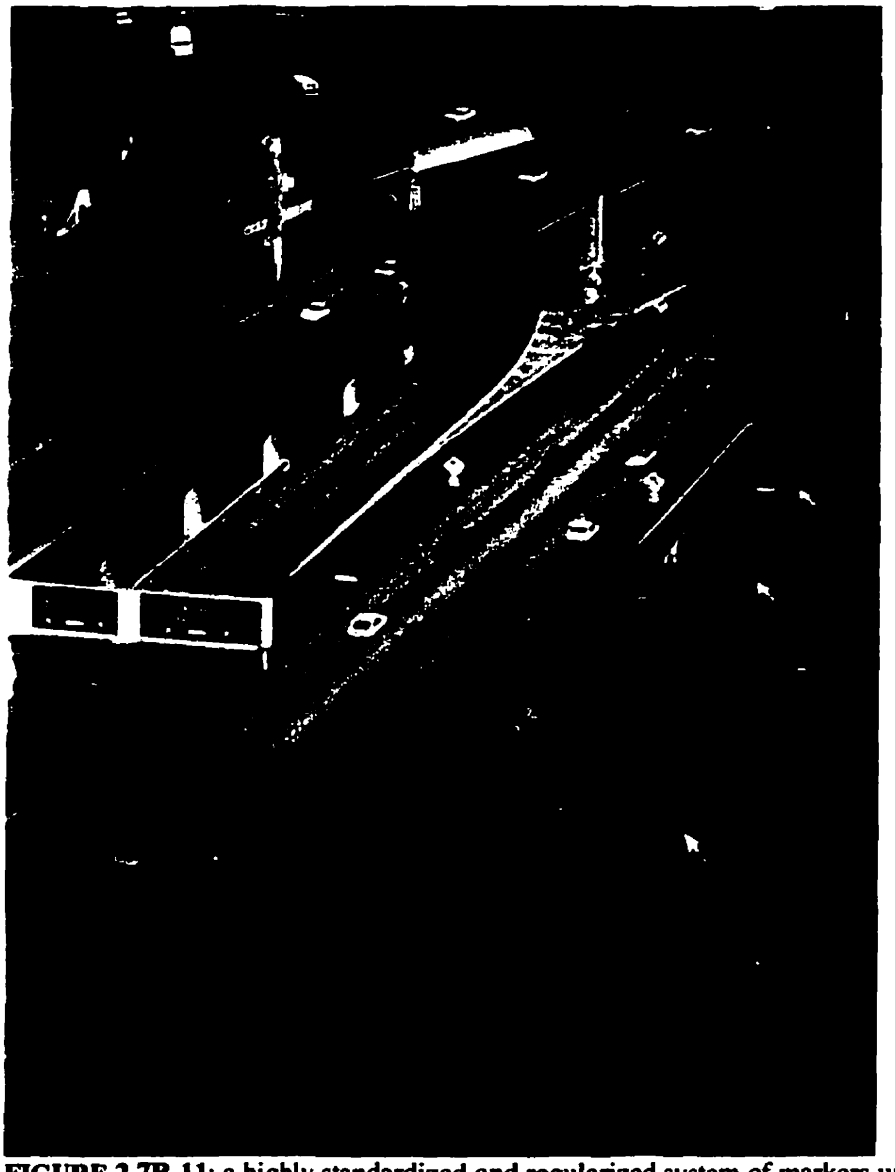


FIGURE 2.7B-11: a highly standardized and regularized system of markers within the contemporary high speed road system.

C. DISPLAY SIGNS ALONG THE ROAD

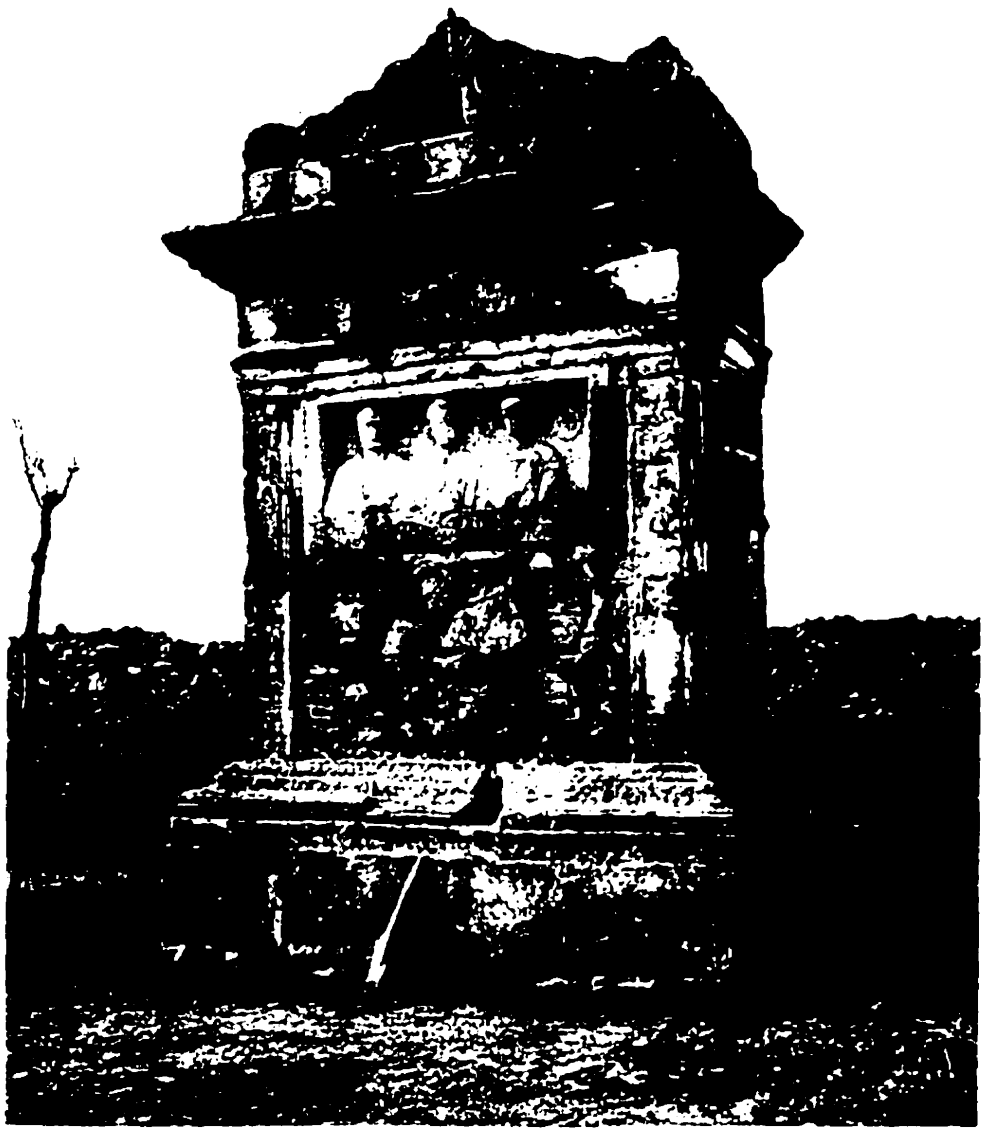


FIGURE 2.7C-1: Roman family tomb from Via Appa.

Since many cultures were anxious to bury their dead in holy ground, ancient roads were fringed with burial places. Monuments that marked places of burial were sited along the roads for reasons of access and visibility. At these places, offerings could be made, and the importance of ancestors, their memories, names, or their deeds could be broadcast. This was a Greek practice, later continued by the Romans. Sites near the towns where various roads converged were particularly sought after. The same was true for road-junctions where traffic was heavy and for, above all, the most visible place, city gates. Many important heroes were buried at the main gate of town. Heroes would often be honoured by being buried by a main road, particularly at cross-roads.

FIGURE 2.7C-2: inscription on the flag stone from the median of the Sacred Trail in Babylon:"Nabu and Marduk, when you wander happily along these roads, may benefaction for me rest upon your lips, a life of distant days, bodily wellbeing. I shall wander along them before you. Grant that I may become old for ever".

The median of the Sacred Trail was paved with flag stones which had inscriptions on their downward facing sides, with the messages meant for divine eyes only. They were not visible to the passerby, but can still be considered precursors of advertising: they were broadcasting a claim on an action for the purpose of further gain. They were advertising on the billboard of the road the greatness of the deed (construction of the road), and asking, in return, for immortality.

FIGURE 2.7C-3: Fort Lauderdale, Florida, fall 1997: several billboards like this one, each with a different missive from God, confronted commuters for several months. The sponsor of the campaign remained unnamed.

FIGURE 2.7C-4: Display signs often encroach onto the sign infrastructure. Sometimes the place of promotion/display is earned by a contribution to the infrastructure (sponsorship of the particular display that serves public or infrastructural purpose). The promotion and the sponsorship can be overt, as in the way the half-way marker cited as an example of referencing indicators, *Slup koninski*, also promoted its founder with an inscription on the base clearly specifying "courtesy of whom" the signpost was provided. The name of its founder and the prayer (offering) for his soul was the payment for his contribution to the infrastructure.

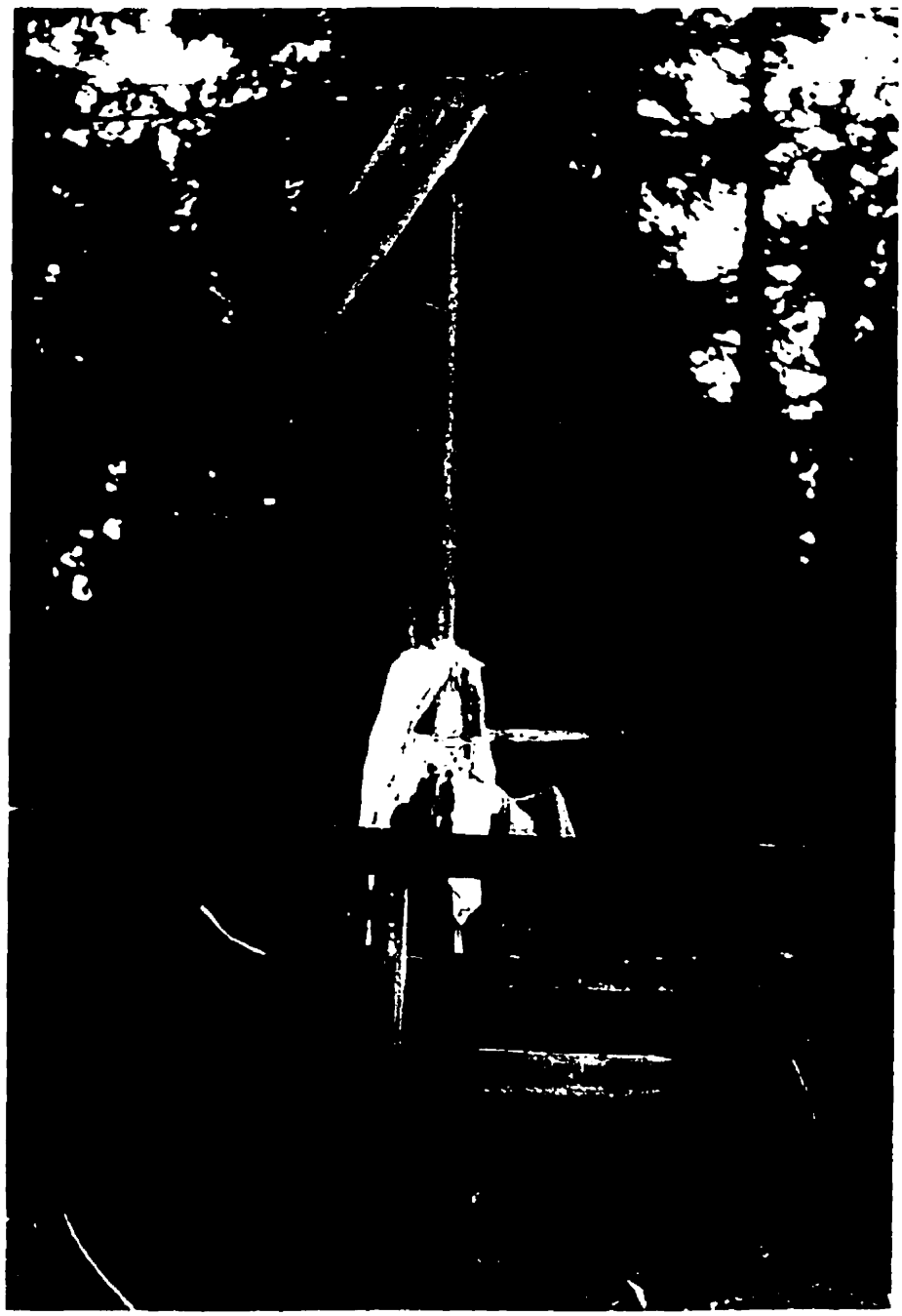


FIGURE 2.7C-5: votive crosses, mourning crosses were places were prayers where heard, offerings made.

Many markers carried specific requests for protection against various misfortunes. Crosses asking for protection from the plague were very common across medieval Europe during various outbreaks. Many displayed specific prayers, signs asking for protection, requesting that adversaries go away ("*fugite partes adversae*") or simply stating in an inscribed message that the cross has this particular function ("*contra pestem*"). See Seweryn, *Kapliczki i krzyże przydrożne*, p. 9.

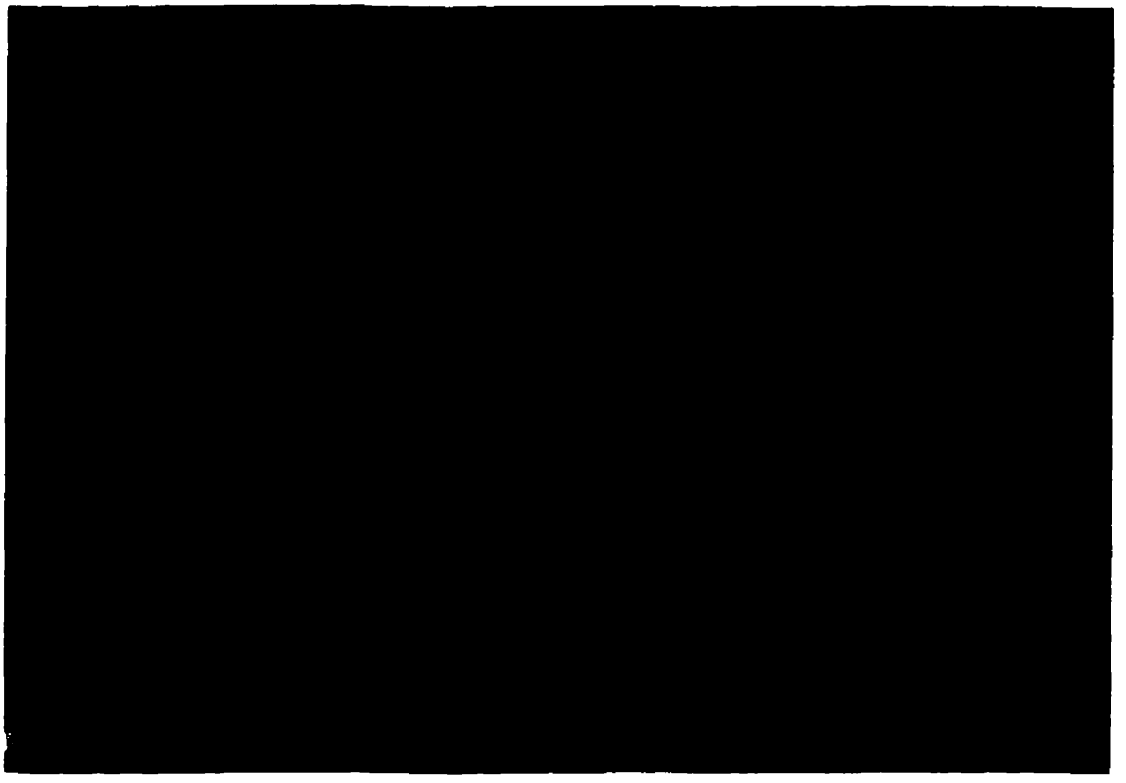


FIGURE 2.7C-6: one of many signs displayed in Walkerton Ontario during the E.coli outbreak in the summer of 2000.

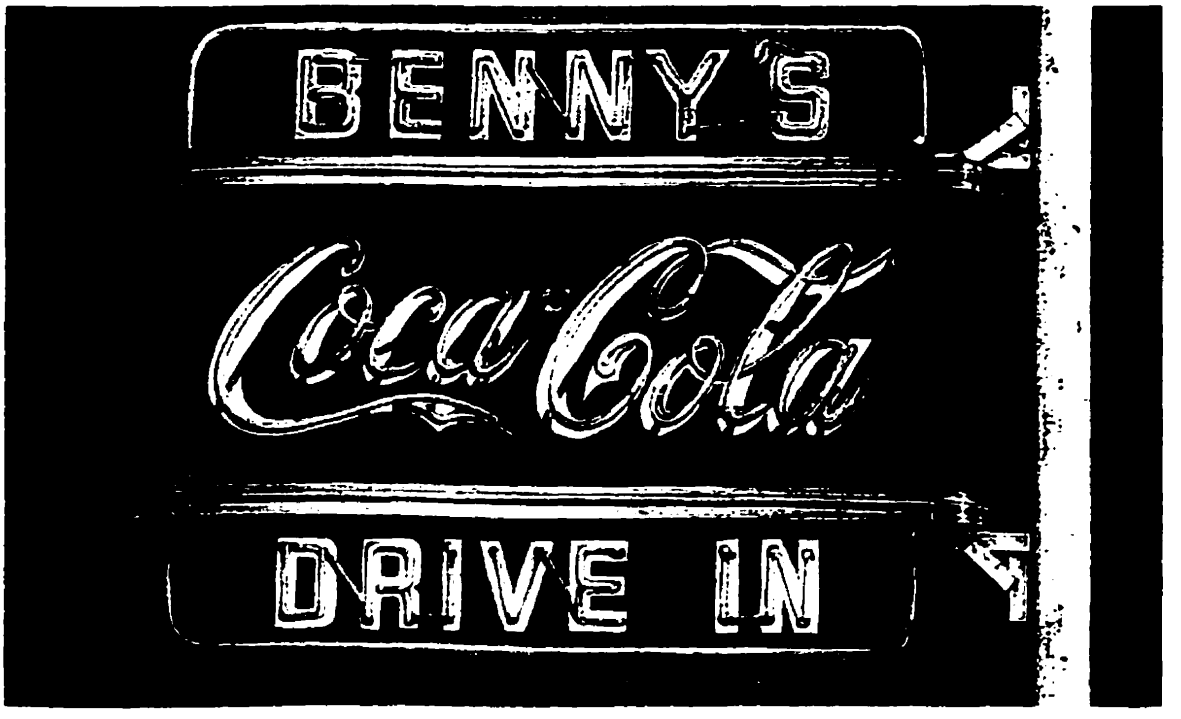


FIGURE 2.7C-7: promoting the place and promoting the sponsor.

FIGURE 2.7C-8: renting out the infrastructure for advertising.

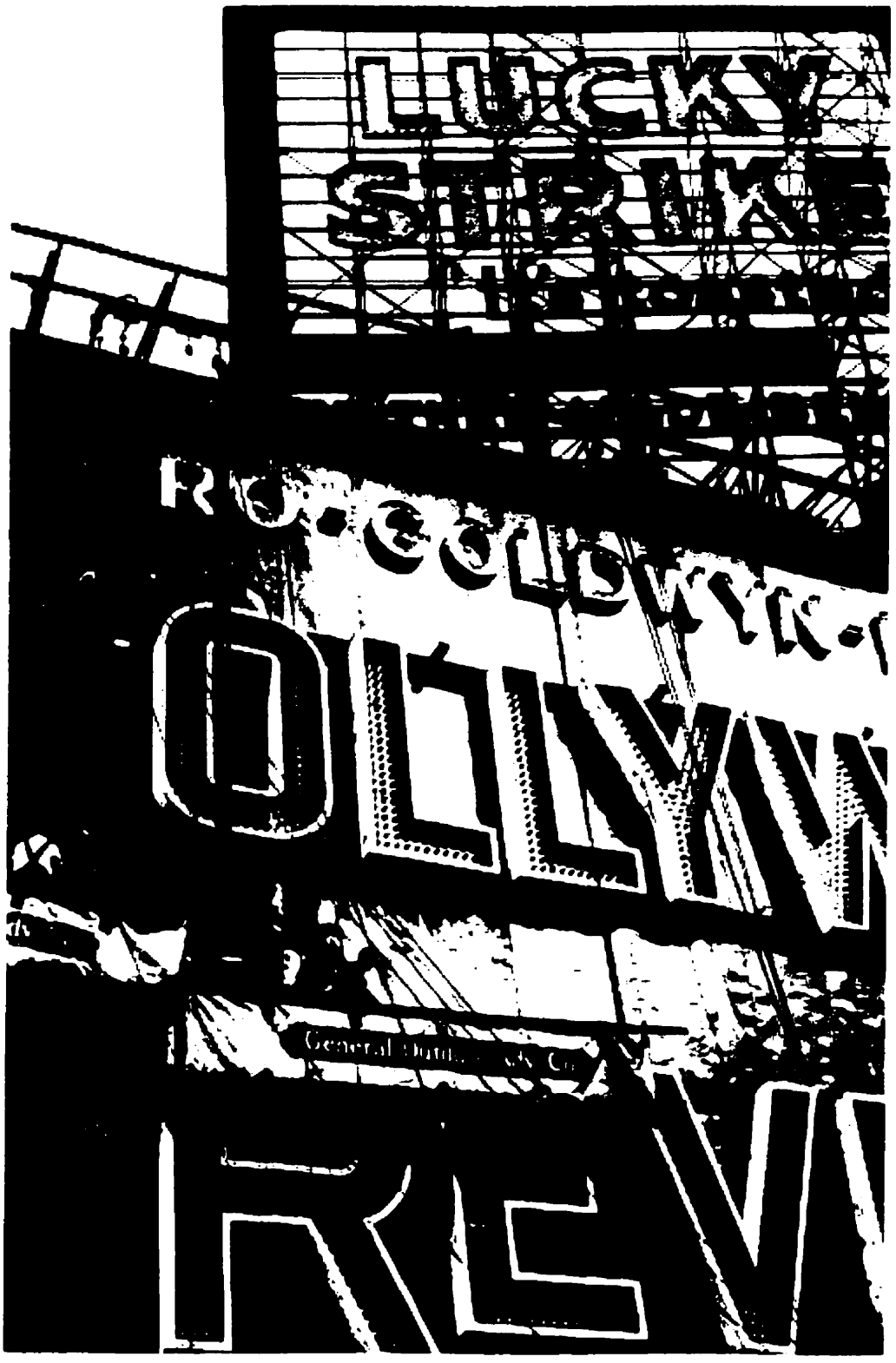


FIGURE 2.7C-9: display signscape.

FIGURE 2.7C-10: informational environment along the road. As Venturi claims in the catalogue to the exhibition *Signs of Life*, "the billboard has become the architecture of the highway", and "the sign *is* the urban landscape".

CHAPTER 8

Communication as Place Marking.

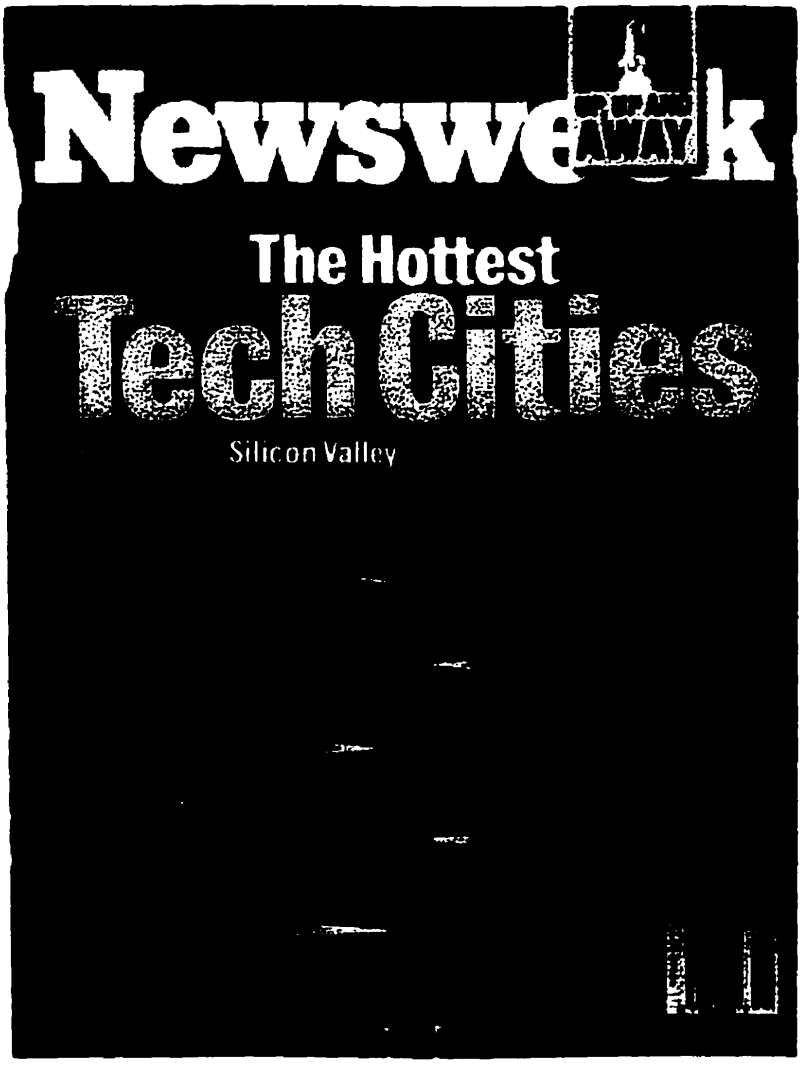


FIGURE 2.8-1: Our use of metaphors, visual and linguistic, indicates the importance of place- and way-markers in our conceptual systems. The proliferation of visually traversed informational environments may be transforming 'markers' into 'pointers'. How does this change/affect the role of place in communication?

We examined how the concept of the itinerary illuminates some of the important connections between a physical route and its communicative environment; between the implaced materiality of route markers and their communicative power, and between the specificity of place and communication. Steven Graham and Simon Martin, in

Telecommunications and the City, claim to offer the first comprehensive analysis of the complex inter-relationships between electronic spaces and urban places, "a broad and synoptic approach" to an otherwise neglected analysis of the effects of telecommunications on actual cities.[1] "Because of this neglect", they further propose, their "journey through the most important types of city-communications relationship is analogous to an early expedition into a largely uncharted territory. This journey is assisted by a highly imperfect map".[2] Indeed, the map's imperfections seem apparent if we consider that the basis for arguing the new framework is sought in the space of discourse between utopian and dystopian theorists.[3] The discussion of urban place is thus positioned without *topia* at all, apart from the very concept of place and its material reality. Graham and Martin assert that "telecommunication – literally communication from afar – fundamentally adjusts space and time barriers" and they point to the often-mentioned modern shift away from the production and circulation of material goods toward the circulation and consumption of symbolic and "informational" goods, within a "society dominated by information, communication, symbols, and services".[4] The apparent tendencies of "the movement from physical, local neighborhoods to specialized social communities sustained over electronic networks" are frequently mentioned in the

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1 Graham, Steven and Simon Martin. *Telecommunications and the City. Electronic Spaces, Urban Places* (New York: Routledge, 1996), p. 2. This is in contrast to the focus on social space as pursued by Meyrowitz in *No Sense of Place*, or the focus on the inevitability of replacement as demonstrated by William Mitchell, in *City of Bits* and *e-topia*, or by Nicholas Negroponte in *Being Digital* (New York: Alfred A. Knopf, 1995).

2 Graham and Martin, *Telecommunications and the City*, p. 2.

3 Ibid.

4 Ibid., p. 10.

literature on electronic communication technologies.[5] Graham and Martin suggest that despite the significance of these shifts, investigations of the impact of telecommunications on urban form and the city's informational environments "have been virtually non-existent" or "woefully inadequate."[6]

Actual telecommunications-based developments in real contemporary cities are rarely analyzed in detail, and when they are, they often seem to be discussed through metaphors curiously based on the comprehensible spatial structures and elements of past built environments:

> ... thus the satellite ground station becomes the tele*port*'; the highly capable trunk network the 'information super *highway*'; the computer conferencing system becomes the 'virtual *community*'; the local community electronic bulletin board is labelled 'the public *square*.'[7]

While telecommunications are intimately involved in complex changes across all areas of urban life, the precise nature of these developments is subtle and difficult to disentangle. Thus, profound implications on urban physical form and significant spatial restructuring are often dealt with through a discourse of metaphor. If we are attentive to this discourse, however, we can discern two parallel planes: one focused on the role of telecommunications in dissolving the need for physical proximity and for presence in communicative practices, and the weaker but persistent tone that continues to hold on to (if only at the level of metaphor) the spatiality and materiality of physical environments and the human place within them.

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[5] Graham and Martin, *Telecommunications and the City*, p. 5, this prediction has become a cliché in much literature dealing with electronic communication and the city. See Mitchell, *City of Bits*, and *e-topia*.

[6] Graham and Martin, *Telecommunications and the City*, p. 7, see also Michael Barry, "Intelligent Cities: using information networks to gain competitive advantage," *Environment and Planning B: Planning and Design* (17, no. 2, 1990), pp. 247-256.

[7] Graham and Martin, *Telecommunications and the City*, p. 9.

Graham and Martin propose two key questions pertinent to our discussion as well: what are the historical linkages between telecommunications and contemporary patterns of urban form? And how can we develop a more sophisticated framework to understand the relationship between telecommunications and the contemporary city? In answer, they offer an historical analysis of the linkages between the development of a typical North American city and the telephone. While useful in some ways, such an examination does not provide a temporal or conceptual depth adequate to the complexity of the problem at hand.

To trace the impact of telecommunications technology on the city and its built and informational environments, one needs to probe more deeply than the immediately preceding communication mode; one needs to cast the net more broadly than the premise that " cities developed, at least in part, to make communications easier", that the early industrial city developed into dense settlements of intermingled functions because of the necessity of face-to-face interactions, and communications "dependent on the physical movement of people, goods, and services".[8] Humans have used "telecommunications" – if defined as communications from afar – for millennia. They have inscribed messages in different media to transport them across time and space, to make them be seen, heard, understood and remembered across spatial and temporal dimensions. They have developed intricate systems of linkages amongst numerous media employed at the same time for different or similar purposes. The relationship between communication and the built environment of settlements has always been one of the most palpable, most visible, most expressive of changes, and highly vulnerable to them. These relationships have

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[8] Graham and Martin, *Telecommunications and the City*, p. 33.

since the beginning been deeply entangled in the developments of technologies of movement and storage, and the systems of knowledge and social formations that have supported them. They have been manifested in the most palpable ways in constructed environments, particularly in the character of the interfaces used and constructed for mediating between place and human action within it.

What if we consider that the direct face-to-face (or mediated, face-interface-face) communication of messages forms only one component of human communication? What if a significant aspect, an important mode of communication is in fact the communication of presence; to ourselves, to future generations, our gods (or simply desires and ambitions that drive us)? If it is not merely the message that is of import, but the way the medium carries it? Of course, McLuhan's famous words point to this, but they refer, and have been mostly applied to, modes of communication that have displaced the message (print, and electronic image or sound transmission media).

What if we consider the importance of media that were never meant to be displaced? Multi-modal communication seems to have been in use for millennia. And even through developments of means of communicating at a distance, modes of implaced communication (communication through grounded media) have persisted. Inscriptions have been made on portable and immobile media. Movable substrates were not necessarily substitutes, improved versions of the less mobile ones. They were not necessarily replacements for the solidly grounded, permanent markers. Light-weight clay tablets were available at the time the Hammurabi laws were inscribed in an 8-foot-tall

stone stele (similar in form to the markers of graves or other important places) and set in the temple of Marduk in Babylon.[9]

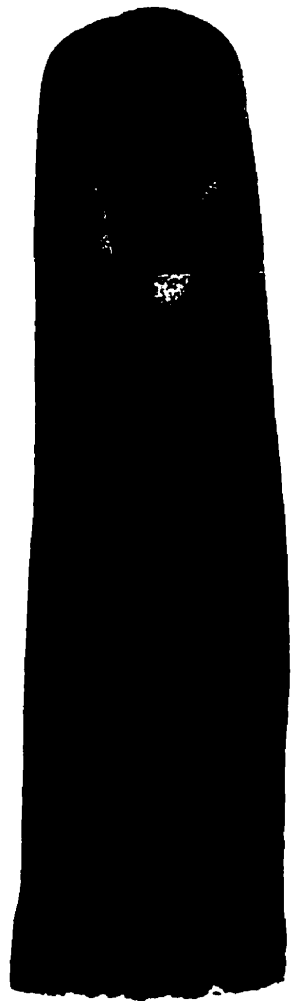

FIGURE 2.8-2: Stele bearing the code of Hammurabi, initially writtten between 1792 and 1750 B.C. The 8-foot-tall stele shows, in addition to the 282 laws, the image of divine authority, sun god Shamash, who ordered the king to write down the laws for the people of Babylon. The stele was erected in the main temple of Marduk in Babylon, with copies placed in the temples of other cities.

The famous Egyptian Rosetta stone was inscribed at the time papyrus was in abundance and in wide use, and when scribes produced on it works of exceptional beauty and complexity.[10]

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9 Meggs, *A History of Graphic Design*, pp. 6-8.

10 Ibid., pp. 10-11.

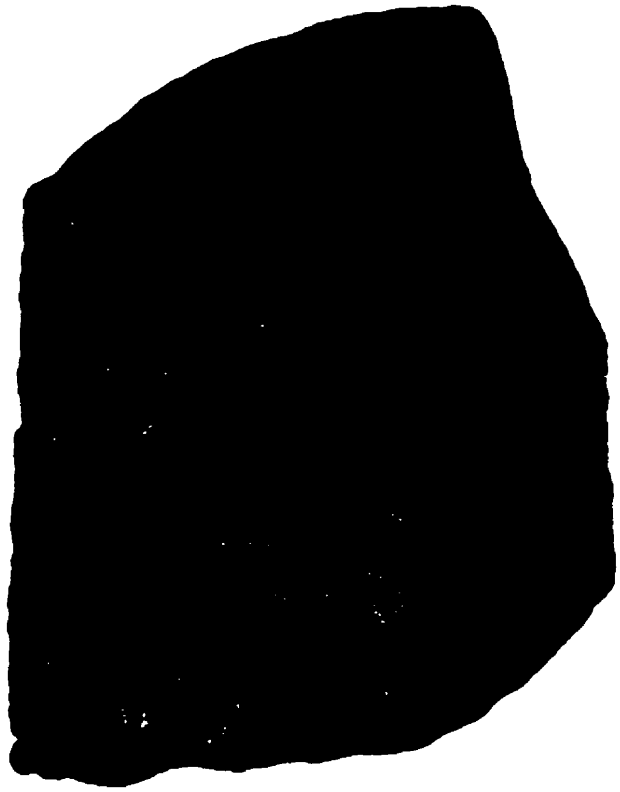

FIGURE 2.8-3: the Rosetta Stone, a black slab, c. 197-196 BCE. From top to bottom the concurrent hieroglyphic, Egyptian demotic, and Greek inscriptions that provided the key to the secrets of ancient Egyptian writing.

Egyptian scribes made insciptions on the walls of temples to mark their presence in a specific place, at a time when their "clever fingers" were producing magnificent papyri which were easier to transport over distance, and could have given the writer more exposure.[11] Several centuries later, graffiti artists mark the walls of contemporary cities at a time of high availability and low cost of reproduction and printing, and access to several electronic modes of communication. Cathedrals were built and important

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[11] Casson describes repetitive inscriptions on walls of Egyptian temples, like this one: "Hadnakht, scribe of the treasury, came to make an excursion and amuse himself on the west of Memphis, together with his brother, scribe of Vezier", dated 1244 BCE, on the wall of a chapel connected with Djoser's pyramid. Most inscriptions, as Casson notes, were not elaborate and consisted of the scribe's name and a simple statement praising his "clever fingers", *Travel in the Ancient World*, pp. 32 –4.

knowledge conveyed through their form and ornament, not only at the height of the manuscript culture, but well into the print age. And we continue to create grounded landmarks, and mark the roads, despite the availability of accurate mapping and positioning technologies.

It seems that the physical environment plays an active and important role in communication (in both transmission and ritual). An important part of communication is conveyed through the physical environment. We need to examine this attentively, especially when attempting to understand how our changing modes of communication affect the built environment, urban form, the material places around us. It has always been important to communicate through place: even when various modes of communication over distance were known, widely-used and available. Numerous modes of communication through place have been used in parallel with developments in the sending of messages across distances. It is possible that communication has always been about both: speed of transmission and permanence of broadcast; transportable and grounded, ephemeral and enduring. Communication has been concerned to the same degree with the sending and the storing of information. These simultaneous aspects of communication are difficult to disentangle, but not possible to separate without oversimplifying both.

What seems to preoccupy much scholarship since the emergence of electronic communications is the theme of the dissolution of the city and disappearance of place. McLuhan saw the emergence of the "global village" as a demise of the city which "as a

form of major dimensions must inevitably dissolve like a fading shot in a movie".[12] Since the 1990s, many voices have assured us that " cities will be freed from geography and defined not only by place but by intellect".[13] At the same time, patterns of intense telecommunications development correspond very closely with the routes and areas where transportation movement and developments in urban places are most concentrated.[14] The relationship between telecommunications and the physical dynamics of the city seems as strong and physically present as it is visible, despite the talk about the 'invisibility' of electronic connections. This relationship is manifest in both synergies and conflicts, but at the beginning of the 21st century, cities show few signs of dissolution – neglect and decay definitely – but not the fading of their materiality and weight.

Indeed, new developments in telecommunications, as Graham and Martin suggest, dramatically alter the "significance of distance in the organisation of space".[15] But this cannot be simply equated with the necessity for the dissolution of place in communication. An historical analysis that takes us back to the development of the telephone cannot provide much insight into the spatial development of urban form or our relationship to place. As suggested, we cannot adequately explain human communication

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12 McLuhan also understood the city as a site for "simultaneity of association and awareness", and if so, his global village with its "return of simultaneity" would most likely take hold *within* not *without* urban centers... Marshall McLuhan, *Understanding Media: The Extensions of Man* (New York: McGraw-Hill, 1965).

13 J. Pelton. *Future View: Communications, Technology and Society in the 21st century* (New York: Johnson Press, 1992), p. 2.

14 UK "Mercury", the second largest telecommunications company, has been laying their City of London network within an old network of hydraulic ducts that still underlies the main financial district. Optical fiber networks are being strung along railway lines by "Mercury", and even along the banks of old canals (by British Waterways). Physical synergies between telecommunications and physical networks mean that both tend to concentrate in the same city centers and along the same transportation corridors between them. Graham and Martin, *Telecommunications and the City*, pp. 329-330.

by taking into consideration just the developments that immediately preceded the mode we are analyzing. And we cannot understand telecommunications (as communication from afar) in any larger perspective by focusing singularly on its electronic dimension. We need to take into consideration the broader relationship of communication to the physical environment.

New developments in electronic communication technologies have brought about significant reconfigurations of our conceptual systems and their physical articulations within the built environment. The archetypal lines of communications (the roads, routes, paths, their elements and their marking: landmarks, boundaries, route-markers, guide-posts) persist in our conceptualizations of new communications. The story of the road thus reflects in equal parts a story of the transportable message and implaced communication; human movement and human dwelling. Dwelling and travel have always been bound together.[16] Historically, the human dwelling and settlement have acted as manifestations of an understanding of the human place within the world and cosmos.[17] But the concept of travel (and the story of the road) has always been anchored *within* – not *without*– the human settlement. The concept of the road and its navigational markers has thus undergone several major re-configurations closely bound to: the importance of physical place; human orientation within the cosmos; and communication technologies (technologies of both storage and transportation of material or purely abstract messages).

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[15] Graham and Martin, *Telecommunications and the City*, see particularly their discussion on telecommunications as a paradigm challenge for urban studies, pp. 48-75.

[16] See discussion of homecoming and homesteading in Casey, *Getting Back into Place*, pp. 290-2.

[17] Based on Norbert Schoenauer's lectures in History of Housing, McGill School of Architecture, 1995-6, and particularly his discussion on the Greek *megaron* as an archetypal temple. Also see Norbert Schoenauer, *6,000 Years of Housing* (New York: W. W. Norton & Company, 2000); and Mumford on archetypes in *The City in History*, pp. 9, 90-93.

To understand contemporary developments in communications, it is useful to look at just how historically bounded place and communications have been, and how this relationship has been expressed in the navigational markers used.

Place, whether dwelling or settlement, manifests human attachments to the physical environment, expresses the interconnection of specific locale and cultural practices and beliefs. Ways of claiming place, marking territory, marking its important physical components, give meaning and orientation to this relationship. The human position within a larger order has always been expressed in the ways in which knowledge has been transmitted and stored: the concept of self *vis a vis* the external world (the inside and the outside); the relationship to other structures and systems of references. These have been manifest in the ways in which places have been marked, claimed, appropriated, in their external symbols and the references that were made visible. Developments in technologies of communication profoundly affect both place attachment and the human position within a larger order. They are the first to change and express shifts in information storage and transfer. Each privileged technology of communication (both of movement and the storage of information) sets the tone for other forms of expression and social practice.[18]

Let us sketch out the provisional stages of development of the correlative interlacing among place, human orientation and navigation, and communication technology. This will suggest the richness of the territory for further exploration – for investigation of the effects of communication technologies on place and the information

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[18] Mumford examines this transformational power of technologies in *Art and Technics*, *Technics and Civilization*, and *The City in History*.

environments. We can delimit a few provisional eras of development, major re–configurations that the informational environment has undergone. These can be seen as different types of places and we will refer to them as such: place as landscape, walled place, traditional place, amorphous, and virtual place. Let us briefly describe each environment in terms of its navigational elements and their relation to location, orienting schemas, and technologies of communication. The general discussion that follows draws on Lewis Mumford's analysis of transformations of the physical environment related to the impact of technologies on the ways we store and transmit knowledge, and on Harold Innis' attentive examination of the spatial and temporal dimensions of various modes of communication. The discussion is focused on the relationship of communication to its physical context.

Nomadic place. Characteristic of nomadic societies (whether historical or contemporary), navigational elements are embedded directly within the landscape: the dwelling is placed within the landscape but does not necessarily claim its specific place; the road and the site of dwelling are seen as one and the same; and the technologies of movement and storage are intricately interconnected with dwelling and ways of marking place. Navigational elements interconnect dwelling, the road and language: rhythm, incantation, memory, landscape. They are all inscribed in the landscape. For a nomadic society, the road is equivalent to place. Movement through space is not 'transitional', movement (travelling) is both 'destiny' and 'destination'. And movement is not equated with ephemerality; notions of permanence and continuity are mobile, they are carried with the traveller (dweller) as cultural value, language, artifact, dwelling form and the rules for setting up the transitional shelter. 'Road' is contained within 'place'.

Navigation is a way of life, a way of understanding the world through the reading of subtle but recognizable cues from the surroundings. Though shelter is not stationary, it contains continuity and permanence in the rituals of travel and dwelling.

*The **walled place*** (city or settlement) can be described as the place where navigational elements take on a protective function: where place and dwelling are permanently delimited, bounded and immobile; where place is marked mainly for insiders, and protected from outsiders; and where architecture and building technology form the primary interface between human and landscape (the natural or the built environment) and are used for both the storage and transmission of information or knowledge.

The walled place warrants particular attention because signage in this formation is embedded deeply within its structure, in its rituals, ornaments and architectural styles rather than in surface-applied messages. For permanent settlers, the concept of place is spatially specific and locally bounded. The road exists outside of place, *without* the dwelling or settlement. The road is what connects places. Movement is differentiated from dwelling and classified in relation to distance from the shelter or settlement, and to its function (trade, war, ritual). Navigation through the landscape requires more specific cues, more obvious markers.

From this point, our narrative of walled settlements can take two paths: one within its walls and the other extending its boundaries. Within the settlement, the routes of movements that served as dominant organizing forces were linked strongly to the rituals of everyday (and religious) life which governed the particular culture. The Panathenaic procession in ancient Greece (illustrated on the Parthenon frieze) was not a mere practice

that followed the city streets, but a governing ritual that determined the organization and physical structure of the city.[19] In the rituals of many cultures, the act of procession (the practice of formally tracing a ceremonial route) was tied to the built environment, to the siting of important structures, architectural articulations, monuments, statues, and the various markers along the route. Physical markers of the settlement boundaries would also be included in the rituals, even though these would also serve important non-ceremonial functions, of which protection was paramount. [20]

Historically, within each settlement, an intricate system of roads (streets) connected all of the different components of the larger structure: temples, homes, public spaces, stores/markets, defense structures. The hierarchy of roads, building scale, ornamentation, orientation and siting (all of a settlement's built components) were set within that settlement's topography and worked as an intricate and legible signage system in itself. Navigation of space was orchestrated through its architectural articulations. The visual logic of the architectural structures and urban form (the sequence of spaces)

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[19] See Edmund Bacon, *Design of Cities*, pp. 64-83; Pérez-Gómez, "The City as a Paradigm of Symbolic Order"; Dalibor Vesely, "Architecture and the Question of Technology" in Louise Pelletier and Alberto Pérez-Gómez, eds. *Architecture, Ethics and Technology* (Montreal & Kingston: McGill-Queen's University Press, 1994), pp. 28-49.

[20] Protection included, for example, the ritual closing of the city gates, and customs that prevented transients from staying within the walls of the settlement after dark. Both functions (ritual and protection) often transcended religion, as for example, when the pagan ritual was translated into the Christian procession. Rituals that were organized around chapels and roadside shrines replaced those related to pagan deities. Thus, the statues of Swiatowid, like other local gods, placed by the road outside the settlement, typically at the crossroads, for the purpose of warding off evil spirits, would be replaced, or modified with new symbols. The siting, however remained unchanged. Pagan evil spirits travelled in straight lines – a notion that permeated many cultures, see for example Schoenauer's discussion of the courtyard house, *6,000 Years of Housing* – and it was at the intersections of roads where the spirits were most likely to congregate. These sites functioned simultaneously as identifying markers (orientation points) and sites of religious ritual (where offerings to the deity would of course ensure the power of his /her protection). Often large trees or prominent rocks would be used as sign posts: settlements and homesteads would be protected by statues of numerous other protective deities whose carved figures simply would be attached to/placed in relation to prominent natural landmarks.

and location of entrances/exits (the cadence of arrival and departure) produced a clear hierarchy of spaces and articulated progression through the settlement. Architecture itself functioned as an interface, a mediating agent between human action and the environment (natural or built). Architecture established strong visual links to functions, symbols, clearly understood and manifest hierarchies, directional clues and markers for a progression of rituals. Navigation of the system would be learned through participation in ritual processions along the ceremonial routes, as well as through the simple rituals of everyday life, which delineated inclusion, exclusion, and the various uses of the hierarchical space. Naturally, the size of the early settlement would aid its legibility: one could easily memorize the location of the specific services, the components of the settlement's structure. A town dweller need not ask the way to the Temple of Athena, or which way to the main gate in Biskupin.

Settlements were not only delineated by gates and walls, but also through their siting. Often, settlements actually would be visible from some distance whether by water, or by land; strategic location would have placed them on a hill, an island surrounded by some water hazard, or a valley visible from some higher ground or distance, and often protected by a system of observation/warning points. Travellers would approach with the settlement in clear view. One could see its fortifications, size, and probably its affluence. From its exterior, one could gather specific cues about the inhabitants, their culture and religion. One could often see territorial, proprietary marking through banners or specific building traditions. "You have arrived" was the message articulated clearly by the settlement and its siting; "you are welcome here" may not, however, have been part of the message until later times.

The road outside the settlement would first follow the natural routes delimited by topographic boundaries: valleys, passages between hills, mountain ridges, rivers, wetlands, etc. Navigation of these routes was not aided by many deliberately placed signs; most likely, features of the terrain, natural markers, were used for orientation. More frequently travelled, thus more important, trade routes would be marked. It was not directional cues that markers provided, but orienting information, as well as signs of protection and spiritual affirmation (like wayside shrines, chapels, and crosses). The traveller had to know how to interpret these markers. This system can be compared to the Inukshuk system in the Canadian North, where, to aid the paucity of natural points of reference, various landscape markers are constructed. These do not mean much in themselves: you cannot read where you are or how to get to a specific place without the code. Historically, it would not be wise to make the code transparent and easily understood: natural routes used for trade often doubled as paths of invasion and conquest. Clear marking was not a wise strategy, unless it expressed the strength and confidence of the ruler (as with the Roman road infrastructure). For example, the "amber route" leading from the Baltic sea south through the Carpathian valleys would be marked by signposts at important points only, without road signs of any kind in between.[21]

Road sign markings and infrastructure (the system of paved roads themselves) were a way of mapping territory: they denoted distance as well as proprietary information. The Roman mile stones that marked military routes provided information about the distance of travel, while hailing the greatness of the Roman Empire. In a less

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[21] As noted in the example in Chapter 7, above, *Słup koniński* marked the half-way point between two important towns along the amber route. See Piotr Wojtowicz, "Życie gospodarczo-społeczne dawnej Polski" in Paszkiewicz, *Polska i jej dorobek dziejowy*, pp. 252-279, p. 253,

overt manner, but with a similar strength of message, roadside crosses and shrines denoted the territory of influence of the Christian faith. These religious symbols, literally replaced their pagan predecessors in holding vigil at the crossroads, protecting settlements from an enemy or the plague.

The ***traditional place***, we might say, developed with the walls of the city opening up.[22] Here, navigational markers become increasingly complex as they compensate for the lack of a clear demarcation of city boundaries (with social boundaries remaining clearly and visibly marked). Place and dwelling remain permanently delimited; place becomes gradually re-oriented toward the outsider (pilgrim, traveller, tourist), while mobile technologies of communication (like print) gain importance. In this formation, spatial organization and articulation within a wall-less environment become paramount. The city remains a paradigm of order (no longer strictly religious order, but an organization shifted toward the social and political spheres). As its boundaries expand and population grows, the need for containment, for ordering structures arises: address systems, street organization patterns, circulation patterns and traffic systems, demarcations of districts, naming of places, etc. Articulation of form remains important in conveying the ordering schema, and architecture prevails as representation and information system.[23] The articulation of navigational markers also becomes gradually re-oriented towards the outsider: the pilgrim, tourist, trader, visitor. Attempts to make

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22 See the discussion by Shepheard, *What is Architecture*? noted in Chapter 4 above.

23 See Donald J. Olsen, chapter "Architecture as Language: Representation and Instruction", section "The City as Document" in *The City as a Work of Art* (New Haven and London: Yale University Press, 1986), pp. 281-294.

places recognizable and familiar to the outsider result in the early standardization of the built environment.[24]

The ***amorphous place*** spills out into the surrounding area, it is no longer contained within visible boundaries that separate built environment from "natural" surroundings. In the amorphous place, spatial and architectural articulation become reduced and abstracted as prominence is given to the surface-applied message and standardized, highly regulated sign systems. On the one hand every improvement in the technology of movement brings an increasing standardization and systematization of signage. On the other, the proliferation of signs reaches the level of visual chaos, with some places actually defined by signage (Las Vegas, Times Square, and Piccadilly Circus, most notably). As technology gains speed, car-oriented signage gains prominence, and advertising becomes both larger and dynamic, blinking signs and neon spectaculars fight for the attention of the passer-by. While technology speeds up and becomes less visible (electrical and electronic technology, pneumatic systems, smaller and smaller engines), signs become increasingly visible: more flagrantly displayed, larger in scale, often obscuring the buildings to which they are attached. Architecture becomes a sign post, a surface for display. Place and dwelling also become increasingly re-oriented towards technologies of movement (the car and electricity), toward the outsider (the now increasingly motorized outsider as well as the air traveller), and toward communication technologies freed of their bounds to place.

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[24] Religious symbolism and architectural canon can be seen as recognizable standards that marked the built environments. For a discussion of specific route markings see the works on pilgrimage routes: Frey, *Pilgrim Stories*, and Good Morelli, *Medieval Pilgrims' Hospices*.

In what I have termed ***virtual place***, the road within and the road without are navigated both through surface-applied signs and through increasingly ephemeral screens, or impermanent surfaces. Urban spaces are navigated through a multitude of overlapping signage systems, each related to a different technology and regulatory structure, forming a true cacophony of linguistic and commercial messages: directional signs, commands, warnings, signs of prohibition, messages of enticement. It also creates a clamor of types: textual messages, numbers, images, blinking arrows, icons, moving pictures. The same kind of visual noise inhabits emerging informational spaces, where newly established navigational systems share territory with a pandemonium of advertising – all dynamic, pulsating, moving, morphing, rotating – commanding us to interact.

In the virtual place, the real spills into the virtual, representing a conceptual shift away from the physicality of place, city. Navigational systems are forced into one platform of technological (computer) interface, signage systems are ordered, and problematized, by the specificity of the electronic media. This may be seen as a return to the nomadic mode of navigation, with journeys now taking place mostly within the constructed signage medium, completely disengaged from both landscape and place. Here, we can talk about the further reorientation of the environment toward a (this time invisible) technology, the further re-orientation of place toward the more and more mobile outsider (and his mobile capital), with defining communication technologies increasingly invisible: electronic modes of movement and storage of information, messages, knowledge.

The above delineation is proposed as a provisional framework, a tool for the analysis of the major development trajectories of the interface between human movement and the built environment. One can assert that what is changing from one type (or era) to the next is the very idea of negotiating the space, the concepts of inside and outside, and the place of the human settlement and human agent in the larger order. All of these changes are manifested technologically in the increasing speed of movement and transmission, and in the modes and efficiencies of storage (of objects, messages, and knowledge). All these changes are reflected in historical shifts in the broadly understood functions and manifestations of the road and its marking.

PART THREE

CONSIDERING SIMULTANEITY: Mediating the Liminal Place.

FIGURE 3.i-1: the title cartouche from the 1714 map of the Holy Land, copperplate engraving by Adrian Reland, Utrecht, from *Palaestrina ex Monumentis Veteribus Illustrata.*

Before we take the conceptual leap from way-marking to the navigation of informational environments, let us pause at this 1714 *cartouche* from the exquisite map of the Holy Land by Dutch scholar and cartographer Adrian Reland.[1] The map itself is outstanding in its researched rationality and its knowledge grounded in actual geography, rather than the biblical or mythical topographies still prevalent in contemporaneous maps

[1] Nebenzahl, *Maps of the Holy Land*, pp.142-143.

of the area. Reland's research drew heavily from *itineraria*, particularly the *Antonine Itinerary* and the *Peutinger Table*, in addition to numerous descriptive historical sources dating back to antiquity. The allegorical scene of the title cartouche depicts Hermes, the Greek messenger of the gods, as a cartographer, with the harbor of Jaffa and the crusader castle seen in the far background. Hermes is shown with the tools of mapmaking: a surveyor's pole, watch, compass, and terrestrial globe. He is positioned by the roadside, with a Roman milepost behind him, and is involved in a transaction with a winged figure who may, as Nebenzahl speculates, represent Urania, the muse and goddess of intellectual pursuits, shown here road-weary and carrying a stack of maps. One could venture that the transaction is a payment for the right of passage, the collection of a toll, not the sale of maps as interpreted by Nebenzahl.[2] But the overlapping of the broader themes depicted allegorically as involved in mapmaking is of our interest here: the road and its marking, surveying and measuring, travel, transaction, exchange of information, and navigation.[3] A number of other themes and details remain somewhat unclear;[4] there is, for example, a startling gender ambiguity of the characters, with typically masculine, often ithyphallic, Hermes, portrayed here as a feminine figure.[5] This may represent the

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[2] Judging from the position and movement of Urania's body and Hermes' gestural language, a collection of a toll seems more plausible than an exchange (purchase of maps). Considering that *herms*, were typically sites of offerings as well as the road markers, this interpretation may add an important dimension to the allegory.

[3] Navigation, in its aquatic meaning is given a background position in this allegory of mapmaking, and it suggests traversing the sea waters and dealing with visible reference systems (the contour of the coastline and landmarks recognizable in the distance).

[4] Nebenzahl speculates that the third figure could represent Adonis, though his role in the allegory is unclear. *Maps of the Holy Land*, p. 142.

[5] The importance of the gender ambiguity to this allegory became clear to me after pointed questions posed by Indra McKewn in reaction to my presentation at the CCA Study Centre, Montreal, April 2000.

concurrent, the liminal, the simultaneous implicated as much in mapmaking as in wayfinding, navigation and most of all communication.

Let us pursue the idea of simultaneity and its connection to place. As Casey argues in his discussion of the significance of differentiation, the in-between is not a void but a place of transition. Like the horizon line in the creation myth of the Navajo, the gap between the Earth and Sky retains properties of both separate entities, it has a "unique capacity to bring together earth and sky into active contiguity with one another while respecting their differences as distinct cosmic regions."[6] Because of its grounding in place, wayfinding can be thought of as a process that is inherently liminal, implicated simultaneously in the stability of implaced markers, and in the dynamics of transport and transition. Wayfinding is a process that brings together actions, perceptions, ways of knowing (and related technologies) and the stable matrix provided by the elements of the traversed landscape. Borgmann argues that "navigation proceeds in two fundamentally distinguishable ways, by landmarks *or* by instruments", the first creating metric, oriented space, the second, the technological space of grids. [7] I propose that these two spaces are conjoint, overlapping, with the media of communication functioning as an horizon line; the visible place of "active contiguity".

Many discussions of wayfinding focus on representation (whether mental or cartographic mapping), obscuring or neglecting the role of the dynamic aspects of spatial orientation and the indexing dimensions of place. Map knowledge and route knowledge are often treated separately in the theoretical analysis of spatial relationships, and are

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6 Casey, *The Fate of Place*, pp. 10-11.

7 Albert Borgmann, "The Destitution of Space. From Cosmic Order to Cyber Disorientation." *Harvard Design Magazine*, (Winter/Spring 2000), p. 14 (emphasis added).

examined as empirically separable.[8] Map-making in Reland's rich mythological scene is intricately linked to the concept of the road and the specificity of place. Mapping is not presented here as the production of abstracted (displaced) spatial representations, but a process that implicates a number of interlinked elements and actions: the road and the road side, measuring and indexing, surveying and marking, orientation and movement, charting and sign-posting, distance measured and distance observed or traversed, the moving through and moving by. Communication of information is presented as involving agents (bodies, objects) who are stationary (on the road side) as much as those who are moving (on the road) whether mobile themselves or portable (carried, or exchanged). The symbolic representations, the media of communicating information, are also shown both as mobile (those implicated in transaction) and stationary (those marking the site of commerce). And the god of the road presides over the simultaneity of communicative exchange.

The figure of Hermes overseeing multiple exchanges of knowledge, can be thought of as a conceptual key to the understanding of the complexity involved in wayfinding and its relation to place. Hermes symbolizes the simultaneity inherent in the process of mediating. After all, he embodies the road and its marking, the knowing of the way and finding one's destination, language and measurement, as well as exchange and the transition between different worlds (domains). Like the *Corpus callosum* linking the two hemispheres of the human brain (quite separable in their functions and responsibilities), Hermes as a metaphor for mediation links the disparate domains in the

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[8] Gollege, *Wayfinding Behavior*; David Canter, "Way-finding and Signposting: penance or prosthesis?" in Ronald Easterby and Harm Zwaga, eds. *Information Design: the design and evaluation of signs and printed matter* (New York: John Wiley & Sons, 1984).

process of communication. And, as Shlain proposes, a metaphor itself joins both hemispheres; "the right brain's unique contribution to the left brain's language capability. Thanks to the metaphor we can leap across the chasm from one thought to another. Through a metaphor, multiple levels of meaning are perceived simultaneously."[9]

The gender ambiguity of Hermes may suggest a number of dualities that are implicated in spatial perception and communication, for example, the feminine (holistic, simultaneous, synthetic, concrete) versus the masculine (linear, sequential, reductionist, abstract),[10] and, the duality related to the right and left brain hemispheres and their domains of perception and information processing. The non-verbal right brain recognizes images, synthesizes multiple convergent determinants, perceives spatial composition, appreciates dimensions and judges distance; it is responsible for field awareness. The left hemisphere is responsible for the speech, language and writing (notational systems) used

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[9] Leonard Shlain, *The Alphabet Versus the Goddess. The Conflict Between Word and Image* New York: Viking, 1998), p. 23.

[10] Shlain, *The Alphabet Versus the Goddess*, p. 1. The gender ambiguity of Hermes on Reland's map adds an interesting angle into this visual metaphor of mapping as wayfinding. From the contemporary perspective of research on cognition and spatial orientation, gender plays a role in wayfinding strategies, both in real spaces and in navigating large virtual worlds. For specific examples of studies on the subject of gender differences in wayfinding behavior both in physical and virtual spaces, see: C.A. Lawton, "Strategies for indoor wayfinding: the role of orientation." *Journal of Environmental Psychology* (16, no. 2, June 1996), pp. 137-145; and Madhumanthi Sakthivel, Patrick Patterson, and Carolina Cruz-Neira, "Gender differences in navigating virtual worlds", *Biomedical Sciences Instrumentation* (35, 1999), pp. 353-358. This can be linked to research on left/right brain split and processing information, as well as some research on gender differences in the focal and peripheral vision. Both are implicated in different ways of gathering and processing information. For a provocative discussion of the feminine/masculine principle and vision, perception and communication see Shlain, *The Alphabet Versus the Goddess*, pp. 8-16 (peripheral versus focal vision) and pp. 17-27 (left/right brain split). Research on left and right brain functions, as well as the roles of focal and peripheral vision also point to gender differences, and may have interesting implications if brought to bear on studies of wayfinding strategies and in spatial perception and orientation. Various studies of gender differences in wayfinding strategies indicate that men rely mostly on spatial orientation and women on route knowledge. See Gary L. Allen, "Spatial Abilities, Cognitive Maps, and Wayfinding" in Gollege, *Wayfinding Behavior*, pp. 46-80.

to abstract, discriminate, analyze and dissect the world into categories.[11] Duality in vision, can also be brought into this discussion: the duality of perception (the difference between perceiving an image in all-at-once manner, and the linear sequence of reading), as well as the difference between focal and peripheral vision and their integrated function in spatial perception. [12] We can also overlay the duality of knowing upon the duality of seeing. Comparing the work and thought of Wittgenstein and Derrida, Newton Garver and Seung-Chong Lee metaphorically contrast a painting by Monet with a photograph: representational exactness that lacks resolution, and the type of digital exactness that corresponds to a logical and analytic precision of meaning.[13] Our point here is not to bring an additional layer of problematics to already complex concepts, but to emphasize the theoretical possibilities of examining the multiplicity of dimensions inherent in the concept of wayfinding as encompassed by this rich visual metaphor.

Hermes's presence in the allegory of mapmaking is a rare tribute to the importance of place and sign-posting – road and way-marking – to both wayfinding and mapping. His presence underscores the importance of the interconnectivity of the different domains of knowledge and representation, and thus links mapping (and map knowledge) to what is referred to as *process information* in sources related to the

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[11] Shlain, *The Alphabet Versus the Goddess*, pp. 17-27.

[12] Focal and peripheral visions rely on different receptors: the first on cones, the second on rods. These two kinds of receptors in the retina of the human eye perform different functions: rods are responsible for detecting movement in a visual field, perceiving the totality of image, and cones are responsible for the focal points, seeing in sequence, and intensifying clarity. Most scholarship on visuality focuses (sic!) on concepts related to focal vision, and the peripheral component which plays an important role especially in perceiving dynamic images seems largely neglected. For a discussion of gender difference in vision (differences between focal and peripheral visions as related to difference in the distribution of rods and cones in the retinas of men and women) see Shlain, *The Alphabet Versus the Goddess*, pp. 8-16.

[13] Newton Garver and Seung-Chong Lee, *Derrida & Wittgenstein* (Philadelphia: Temple University Press, 1994), p. 5.

psychology of place, and *route knowledge* in sources describing wayfinding, computer-mediated informational spaces and the graphic user interface.[14] While map knowledge is related to the creation of conceptual or representational overviews of spatial relations, route knowledge is context-dependent, and some claim, involves an ego-centred perspective. It is said to direct the action of a specific (embodied) agent via personal recognition of cues *en route*.[15]

Passini defines wayfinding as spatial "problem-solving under uncertainty".[16] Indeed, the multiple dimensions of the process exist simultaneously in a space of ambiguity, a place of concurrent presence, the in-between of certainty in knowing the 'where' and disorientation, in the space of chance and transition where the possibilities of finding orientation and the risk of getting lost are co-present. Uncertainty is inherent in a place of traversing, the path, the road as a place of exchange (whether of knowledge, goods or symbols), a place of liminality. The road can thus be seen as a place of simultaneity: of far and near, the focal and the peripheral, the 'here' and 'there', static and dynamic, the concurrent states of on-the-road and by-the-road, of place and the in-between.

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[14] For an example of the differentiation of *process knowledge* from *mapping knowledge* see David Canter, "Wayfinding and sign-posting: penance or prosthesis ?" p. 250. Simon Shum differentiates between *route* and *map knowledge* in navigation, "Real and Virtual Spaces: Mapping from Spatial Cognition to Hypertext," in *Hypermedia* (2, no. 2, 1990), p. 147. For a discussion of route knowledge from the perspective of environmental behavioral research see Allen, "Spatial Abilities, Cognitive Maps, and Wayfinding".

[15] After P. W. Thorndyke, "Performance models for spatial and locational cognition." *Technical Report R-2676-ONR.* (Washington, DC: Rand Corporation, 1980), cited in Shum, "Real and Virtual Spaces", p. 250.

[16] Passini, *Wayfinding: A Study*, p. 28.

For Lynch, who is credited with being first to define it, the concept of wayfinding is broad and multidimensional;[17] it is set within several overlapping typologies that deal conceptually with the complexities of environmental image.[18] The image consists of the simultaneous presence of identity, structure, and meaning. It demands sufficiency, safety, communicability, and open-endedness. His often-cited elements of the environment (paths, nodes, landmarks, edges, and districts) are proposed as non-hierarchical and inter-related, placed within the context of a dynamic process between observer and observed, as well as a number of systems of spatial orientation. In wayfinding, Lynch emphasizes the "consistent *use and organization* of definite sensory cues from the external environment."[19] His concept of wayfinding encompasses mapping and place-marking, measuring and positioning within a larger system of reference, recognition of landmarks and landforms and the construction of notational systems that represent the spatial relations among them. Wayfinding can thus be said to encompass the communication of knowledge involving the exchange or transfer of portable symbols and interaction with immobile symbolic forms.

Passini, who can be credited with the most sustained theoretical focus on the subject, proposes that wayfinding is a spatial problem-solving process that includes cognitive mapping as part of environmental perception and cognition. Defined as such, wayfinding links spatial organization to manifestations of marking, pointing, and annotating, and thus to the material metaphors, symbols and markers used to inscribe

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[17] It is also open-ended: "This study points out, even if in an elementary way, one approach to this new kind of design." Lynch, *The Image of the City*, p. 119. Passini and Arthur credit Lynch with first defining the concept of wayfinding. Arthur and Passini, *Wayfinding. People, Signs, and Architecture*, p. v.

[18] Lynch, *The Image of the City*, p, 7.

[19] Ibid., p. 3, emphasis added.

spatial organization and related cues in the landscape. Passini's research is focused on the process and nodes of decision-making, as well as a notational system intended to aid in a design for wayfinding. In his work, wayfinding is presented as a serious design issue that concerns the spatial organization of a setting, the circulation system, and architectural as well as graphic communication. While layout and circulation routes define navigational problems, architecture and graphic communication provide the information for solving them.[20] Signage, or graphical communication as he terms it, forms an important layer of information required for wayfinding (with maps seen as just one type of navigational aid). Passini's work concerns contemporary manifestations of way-markers, which are largely in the form of surface-applied signs, whether text or image, icon. At the conceptual level, however, he moves effortlessly along an historical axis, bringing together symbols of spatial representations and spatial orientation, like the concept of the labyrinth as a symbol of disorientation,[21] and past manifestations of wayfinding as well as emerging issues in information design.[22]

And what does all this have to do with Hermes? While mythological figures and the mixing of science and myth were not out of place in the early age of science, when Reland produced his map, what purpose can they possibly serve in late modernity, when scientific criteria of validity and scientific fragmentation and detachment have reached such extremes of sophistication? What is the point, also, in this age of instantaneous

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[20] Passini, "Wayfinding design: logic, application and some thoughts on universality".

[21] Passini, "Of Labyrinths and Orientation" in *Wayfinding*, pp. 1-25. Passini presents the labyrinth as a conceptual tool for spatial thinking , not as a representation of spatial relations. By contrast, in sources on the history of cartography, pre-historic evidence of images of the labyrinth is often presented as a manifestation of mapping urges (drawing of spatial relations). For examples see Catherine Delano Smith, "Cartography in the Prehistoric Period in the Old World" in Harley, *History of Cartography,Volume One*, p. 65.

[22] Passini, "Information Design: An Old Hag in Fashionable Clothes?"

communication of the search back into past manifestations of spatial practices? Hermes, the god of the road and mediation, seems an unlikely mythical figure to reappear in late modernity; what possible use could he have in an age of electronic connections, when communication is based on the immaterial message and invisible path? Yet, Hermes's metaphoric presence seems palpable in many contemporary concepts. His presence in contemporary thought may not be completely surprising, especially in the work of someone who straddles language, science, and philosophy, like Michel Serres. Serres not only sees Hermes as patron of communication and mediator of connections, but he also gives the trickster god and protector of the road, the role of methodological guide, a particularly useful attribution when time is considered as a multiply-layered and inter-connected entity. What may be more surprising, however, is the reappearance of Hermes (even more so than his Roman successor, Mercury) in the numerous names and titles related to telecommunication technology and the navigation of electronic networks.[23] In many, his name merely represents the speed of connection,[24] but curiously in others, it is his mediating role of a negotiating presence between different domains that seems to be the essence of the metaphor. [25]

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[23] See Clare D. McGillem and William P. McLauchlan, *Hermes-bound: the policy and technology of telecommunications* (West Lafayette, Ind.: Purdue University, 1978).

[24] As is an example, in Hermes Experiment at the DESY Lab in Hamburg: the study of the spin structure of the nucleon. See http://dxhra1.desy.de/

[25] Stan Nadolny decries the weak presence of Hermes in the contemporary culture and describes the phenomenon of flattened metaphors that feature ancient gods: "...the ancient gods were not respected, and so the desire for the divine remained vague. People knew the name Hermes, but in a form than hindered rather than helped to develop a serious cult. The Roman form, Mercury, was used for newspapers, ships, travel bureaux, messenger services, and businessmen glee clubs. The more sophisticated Greek name designated entities such as space flight, credit insurance companies, mail order business, vitamin tablets, and silk scarves." *The God of Impertinence*, p. 4. But a long list of examples could be cited here taken from a simple on-line search of sites/groups/projects that link Hermes to navigational and mediating aspects of new technologies: for example, *Hermes Net Solutions Inc.* (network connectivity solutions, where

Hermes can indeed serve as a rich and useful metaphor for, or guide into, the conceptual complexities of navigating informational environments: he embodies movement as a traversing (not merely as speed or dislocation), the constructing of knowledge as connecting (rather than abstracting and detaching), and thus conceptually links mapping to route knowledge. Such a constructed knowledge combines words, symbols and measurement with classification systems and the larger orders of the cosmos, bringing together wayfinding, sign-posting and sense-making.[26] If we look at some of the complex computer systems designed to deal with the intricacies of searches or representations of large relational data sets, we can see that we need more than a cognitive mapping theory to conceptualize them; we need a theory that recognizes the power of the simultaneity of connections between disparate domains. We may venture to say here that we need Hermes no longer for his divine power, but for the theoretical possibilities of the conceptual model, such as the one proposed by Serres, which integrates the various layers and modes of thinking and representing, the functional and hierarchical organization of information, of traversing and mediating. According to Lopez-Pedroza, "Hermes permeates the whole world because of his possibilities of making connections, and because of his commerce with, and collaboration of, other gods... He is the connection-maker and he is the messenger of the Gods." [27]

Research on human-computer interactions points to a need for the incorporation of theories of spatial perception into an understanding of notions of the interface, and the

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those new to the Internet can learn about search engines and banner networks); or *The Hermes Project*, University of Michigan (developing a methodology to track and predict customers' decisions on commercial resources on the www).

[26] For a discussion of sense-making see Brenda Dervin, "Chaos, Order, and Sense-Making: A proposed Theory for Information Design" in Jacobson, *Information Design*. pp. 35-57.

[27] Rafael Lopez-Pedroza, *Hermes and His Children*. (Dallas: Spring Publications, 1977), p. 64.

processing of knowledge, the navigation of informational spaces, and the marking and indexing of 'places' to return to.[28] The HERMES Project at the University of Maryland, a HEterogeneous Reasoning and MEdiator System, is an interesting example of how the metaphor is used as framework, a structural container of overlapping concepts. Described as "a system for semantically integrating different and possibly heterogeneous information sources and reasoning systems", it provides "a paradigm for integrating information, through a declarative language that defines a mediator (a framework for integration) for data from various sources and domains"; data created and represented in different electronic formats, and through multiple forms of reasoning.[29] In this system, spatial and path-marking metaphors are used as conceptual tools to define methods for the organization of hierarchical data and problems, as well as the visualization of information integrated from a number of different domains.

The simultaneous presence of multiple modalities is inherent to wayfinding, whether in physical places or informational environments.[30] Lynch proposes that "rather than a single image for the entire environment, there seems to be sets of images, which

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[28] Shum, "Real and Virtual Spaces," p. 250.

[29] See the HERMES Project, University of Maryland, Computer Science Department,V.S. Subrahmanian Sibel Adali, et al, www.cs.umd.edu/projects/hermes/

[30] On modalities of representation of information and the connection between vision and natural language: Wolfgang Maass, "From vision to multimodal communication: incremental route descriptions", *Artificial Intelligence Review* (8 n. 22-3, 1994), p. 159-174; the study concludes that "we represent environmental knowledge through multiple images" p. 159. See also N. Abuobeid, "Abstract and scenographic imagery - the effect of environmental form on wayfinding," *Journal of Environmental Psychology* (18, no. 2, June 1998), pp.159-173,. Abstract (map-like) and scenographic (photographic composition involving detail) students from the university of grid-patterned and repetitive design made significantly more errors in scenographic imagery than students at two other universities; " importance of relying on multiple research methods" when studying wayfinding: Barbara Brown, Holly Wright and Craig Brown, "Post-occupancy evaluation of wayfinding in a pediatric hospital: research findings and implications for instruction," *Journal of Architectural & Planning Research.* (14, no. 1, Spring 1997), pp. 35-51,

[are] more or less overlapped and interrelated"[31] He singles out the image as a conceptual model because his method is directed towards design. He seeks a method relevant to the special nature of "city perception", and, although his work is centred on the identity and structure of single elements and the patterns they form, it is "directed towards future synthesis of city form as a whole pattern" and towards analysis of "large scale imageable environments". [32]

Borgmann, in his discussion of informational environments, provides an insightful analysis of the simultaneous presence of different types of information and thus different ways of knowing.[33] Tufte brings into his discussion of visual informational environments the simultaneity of multiple classifications, comparing, differentiating, sorting things out.[34] Visual intelligence, according to Gardner would involve the joined workings of several intelligences, including what he describes as "patterning", an ability to recognize patterns that is the key to perception and to abstract thinking.[35]

The simultaneity inherent in wayfinding stems from the implaced nature of the process. Casey speaks of the concept of place simultaneously implicating the placial where, the temporal when, the personal who, and the social how.[36] Casey brings into his discussion of place both the marking and the understanding of locality: connecting the immediate with the farther afield. The wayfinding concept in his work includes elements of map knowledge and route knowledge. The examples that Casey brings to bear on his analysis of place, the northern hunter and the Polynesian sailor, speak to the variety of

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31 Lynch, *The Image of the City*, p. 85.
32 Ibid., p. 118
33 Borgmann, *Holding On to Reality*, pp. 1-6.
34 Tufte, *Envisioning Information*, p. 50.
35 Gardner, *Multiple Intelligences*, p. 21.

navigational marks, signs and signals observed (and employed) within apparently disorienting and impenetrable landscapes.[37] Both examples speak to the similarities of navigation within on-land and at sea terrains, simultaneities embedded in the wayfinding process and the characteristics of the medium traversed. And both position the human body (and social knowledge) as the active agent in the landscape. We can argue that exploring the communicative nature of place necessitates the accordance of such a position to the human body (the 'site' of the inherently multisensory aspects of embodied experience). The experience of place cannot be understood through an analysis of separate senses and their separate roles in the communicative act.[38] Multi-modal communication is a key concept in the understanding of human interactions with (and within) place. The role of implaced and embodied experience must be examined together with the simultaneity of human perception. Alberto Pérez-Gómez describes this necessity:

> Our potential to deal simultaneously with the specific and the mutable on one hand, and the ideal and the universal on the other, has been described by phenomenology as the most significant characteristic of human perception, as the very condition of meaning revealed in the immediacy of the world-as-lived.[39]

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[36] Casey, *Getting Back into Place*, pp. 31-32

[37] Ibid.

[38] As Mumford believed, we could not understand the world, or any process through the fragmented experience of the senses. *Art and Technics.*

[39] Pérez-Gómez," Abstraction in Modern Architecture. Some Reflections in Parallel to Gnosticism and Hermeneutics" in *Carlton Book.* p. 182.

CHAPTER 9

Wayfinding in Informational Environments.

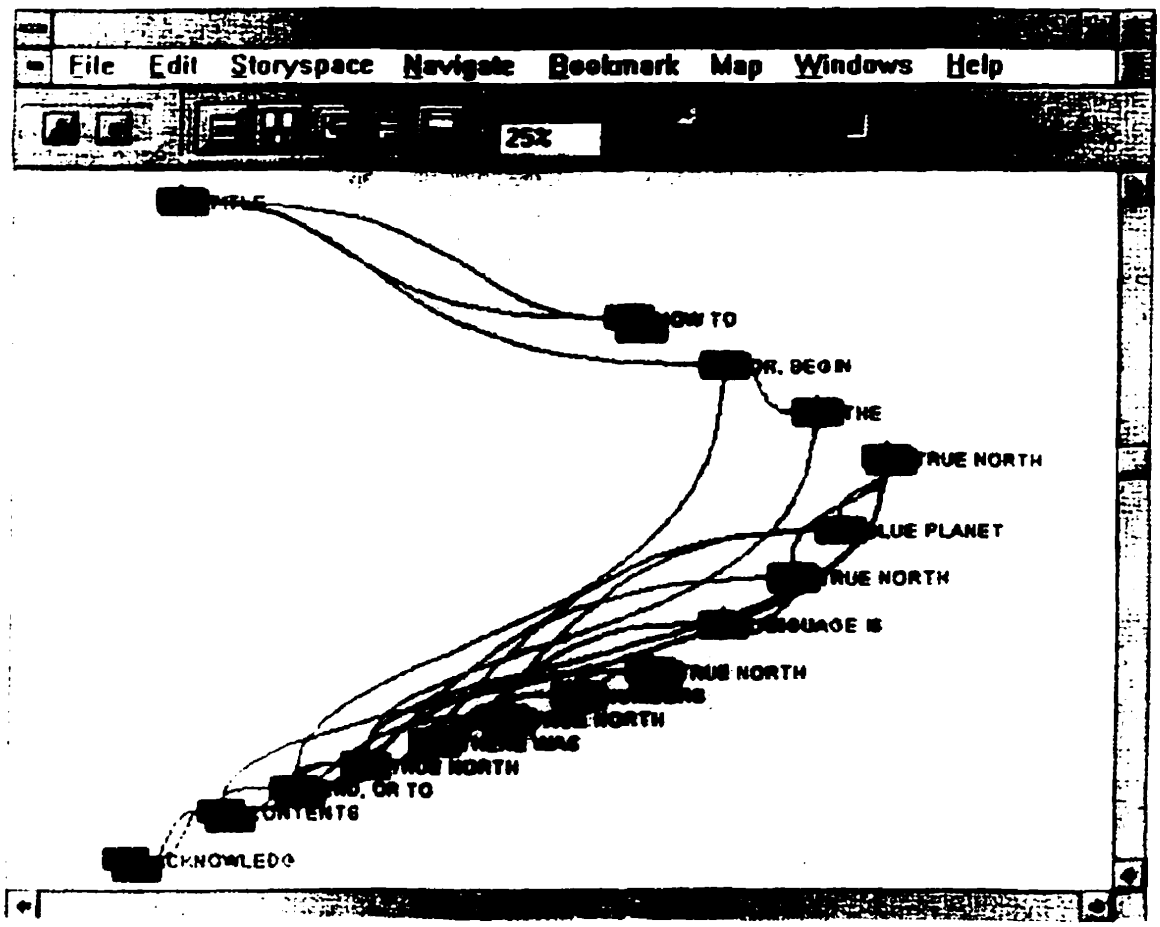

FIGURE 3.9-1: With the *Storyspace* hypertext program you can create a variety of reading experiences: a *Storyspace* map view of *True North*, hypertext poetry by Stephanie Strickland.

While a keyword library search for 'wayfinding' yields titles predominantly from cognitive science, a search for 'navigation' results in entries mostly from the field of computer engineering, with an occasional find from transportation- and aviation-related texts. Yet these two concepts are often used interchangeably, particularly in the context of virtual environments. And indeed they are similar in many ways, though important

semantic distinctions need to be drawn between them, especially if we use these terms for the conceptualization of new domains. Navigation has a strong connotation of movement through the undifferentiated, unknown, and perhaps not completely knowable space: traversing unmarked fluid scapes (i.e. sea, air). Navigation also typically implies mediated movement, movement of a body encapsulated in a vehicle or vessel of some kind.[1] Most metaphors of navigation in hypermedia space evoke flight rather than the walking of a path; they envision "a universe of connected spaces through which users rapidly travel, like pilots navigating space-craft in the real universe."[2]

Wayfinding, on the other hand, has the connotation of land travel, and often walking on foot. It has traditionally been used in relation to intuitive knowledge and the skill of spatial orientation.[3] It may still carry connotations instilled by the early literature on the subject, connotations that tie wayfinding skills to the innate spatial orientation and terrain familiarity characteristic of traditional cultures.[4] When wayfinding is used in

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[1] The word 'navigation" is rarely used in relation to on-land travel. The meanings that the OED lists involve travelling on water, or through the air, and particularly to using the art and science of navigation to direct the movement of a vessel, determining its position and course. Navigation is also used in relation to a motor car, a vehicle (as in "You drive. I'll navigate"). The use of the term navigation in relation to electronically mediated spaces, could have come from the meaning of technologically aided mediation of space (as the term is used in relation to technologically complex wayfinding, like a radar navigating system), and the vastness of the unknowable territory to be explored. However, the term 'navigate' carries also the early meaning of 'to walk steadily, to keep on one's course'. It also implies the usage of observable markers (lighthouses, light vessels, buoys, beacons) as 'navigational marks', as well as technological devices that vehicles can be equipped with as 'navigational aids'.

[2] Shum, "Real and Virtual Space," p. 1.

[3] Even in relatively recent sources on wayfinding this connotation remains strong. For example Canter talks about "normal means", making use of "natural processes", user's "intellectual resources to find their way without signposting." "Way-finding and Signposting: penance or prosthesis?" p. 246.

[4] For a thorough review of research on indigenous spatial knowledge and, particularly, the conceptual implications of the notion of the "noble savage" see Blakemore, "From wayfinding to map-making: the spatial information fields of aboriginal peoples."

relation to movement in modern urban space, however, it seems to evoke the concept of mental mapping.[5] It is thus said that wayfinding – even in contemporary settings – remains understood as a less technologically-mediated process than navigation; it implies the movement of a person not a vehicle, and the use of conceptual maps, rather than instruments or detailed charts indicating a trajectory of movement or positioning. It implies human skill rather than technology. So, while the idea of navigation has come to be linked with vehicles and technologies of movement and positioning (of abstracted scientific knowledge and measurements based on the exactitude of time, or signals transmitted through satellites) the idea of wayfinding retains a strong connotation of unmediated movement, of the route traversed, the path and decisions taken along the way.

Despite their differing traditions of use and specific meanings, navigation and wayfinding are conceptually similar; differences in common connotation and specific disciplinary terminology may have obscured important dimensions of both terms. Their interchangeability points to the communicative dimensions of each of the two processes. Casey uses the term navigation to encompass the use of environmental cues and knowledge of the organization of the medium traversed. Whether at sea or on land, conceptually similar techniques are employed: experience of the medium and knowledge of some larger organizational system (whether celestial, spatial, social or conceptual). As mentioned above, he illustrates these dimensions of navigation with two stories from

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[5] Lynch used the concept in relation to the modern urban environment and its features, focusing on the perception of cues from the surroundings, rather than innate skill. Most references to his work seem to focus on the concept of imageability and thus mental mapping, setting aside Lynch's complex analysis of how the elements of landscape interact with the images we hold in our memories and those we can represent graphically. Lynch, *The Image of the City*.

largely undifferentiated environments – the tundra, and the ocean. Each explicates navigation in traditional cultures where interactions with the world are grounded in embodied experience and a learned reference system, as opposed to the modern Western tradition of measurement, exactitude, and a reliance on technology.[6] Both, however, reveal the process in which observation of markings in the landscape is combined with knowledge of the medium traversed, as well as its fit with the larger cosmological schema. Both thus reveal the where, when, who, and how of the process of environmental negotiation. Borgmann, in his discussion of navigation by landmarks and by instruments, also draws attention to the important conceptual similarities between wayfinding (within the ancestral landscape) and navigating (the technological space of grids).[7] The dynamics of the processes differ, and various elements and references play different roles and are assigned importance in dissimilar ways but Borgmann emphasizes the significance of examining the use of environmental information on a conceptual continuum.

Both navigation and wayfinding carry strong links to mapping: navigation with its connotation of seafaring and charting, and wayfinding with its connotation of spatial orientation aided by mental maps. It may, however, be useful to note the difference in the

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[6] The Eskimo hunter described in the 1910 notes of a European Arctic explorer uses his own tracks made in the snow to re-trace his way to the place he stored meat from the hunt. For the European explorer this method is not the most efficient for it adds several miles to the trip (the place where the meat is stored turns out to be a mere three miles straight east from the base camp). He obtains his exact position in space with navigational instruments superior to the inefficient instinct and "meandering" of his guide: the explorer notes disparagingly in his diary, "So much for the idea of the Eskimo having the compass in his head." Casey, *Getting Back Into Place*, p. 25. The Puluwatans navigated the ocean used a complex system of "seamarks" in addition to observing weather patterns and the skyscape. The Polynesian sailors would watch the changing colours of water, the size and shape of ocean swells, even the marks made on the water's surface by the canoe. They would test the temperature and taste the water's salinity, and often "steer by the feel of the waves under the canoe". Casey, *Getting Back Into Place*, p. 27.

[7] Borgmann, "The Destitution of Space," p. 14.

mapping schema used for each concept; while charting relates to dynamic positioning and course planning, mental mapping is a static concept implying the spatial representation of the relationships between elements.[8]

The traditional focus on mapping in spatial behavioral research may have taken attention away from the role of physical cues in the environment, and from informational environments themselves. It has, instead, emphasized the analysis of representations and simulations. Cognitive research often equates wayfinding with cognitive mapping, assuming the nature of spatial orientation to be static. The dynamic dimension is understood as "planning the course of decision", perhaps akin to the construction of a mental "strip map". Both planning and mapping, again, refer to mental processes of construction and representation rather than the experience of context.[9] Cognitive research tends to neglect land-marking as a system of knowledge in itself, and acknowledges landmarks only as objects in the geographical plane.

Leaving aside the question of whether the traditional cognitive model adequately explains our movements in physical space, the application of the concept of mental mapping to informational environments may be problematic.[10] While we may know how to construct visual representations of perceived or imagined physical space, we cannot

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[8] Passini emphasizes the difference between the dynamic process of wayfinding and a static nature of spatial orientation and mental maps. *Wayfinding in Architecture.*

[9] Cognitive researchers seem to prefer the term 'strip map' to 'itinerary', perhaps because the latter does not have an implication of mapping, as it could simply be made of a list of names, stop-points, nodes A strip map, it is further argued, has no context of references, while in fact the sequence presented in it is in itself a very specific reference system, as spatial as any map could be, though not necessarily imaginable in cartographic terms of reference. See Golledge, *Wayfinding Behavior.*

[10] Brian Massumi, in "Buildings, Biograms, and the Body Topologic" provides an interesting discussion of limitations of cognitive mapping and new research in spatial orientation.

simply translate this ability to the complex and abstract realms of the computer-mediated environment. How can we form a mental map of a conceptual realm? When we try to move the idea of mapping into the digital informational environment, we can no longer talk about the envisioning of spatial relationships. If we use a map in these domains, we have first to conjure up, to simulate spatial relationships in the form of a visual metaphor. The conceptual map of virtual space (for example when we represent a complex data set in the form of a city, or floor plan, which is often the case) would then become a mental representation of a conceptual map. Such "double mapping", as it were, is necessary to create the cartographic or spatial metaphors for digital informational environments.

It seems that in these new, abstract environments we cannot rely on our ability to create "conceptual maps". We do not have adequate mental images to support these abstract constructs. What "modes of acquiring an internal representation" do we have when navigating data sets, moving between "sites" that are purely informational? We need to fall back on representations of physical spaces, on our embodied movement and experienced ways of perceiving and organizing information. Cognitive mapping theory seems inadequate for informational environments, and the spatial reasoning of homing pigeons and insects will not give us a complete understanding of the navigation of abstract space.[11] So the neglected dynamic aspects of spatial orientation and the role of elements of place and environmental cues necessarily come to the fore.

The power of both concepts, navigation and wayfinding is, I propose, based on their conjoining of markers, labels of positional places, topo-sensitive indicators to the abstract knowledge of reference systems and their spatial or structural organization.

Information for wayfinding is drawn not merely from 'mental mapping' but rather simultaneously from the physical markers of specific place and knowledge of their relationship to the larger organizational, orienting and classifying schema. Similarly for navigation, information is drawn from specific markers and indicators (even if technologically mediated), as well as larger systems of reference.

We can thus say that wayfinding (and navigation) simultaneously involves two types of markers: identifiers of place specificity and referencing indicators. At the same time, they allow for the presence of the disorienting noise of display signs that may be attached to, or embedded in, other markers along the way. Wayfinding thus implicates two types of axes: the metaphoric, paradigmatic axis (with its selective, associative dimension involving similarity) and metonymic, syntagmatic axis (with its combinative dimensions of contiguity).[12] The concept of wayfinding links the specific within the landscape to the matrix of relationships conceptually overlaid on its surface; it forms linkages amongst the ideas of movement, knowledge and its representation, and the description of passage, the sequence of stops and decision nodes.

Perhaps the notion of a classification system is more useful for conceptualizing large-scale or abstract environments than is mapping (the representation of spatial relationships). The classifying, organizing and structuring role of the environment and the ways in which we conceptualize its structures and hierarchies is rarely discussed in the literature on wayfinding. Similarly, as Keller Easterling in *Organization Space*

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[11] Gollege's discussion of wayfinding is limited to the role of internal representations in the "skills and procedures for travel", *Wayfinding Behavior*.

[12] After the discussion in Tilley, *Metaphor and Material Culture*, p. 5 and based on Jacobson's schema of the relationship between metaphor and metonymy, in R. Jacobson and M. Halle, *Fundamentals of Language* (The Hague: Mouton, 1956).

argues, the dynamics of the structuring, organizing and networking role of built form are not often taken up by architectural theory.[13] The relationships between elements within complex environments are mostly theorized as involving spatial schema akin to cartographic representations, as if we could construct two- or three-dimensional representations of all of the relationships and hierarchies within which we are immersed.

With the growing sophistication of the computer's graphical user interface, visual representation and multimedia convergence seems to have differently affected the approach to place and wayfinding within: (a) the domains entrusted with the research of physical spaces; and (b) those focused on the development of computer-mediated environments. Architecture, planning and geography show much fascination with the new developments in computer technology and an enchantment with the simulatory possibilities of the new media. In the last two decades, computer-mediated techniques of spatial information-handling have replaced the older skills, and standards, with computer-aided design, geographic information systems, and global positioning systems becoming not mere tools, but increasingly, foci of the disciplines.

In writings on architecture and the city, suggestions are often made regarding the inevitability of the replacement of the material, the outmoded world and its concerns – the world of the built form, the city, and place – with new electronically generated and mediated alternatives. The theoretical work of architects Michael Heim, Marcos Novak, William Mitchell, and Stephen Perrella, describe and analyze a 'liquid architecture of cyberspace", "cities of bits" and "e-topia" of non-material places, topological

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[13] Keller Easterling, *Organization Space. Landscapes, Highways, and Houses in America* (Cambridge and London: The MIT Press, 1999).

architecture and the merging of communication and architectural form into the flux of hypersurface.[14] The new possibilities of architecture are presented as emerging not from the physical environment, but rather, informational spaces generated within the electronically mediated and modifiable domain. With the latter guaranteeing none of the constraints inherent to materiality and context, the realm of possibilities indeed seems boundless. Borgmann points out that, paradoxically, the most radical displacement of oriented space by technological space comes from the discipline responsible for providing the most comprehensive view of the world, geography. Similarly, within the built environment displacement comes from those domains entrusted with space and construction: architecture and urban planning. Digital mapping and modelling techniques now remove the practice and practitioners from actual contact with place, moving them into the realm of digital location, positioning, co-ordinates, data sets, and parameters linked to locations.

On the other hand, research in human-computer interaction, artificial intelligence, visual methods of the presentation of data, graphical interface design, and the emerging field of information design, seems to be reaching back towards the physical environment for cues and concepts. Cognitive theory, the theory of urban form, and research on spatial orientation and wayfinding in physical environments have become important sources for the theory and design of computer mediated environments. Spatial interfaces are designed for 'navigating' library catalogue searches or as a way of visualizing

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[14] See Michael Heim, "The Erotic Ontology of Cyberspace", pp. 59-80; and Marcos Novak, "Liquid Architecture in Cyberspace", pp. 225-254, both in Benedikt, *Cyberspace: First Steps*; William J. Mitchell, *City of Bits* and *e-topia*: *"Urban life, Jim– but not as we know it"* (Cambridge, Mass.: The MIT Press, 2000); Steven Perrella, *Hypersurface Architecture*, Architectural Design (New York: John Wiley & Sons, 1998). Also see also Perrella, "Skin Deep".

knowledge.[15] Considerable research on navigating hypertext and complex data draws on concepts and theories related to orientation in physical spaces.[16] Cognitive mapping theory is routinely brought to the analysis of hypertext.[17] Computer scientists research the applicability of the landscape metaphor for the creation of visual representations of large data sets, and searching and retrieving information from complex documents. Workshops are conducted on the uses of spatial metaphors in user interfaces.[18] In guidelines for producing useable three-dimensional spaces, we can read that it is important to ensure "that travel between points requires the user to pass through the intervening space and experience it, however briefly."[19]

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[15] For some examples see the Digital Design Lab at Columbia University: the Spatial Interfaces for Learning On-line (SILO), or Spatial Worlds for Information Retrieval and Learning (SWIRL). www.arch.columbia.edu/DDL/research/SILO/ or www.arch.columbia.edu/DDL/research/SWIRL/

[16] Jay David Bolter, *Writing Space. The Computer, Hypertext, and the History of Writing* (Hillsdale: Lawrence Erlbaum, 1991).

[17] Shum, "Real and Virtual Spaces".

[18] Matthew Chalmers, "Using a landscape metaphor". Workshops on spatial metaphors are regular features of conferences related to hypertext (like the European Conference on Hypertext, Edinburgh 1994). See also: R. Amant, S. Long and M. S. Dulberg, "Experimental evaluation of intelligent assistance for navigation", *Knowledge-Based Systems* (11, no. 1, Sept. 30, 1998), pp. 61-71; Rudolph Darken, John Silbert, "Wayfinding strategies and behaviors in large virtual worlds", *Proceedings of the Conference on Human Factors in Computing Systems* (New York: ACM, 1996), pp. 142-149; J. L. Chan and K. M. Stanley, "A theoretical model of wayfinding in virtual environments: Proposed strategies for navigational aiding." *Presence-Teleoperators and Virtual Environments* (8, no. 6, December 1999), pp. 671-685; Ann K. Deakin, "Landmarks as navigational aids on street maps", *Cartography & Geographic Information System* (23, no. 1, Jan. 1996), pp. 21-36; David Howard and Alan MacEachren, "Interface design for geographic visualization: tools for representing reliability." *Cartography & Geographic Information System* (23, no. 2 April 1996), pp. 59-77; T. Todd Elvins, David R. Nadeau, and David Kirsh, "Worldlets – 3D thumbnails for wayfinding in virtual environments", *User Interface Software and Technology*: Proceedings of the ACM Symposium 1997, New York: ACM), pp. 21-30. For a discussion of environmental cues influencing wayfinding strategies see: Darken, Rudolph and John Silbert, "Wayfinding strategies and behaviors in large virtual worlds", *Proceedings of the Conference on Human Factors in Computing Systems* (New York: ACM, 1996), pp. 142-149.

[19] Robert Ingram in *Legibility Enhancement for Information Visualization* (Ph. D Thesis, University of Nottingham, Computer Science, 1995), p. 30.

Οταν πιγαινεξ, εγω ερχομονα(On your way there, you met me returning) muses Christine Boyer as she begins her *Cybercities.*[20] Indeed, it may seem that a focus on place shows how recent architectural and urban theorists meet computer scientists and hypermedia designers from opposite directions. As such, architecture, according to William Mitchell, "now embraces the play of digital information in space";[21] cities are becoming "systems of interlinked, interacting, silicon- and software-saturated *smart*, *attentive*, and *responsive* places."[22] At the same time, hypermedia research examines "our natural spatial intelligence" for cues to the development of intelligible virtual worlds, and talks about "the rich spatial environments in which we live and move, and the impoverished spatial worlds currently on offer in the digital realm".[23]

"Since the graphical user interface arrived, spatial metaphors of different sorts have been used to assist in navigating computer environments."[24] Spatial metaphors permeate both the language we use to describe informational environments and the visual metaphors that we employ in the graphical interface to organize the information and define the modes of our interactions with it. The growing complexity of these environments also demands that we reach for more easily understood structuring and organizing frameworks to help make sense of what is around us. Thus the proliferation of spatial metaphors in relation to digital environments, both linguistic and visual, should

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[20] Christine M. Boyer, *Cybercities: Visual Perception in the Age of Visual Communication* (Cambridge, Mass.: The MIT Press, 1996), p. 6.

[21] Mitchell, *e-topia*, p. 41.

[22] Ibid., p. 68.

[23] Shum, "Real and Virtual Space," p. 133.

[24] Words introducing the "Spatial Cognition and Virtual Spaces" site http://kmi.open.ac.uk/people/sbs/spatial.html

not be surprising. With increased computer power and the expanded use of computer-mediated information, we can only expect that the spatial visualization of information will become increasingly commonplace, and the spatial language even more widespread.

A tacit supposition supporting the relevance of spatial concepts for the context of virtual environments is, some suggest, that important similarities exist between the complex spatial worlds in which we live and the digital realms.[25] I want to argue that the opposite may be the case: it is because these worlds are in fact so different that exploration and understanding of the one which is new demands recourse to the solid conceptual ground of the old. Here comparisons, categorizations, organizations and descriptions can be made in ways that are familiar, tried and true. Spatial metaphors are particularly useful for imagining the new realms generated by computer technology because concrete worldly space is the only realm that we can envision in terms that can be orienting and that can help us find our way. Spatial metaphors may have entered into the language of our conceptual world by the first metaphors that were unreflectively used, terms like 'information highway', 'on-line community", or indeed 'navigation'. The digital domain was presented as a spatial entity to make it seem familiar and enticing to explore. The envisioning of the internet network as a giant library card catalogue system, to which we connect electronically, may not have had the same cache, though perhaps it would have been easier to deal with at a conceptual level.

It is commonplace to speak of 'navigation' through hypertext and hypermedia. This can be explained in two ways. For one, the new and not fully charted realms of electronic information suggest an environment that is not easily understood, a 'space' the

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[25] Shum, "Real and Virtual Space".

vastness, fluidity and complexity of which must be somehow faced. On the other hand, while we are not really moving within this realm[26] (and definitely not on foot) we are mediating it through a screen, through a technology which is simultaneously an entrance, and exit; a vehicle for our imaginary movement that contains an entire highway and its related road sign system. The idea of being lost in these new realms is pervasive, and not only metaphorical. Research is conducted on the ways in which one can be "lost" in hypermedia, with these states defined in terms related to spatial orientation, like: not knowing where to go next; knowing where to go but not how to get there; and not knowing one's current location in the overall structure.[27] Common navigational strategies are described in hypermedia also in rather familiar terms: searching for an identifier, following a known path, travel in a given direction, or movement directly to a given "address".[28] This language would have been easily understood by a character in the comedy by Terence quoted above or by anyone navigating a contemporary urban space.[29]

But let us revisit the statement quoted above: "since the graphical interface arrived..." Can we assume, then, that the very choice of type of interface determined at least some of the processes to follow? Once we decided to develop the technical means to communicate with a device with the aid of visual representation, how else could we have envisioned the environments that we created? The very choice of graphical

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[26] Michael Benedikt spoke strongly against the notion of movement flippantly used for digital realms; he suggested a metaphor of digital flyers stuck to the screen window from the other side, and the viewer, stationary as he is, trying to sort through these messages delivered constantly and in great quantities... with no travel involved... Michael Benedikt, "For More Life", lecture at the *e-valuations*, eventONE, Re-configuring Aesthetics conference, McGill University, February 2000.

[27] Ingram, *Legibility*, p. 30.

[28] Ibid., p. 31.

interface determines the spatial nature that we will inscribe onto the data storage processes and manipulative possibilities of the informational realm. From the moment we involved the visual metaphor in the process of interaction with our electronically generated world, then, we may have set the stage for a Lynchan imageability of the domain. The focus on visual interaction resulted in a virtual realm conceptualized in spatial terms and with the use of spatial relationships.

Wayfinding is thus not only a useful concept to the new informational environments, it may be necessarily foundational. Navigation problems in hypertext are discussed by many authors in such spatial terms. Lynch's theory of urban form has been taken up by computer scientists as the basis for the theoretical modelling and visualization of legible virtual space. Researchers and designers working in the computer domain are also drawn to notions of landmarks, route, and mapping, and to comparisons between the structure of navigation in the digital realm and survey knowledge of the urban environment.[30] Maps (graphical overviews giving local area and global context) and guide tours (suggested trails through information) are typically used to aid the navigation process.[31] Lynch's concept of imageability is often taken as pertaining strictly to mental mapping, even though nowhere in his research does he propose that conceptual mapping is the only method of finding one's way. In fact, as discussed above, Lynch openly advocates a multilayered approach to the complexities of large-scale environments.[32] Robert Ingram, in his study of legibility and visualization systems, focuses on Lynch's

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[29] I am referring to a set of directions given by a character in Terence's comedy, in Casson, *Travel in the Ancient World*, p. 86, discussed in Chapter 8 above.

[30] Ingram, *Legibility*, p. 31.

[31] Ibid., pp. 34, 38.

theory and, like many other researchers in the field of computer visualization, refers to the elements defined by Lynch (paths, nodes, landmarks, edges, and districts), as well as to mental mapping. But Lynch's work was not merely about the five elements often quoted and used. These are indeed very easily quantifiable and translatable into computer algorithms and models, and thus easily used for the visualization of 3-D spaces.[33] Simplification of the theoretical elements used for this research aside, however, it seems that the importance and complexity of Lynch's theory can be understood more fully now, when it is applied to the conceptualization of virtual spaces. Many aspects of his multi-layered understanding of wayfinding are present in research pertaining to the digital realm.[34]

Important to consider in these transformations are changes in our intimacy with place: changes in the requirements of knowledge for mediating place. Borgmann suggests that for trips to unfamiliar places, we no longer rely on spatial competence, but on the abstract account of a map or a technological device. This reverses our relationship with place and information. When intimacy with the surroundings is no longer used for spatial orientation, familiarity with the technological interface and the

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[32] Lynch, *The Image of the City*.

[33] The implied weakness of Lynch's theory is also interesting; it is suggested that Lynch's theory is marred with "dependence on language". Barthes and Henken may have been surprised by this assertion. Ingram, *Legibility*, p. 62.

[34] Ingram, *Legibility*, p. 31 Throughout his study Ingram discusses navigational aids, like the "beaten path" (with such mechanisms as trails, markers, stories, bookmarks, and allowing the user to move forward and backward along a string of nodes); "links" and "maps". He also describes local and global levels of navigation: and the relationship between navigation tasks carried out at the local level and the confidence for these tasks derived from a strong image of the overall layout of the space. Ingram also discusses methods used by hypermedia authors to confuse or disorient their readers, methods conceptualized in spatial term: using highly homogeneous representations of nodes, fragmenting the text, introducing sudden unanticipated events, disrupting the way in which reader mentally maps the space.

surface display of instruments becomes crucial. And while, in Borgmann's words, "humans have always been intimate with a nonmetric space – with the space of memory and imagination" ,[35] memory and imagination are also displaced in the technological space of the measured grid and visualized representations.

Contemporary space, says Borgmann, "lost its cosmic scope and its terrestrial orientation; most radically of all, it has ceased to be the depth conferring space of memory and imagination."[36] Within technological space, space based on scientifically measured grids and external reference systems, he further claims, we have unburdened ourselves from the need to use our own capacity for memory and imagination. The world is visualized for us. Even the conceptual world is presented to us ready-made. Paradoxically, we may be creating, in this way, what he calls "spatial disorientation".[37] Reflecting on Steven Weinberg's claim that "The more the universe seems comprehensible, the more it also seems pointless" Borgmann asserts that:

> Pre-modern cultures were keenly conscious of space...In contrast, the semantic space people in our rich Western democracies inhabit is just the surface of the earth" thus we seem to live "either in comprehensible pointlessness or with impertinent orientation.[38]

Within technological space, we need to know or remember nothing, as long as we have 'access to information'. We need not remember where that information is stored, either; its source location is irrelevant, it is all coming from "out there". Pre-modern space was constituted according to the location of landmarks through which we oriented ourselves;

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35 Borgmann, "The Destitution of Space," p. 15.

36 Ibid., p. 12

37 Borgmann, "The Destitution of Space," p. 14.

38 Steven Weinberg, *The Last Three Minutes*. 2nd ed. (New York: Basic Books, 1993), p. 5, quoted in Borgmann, "The Destitution of Space," p. 14.

contemporary space, though measured, organized and accurate, becomes smoothly ambiguous.[39]

FIGURE 3.9-2: Information age itineraries will find the route for you and point the way. The map knows where you are. Wayfinding using geographic information and global positioning systems: an electronic map of the Nuremberg area, Germany displayed on the BMW dashboard screen,

As such, we want technology to find the way for us, to tell us where we are. We want technology to know, to locate us, and point us in the right direction, to "do our knowing for us", as James Carey notes.[40] Benedikt in one of his definitions of cyberspace

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[39] Borgmann, "The Destitution of Space": "the contemporary space has left us with a world whose cosmic extension is thought to be irrelevant whose global technological structure is disorienting, and whose imaginative and memorial depth collapsed to indifference." p. 14.

[40] Carey in "Space, Time and Communication," *Communication as Culture*, p. 165.

describes the space within which "the building knows where you are. And who."[41] In such a space, markers are irrelevant. Perhaps we can begin to forget the references, unburden ourselves from knowledge and orienting skills, and rely solely on technology to navigate the informational landscape... why would we need signposting if the place knows where we are?

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[41] Benedikt, *Cyberspace: First Steps*, p. 2.

CHAPTER 10

Signposting Information.

FIGURE 3.10-1: While signs are often examined in terms of aesthetics, styles and use of materials, as in this comparison of neon signs, they are rarely analyzed as manifestations of complex organizational structures and systems of knowledge. Yet, they are the material and visible component of classification systems and infrastructures of information. The sign on the right, a neon like the other two (Los Angeles cinema signs from the 1930s), is a marker of an entrance to the Moscow Metro system. While comparable to the other signs in stylistic terms, it performs a different role than the signs identifying specific places (even setting aside the role of advertising and signs in 1930s Moscow and LA). Its visible presence has a different meaning and different iconic significance.[1]

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[1] For a study of styles of signage and the different materials they were rendered in (mosaic, metal, tile and brick, glass and neon, paint and wood, stone and brick) see Schwartzman, *Designage. The Art of Decorative Sign.* Here shown: Roxie cinema tower, Los Angeles, 1930s; El Rey cinema, Los Angeles, 1936; Metro sign. Moscow, 1930s. p. 93.

Large sets of spatially ordered signs have invaded and transformed not only our world view but mundane details of our lives," notes Borgmann in his discussion of contemporary environments.[2] From the labels of library stacks and signs designating isles in supermarkets to highway signage systems; from subway systems to streets and addresses; place-names, street-names, names of businesses, parking instructions, directional signs, room numbers, corporate logos, elevator floor displays, warning signs, welcoming signs, entrance signs, exit signs; numerous tags and labels of our daily routines and movements in physical spaces. Are these all part of a chaotic display, swirl of images, words and symbols, like the postmodern metropolis that Christine Boyer describes as "a physical site in which images and messages seem to swirl about, devoid of sustaining context"? [3] If so, how can we possibly make sense of this forest of signs, displays, codes, and numbers? Yet we routinely do. The visual environments that we are immersed in may be increasingly noisy and disorienting, but we do somehow manage to negotiate them daily. We find our way through them (physically and conceptually) because they are highly structured, interconnected, cross-referenced, and because we know the rules and codes that govern them. Signs and signposts function in these environments as tags, labels, indicators, indexing markers; they are the visible and material annotations of information and structures. Still, "how to describe the forest?"[4]

"Information infrastructure is a tricky thing to analyze" assert Bowker and Leigh Star, "[g]ood, usable systems disappear almost by definition. The easier they are to use,

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[2] Borgmann, "The Destitution of Space," p. 15.

[3] Boyer, *The City of Collective Memory*, p. 28.

[4] This is a question Bowker and Leigh Star ask about the classification systems. *Sorting Things Out*, p. 31.

the harder they are to see."[5] The informational environments we are immersed in, they claim, "however imbricated in our lives, are ordinarily invisible"[6] only becoming visible upon breakdown or conflict, when "the material force of categories appears always and instantly."[7] When Borgmann describes "information *about* reality", he marvels over how smoothly natural signs are summoned from the landscape, only to disappear into it again once they are not needed.[8] This is not necessarily, I suggest, a characteristic of natural signs. Conventional signs, especially when they proliferate to the point of creating a landscape in themselves (a signscape) begin to function similarly: they are sought out, recognized, summoned for a particular function, and let disappear in the forest of other signs once more.

Classification, and organization systems, I suggest in contradiction to the arguments of Bowker and Leigh Star, are in fact highly visible. They are made visible with labels, tags, numbers, signboards, signposts, arrows, icons; they are made visible by the flagpoles of signage. Still, paradoxically, we may only become aware of them in their absence, we may notice them only when we are disoriented. At such moments of uncertainty, their presence is summoned, comes to the surface, as it were. Signs then, however visible, surface in absence of clarity, at points of decision, in our sudden awareness of being lost, absence of fit, an aberration in a pattern, an absence of the anticipated.

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5 Bowker and Leigh Star, *Sorting Things Out*, p. 33.
6 Ibid., p. 2.
7 Ibid., p. 6.
8 Ibid.

Signage, like the classification and organization systems it designates, is not unseen, it is simply taken for granted.[9] Though embedded in other infrastructures, implicated in our social knowledge (learned typically as a part of membership) and interlinked with conventional practices, it is often taken analytically as a surface-deep phenomenon, an informational ornament of sorts, superfluous garb, or as David Canter argues, a mere prosthesis for design failures.[10]

Signage is positioned in the liminal place between the external environment and the hidden references and classifications inter-facing the two realms. This position results in two problems. First, the surface is often seen as an extrinsic layer of expression, either superficial or related only to the visual, and analyzed accordingly. Because of its surface position and its often iconic form, signage is largely confined to the domain of graphic design (environmental graphics) and aesthetic concern (of style, typography, iconography).[11] Because of its role as functional interface, signage is largely dealt with

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[9] Very much like the place itself, as Casey argues in *The Fate of Place*: "just because place is so much with us, as we are with it, it has been taken for granted, deemed not worthy of separate treatment... Except when we are disoriented or lost [...] we presume that the question is settled, that there is nothing more to say on the subject." p. x.

[10] Canter, "Way-finding and Signposting"

[11] Few theoretical treatments of signage exist. Most studies approach signage from concerns of design, style, or standards. The focus of the study by William R. Ewald and Daniel R. Mandelker exemplifies such treatment, *Street Graphics. A Concept and a System* (Washington, D.C.: The American Society of Landscape Architects, 1971). Constantine and Jacobson in *Sign Language for Buildings and Landscape* provide a uniquely comprehensive analysis of the visual environment formed by signs as it includes an historical treatment of the subject as well as it covers a broad array of sign manifestations. Much interest in signs followed the trajectory of the work of Robert Venturi and Denise Scott-Brown, as exemplified by *Learning From Las Vegas*. A number of exhibitions and conferences at Design Schools and major Art institutions also dealt with what was seen as a visual shift of the urban environment marked by the proliferation of signs: 1954 Museum of Modern Art exhibition "Signs in the Street", or 1976 Smithsonian exhibition "Signs of Life". The focus of these as well as of the further work by Venturi, has been commercial imagery. Much work seems to focus on a critique and analysis of advertising or incidental art, and the highway and billboards, road-side attractions. More recently the incidental art of urban inscriptions is gaining popularity; like in John Baeder, *Sign Language. Street Signs as Folk Art* (New York: Harry N. Abrams, 1996).

through standards and regulations (codes, zoning, size, setback, etc.)[12] Second, the surface is typically the most vulnerable to changes (whether generated within the external environ or deeper classifications and values). Thus signs (tags, labels, visible elements of the structuring and organizing systems) form the most ephemeral layer of the informational environment; they are typically the first to be painted over, taken down, replaced with new messages.

If understood as a superficial layer added onto architectural expression, signage may indeed function, as David Canter proposes, as a mere prosthesis.[13] While contemporary signage often ends up playing such a limited role (as an admission of the inability of the built form to provide a clearly legible environment), this complex phenomenon cannot be analyzed from such a unidimensional point of view. Only in the absence of an understanding of its role as a communicative medium with a substantial history and deep theoretical implications can signage be considered a mere prosthesis; detachable from its basis in built form, and from the navigational dimensions of the environment.[14] Signposting is not the recent corrective invention of designers. Its current form may have, in many instances, become an appendage largely because the modern articulation of built form programmatically shed its responsibility for the provision of

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[12] Since road and highway signs, as well as many indoor signage systems have been increasingly regulated and standardized, the analysis of these has been moved almost entirely into the regulatory realm.

[13] Canter, "Way-marking and Signposting," p. 245.

[14] While Canter asserts that " it is only in the minority of cases that signposting is necessary" and, indeed, the majority of our navigational cues do not come from the "public information and direction-finding systems", they do come from the markers (formal or informal) placed in the environments around us. Canter, "Way-marking and Signposting," p. 246.

reference systems and orienting elements. Its confinement to the role of mere graphical "garb", however, seriously undermines the importance of signposting.[15]

Despite its surface position, signage is four-dimensional: it has considerable depth as it is enmeshed in informational infrastructures which are made visible, their material textures revealed through its presence; its breadth or reach encompasses reference systems; and its temporal dimension is embedded in the rules, conventions, and codes governing its use and legibility. Signage operates at many levels: it may annotate types of objects, types of hardware; fit between the requirements of various categories and codes; indicate meta-categories that point to the position of a piece of code/classification within some large system.[16] Signage makes visible the ubiquitous, textured classifications and standards and thus helps to structure our representation of social knowledge, categories, memories (representations of the past), and the progression of events in the present.

Bowker and Leigh Star's search for methodological tools for the study of the complexity of informational infrastructures is most useful for the analysis of signage. Two of the methodological points of departure for their discussion are particularly salient: the ubiquity and materiality of texture. It is not enough to point out how densely

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[15] Canter clearly sees signage as purely graphical, and somewhat superfluous. His historical understanding of signs reaches back to English pub signs, indeed, an important development in sign-making practice and tradition, however not adequate for understanding the complex conceptual systems of environments that people have, and that his theory is seeking to understand. Similarly, in much writing on advertising and billboards, the historical axis tends to start in the 1800s at the time of the increasing appearance of competition between businesses and advertising practices, particularly in the North American context. Carter also suggests that "signposting occurs in situations where the designer cannot rely upon the knowledge or experience of the user." But reading environmental information always relies heavily on the knowledge and experience (social, personal, spatial) of the user. Even if signage is an added prosthesis designed to solve the illegibility of the constructed environment, it still needs to be a legible interface in itself, it needs to be understood and its references must be decoded properly, it needs to be noticed and read to be followed. Canter, "Way-marking and Signposting," p. 263.

[16] Bowker and Leigh Star, *Sorting Things Out*, p. 46.

classification schemes and standards saturate our environment, both physical and virtual; it is necessary to examine the properties inherent in ubiquity, like the interdependence of elements and categories. In infrastructures of information, none of these components of the systems stand alone. Rather the elements form complex networks, "matrices of integration".[17] The materiality of texture, another property of classifications systems according to Bowker and Leigh Star, is where integration of the physical elements of environments, and the conventions governing them, takes place.[18] Both characteristics of informational infrastructures, ubiquity and material texture, are made palpable through signage. Embedded in the physical presence of organizational systems, and implicated in their conventional and symbolic dimensions, signage makes the systems of classification and standardization apparent and legible.

Classifications and standards, even if made visible through signposting, are still typically taken for granted. We do not notice them because we anticipate them to be *where* we need them.[19] This paradoxical quality of informational infrastructures is responsible both for the difficulty and the importance of making these neglected areas of human knowledge a subject of more rigorous study. And as Bowker and Leigh Star propose, such a study needs to employ new kinds of methodologies:

> The sheer density of collisions of classification schemes in our lives calls for a new kind of science, a new set of metaphors, linking traditional social science and computer and information science. We need a topography of things... three fluid dynamics on how classification systems meet up, some protocols for finding one's way along, at least on the known path.[20]

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17 Bowker and Leigh Star, *Sorting Things Out*, p. 38.
18 Ibid., p. 39.
19 Ibid., p. 7.
20 Ibid., p. 31.

It is not merely the arrangement and pattern of classifications systems that we need to examine. More important are the hidden ways by which they are implicated in our social and moral rules, accords, and discords.[21] The consequences of informational systems for both our daily lives and larger social order are inescapable. Despite the considerable effort that goes into the choice of classification systems and standards and the design of informational environments, however, few theorists see them "as artifacts embodying moral and aesthetic choices that in turn craft people's identities, aspirations, and dignity."[22] Bowker and Leigh Star acknowledge some formal discussion of classification theory; however they point to lacuna in the analysis of use or impact, and particularly, of histories and analyses of material manifestations of classifications.[23]

A similar assertion can be made for signage. Even when we examine the literature that explicitly deals with the visual environment, visual media, and the complexities of perception, we rarely find signage present as a subject of theoretical analysis or even cultural critique. When Ann Marie Seward Barry, for example, discusses the importance of visual communication and the impact of image-saturated environments on "every area of our lives", it is television images and advertising that she primarily considers.[24] Yet, commercial iconography and images of advertising are set within the complex and perceptible environment of communication. If we are indeed "becom[ing] more and more dependent on the visual for sending and receiving information", as Seward Barry and other critics and theorists suggest, then we need to examine the ubiquitous visual environment in its complexity and in both its spatial and

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21 Bowker and Leigh Star, *Sorting Things Out.*
22 Ibid.
23 Ibid., p. 4.

temporal context.[25] Visual information webs, as discussed, tie us latitudinally into the social environments of physical spaces and longitudinally into their historical depths.

Donis A. Dondis in *A Primer in Visual Literacy* remarks on the profound changes in communicative modes brought about by the invention of photography, and compares these shifts to the impact of print on universal literacy. [26] Her analysis brings out an important insight for the positioning of signage within communication discourse:

> In print, language is the primary element, while visual factors, such as the physical setting or design format and illustration, are secondary or supportive. In the modern media, just the reverse is true. The visual dominates; the verbal augments. Print is not dead yet, nor will it ever be, but nevertheless, our language-dominated culture has moved perceptibly toward the iconic.[27]

One can, of course, question whether the balance of text and image in our contemporary environments is, in fact, tipping towards the visual (considering the saturation of the visual field with verbal messages, as well as the stronghold of textual analysis on the visual domain), and whether visual literacy can be compared to language literacy (considering that the latter is typically seen as 'naturally' acquired through exposure to image, while the former remains a prevailing focus of education). Still, the shift toward iconicity in the visual field, and the concomitant changing modes of communication within visual media, needs serious consideration in communication scholarship. This shift is made quite explicit in the domain of signage, with its constantly reconfigured field of overlap between words and images, as well as the increasingly iconic nature of both.

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[24] Ann Marie Seward Barry, *Visual Intelligence. Perception, Image, and Manipulation in Visual Communication* (Albany, NY: State University of New York Press, 1997).

[25] Ibid., p. 1.

[26] Donis A. Dondis, *A Primer in Visual Literacy* (Cambridge, Mass: MIT Press, 1973), pp. 6-7.

[27] Ibid.

Bowker and Leigh Star argue for the importance of probing the "apparently natural easiness in the world around", and they seek to explicate the effort which constitutes this seemingly smooth operation, the work involved in making interfaces transparent. They seek to uncover the hidden reality of informational structures, a reality concealed behind what is often abstract or arbitrary. If reality is, as Latour argues, "that which resists'[28], the focus on an analysis of effort seems likely to aid the understanding of our information saturated environments. And the reality of the immersive environment, as Casey argues, is typically constituted by its specificity, the spatio-temporal manifestations of its constraints, the "finity" of place, as well as its links with the circumambient sphere. [29]

New informational environments are marvelled at because of the possibility of casting away the ballast of materiality, the gravity of presence that they pose.[30] Paradoxically, the primary interface between our action and knowledge is increasingly material, made of networks of technological devices and interfaces external to our bodies. Certainly, they unburden us from the drudgery of laborious thinking, searching, remembering and even from making decisions. The interfaces know. If so, however, we are faced – as we ask our machines and interfaces to tell us where, when, how and who we are – with a much larger material presence that we would be if we were able simply to consult our senses. The interfacing layers are becoming light-weight thin screens, small devices, miniature sensors, it is true; still they physically separate us from the world with

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[28] Bruno Latour, *Science in Action: How to Follow Scientists and Engineers Through Society* (Milton Keynes: Open University Press, 1987).

[29] See Casey's conclusions of the history of philosophy of place and his summary discussion of the position of place with its centrality and 'finity' within modern philosophy. *The Fate of Place*, p. 338.

[30] Benedikt, *Cyberspace First Steps*, p. 4.

a thicker and thicker layer of technological mediations (increasingly more complex, increasingly more interconnected into thick networks of their own, and as it is often claimed, increasingly visual).[31]

Latour and Hermant in *Paris ville invisible*, position signage within layers of city infrastructures, systems of classifications, modes of display, ways of adherence between various layers of information.[32] The informational environments that Latour and Hermant present are made of networks of utilities, transportation, interconnected classifications and displays of categories, with some layers visible, many implicit, a few entirely hidden, and some indicating their presence in the most subtle ways. All these are pervasive and interconnected, with the new environments added onto the palimpsest of the old. The informational layers presented and analyzed in Latour and Hermant's study are articulated, inscribed in a variety of substrates: the stone of buildings, paper of forms and informal signs, the surface paint of road signs, metal of regulatory signposts, fiber-optic cables of connecting lines, computer screens of displays. All these layers make little sense without a cross-indexing, referencing interface between user and system, and within the infrastructures themselves, between the newer layers and the old. And all of these layers are disclosed, signalled, indicated through signage.

New layers and modes of information re-configure the ways that we perceive and understand the older structures. It will be useful then, as Latour and Herment's analysis seems to suggest, to move away from predictions of the inevitability of replacements and

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[31] Seward Barry, *Visual Intelligence*, pp. 3-11.

[32] Latour and Hermant, *Paris ville invisible*. The collaboration of authors of this book is particularly salient for the subject at hand, Latour is the author the text, while Hermant is the author of images. Image and text in this book have an equal status as narrative and analytic tools.

look instead at the interconnectivity of the older networks with the new. The notions of accretion and re-configuration seem far more useful than the refrain of "*Ceci tuera cela*" persisting in much of the contemporary discourse on new information environments.[33] In reality, the previous is rarely replaced by the new; rather, the new normally emerges from older reference system and the expectations developed earlier. The older is re-shaped and dis-placed by the changing possibilities of the new.[34] The notion of replacement involves the loss of older layers of cross-referencing, and thus of its continuity, and needs therefore to be cautiously considered, particularly in late modernity when the material consequences of the modernist program of historical dissolution are so far past reclamation.[35]

Modernism demanded that architecture detach itself from history, from previous understandings of space and form. It forced a discarding of attachments, an unburdening of old reference systems within the built environment. As a consequence, modern buildings and spaces were made programmatically ambiguous (with their open plans

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[33] Much discussion is focussed on the book and the inevitability of its subsequent electronic replacement. The most often used argument draws on Victor Hugo's words and the vision of the book replacing the "book of stone", the cathedral. Hugo's vision went much further than the quotable phrase, he reflected on the changing materials of storing knowledge as each generation inscribes knowledge in different substrates. The book has never replaced the cathedral, nor did it threaten this mode of human expression; rather, the mobility of knowledge threatened institutional structures and new capabilities of storing and conveying knowledge changed social hierarchies and world views. It has also been a lengthy process, with the materiality of buildings (and cathedrals) not challenged until further and relatively recent developments of movable media. The totalizing process of textualizing communication may be only reaching its apogee over five centuries after the introduction of movable type in Europe. And paradoxically, it may only be possible now, to truly challenge the materiality of both: the book and the cathedral, the durable repositories of knowledge.

[34] Benedikt argues that cyberspace will not replace earlier developments, it will displace them. *Cyberspace: First Steps*, p. 7.

[35] Le Corbusier's call to action perhaps best describes this approach: " I discard, I discard... My life isn't meant to preserve dead things. I discard Stevenson's locomotive... I discard everything, for my twenty-four-hours must be productive, brilliantly productive. I will discard everything of the past, everything except that which still serves. Certain things serve forever: they are Art."

merging outside and in, their weak articulation of elements, and repetitious and uniform structures). Similarly, urban spaces were reconfigured to adhere to a highly structured abstract grid, geometry, standards of numbering, regulations of specialized use. The resultant physical environments, uniform, generic and programmatically poorly differentiated, created a greater need for surface-applied signage. With architecture and urban design discarding its traditional responsibility for legibility, signposting necessarily becomes a design prosthesis. When we contrast the highly differentiated, complex environment of the traditional town or city with the uniform and generically 'legible' suburb from the 1970s, the need for an additional level of landscape marking for purposes of orientation and wayfinding becomes eminently clear.

Bowker and Leigh Starr suggest that to study classification is to examine points of view, as each standard and each category valorize some perspective and silence others.[36] Signage, it can be argued, constitutes one of the most overt displays of points of view. Signs are, in fact, typically the first to show the changing winds of history, political allegiances, moral values and sentiments. They are typically the first signals of change in classification, standards, values, orientation. Signage manifests the reconfigurations of environments, signalling, broadcasting social, political, moral and technological shifts and developments. Any change in the structuring of the environment is made manifest through the re-configuration of its signs. One can study the historical and political transitions of places through an analysis of this outer layer of informational environment. From Moscow through Dublin and Warsaw to Montreal, signs point to conflict in

[36] Bowker and Leigh Star, *Sorting Things Out*, p. 5.

political, religious, social and linguistic arenas.[37] It is useful, however, to see these developments in historical perspective and in the larger context of visible communicative environments, not only as context-specific phenomena.

Research in the field of information visualization, as discussed in the previous chapter, draws on Lynch's work to theorize and design the new digital environments. I argue that the full potential, and particularly the open-endedeness, of Lynch's work has become evident through research on computer-mediated form.[38] And in the research on navigational techniques, the work of Passini, too, gains a new significance within the digital realm. So with the importance of marking, signposting the environment: this, too, comes to the surface within emerging environments of information. Many techniques for data search and retrieval, for example, rely on the concept of the "landmark", the environmental cue used to partition space, and hence the search-task, making it more manageable. Some methods suggest techniques of "manual marking" whereby the user leaves markers at important points for later reference. Such approaches treat "signposts" as an integral part of the wayfinding task and, as such, essential to the design of any legible environment (physical or virtual). Still, as Ingram points out for signage, "this seemingly very important element of the city environment seems to be greatly overlooked".[39]

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[37] And this is not a contemporary phenomenon as discussed in chapter 4. For vivid contemporary examples see a study of changing symbolic signposts (spatial, temporal, and visual) in Moscow after the collapse of the Soviet Union, Elizabeth Gray, *Signposts to the Past: Re-Inventing Political Symbols, Moscow 1985-1996* (Ph. D Thesis, University of Cambridge, 1998).

[38] Ingram, *Legibility*, p. 63.

[39] Ibid., p. 60. Computer systems designed for the management of complex data sets often refer to "banners". This is not a mere metaphorical way of including signposting within the wayfinding methods for information environments. Even though Canter's work, much referenced within the literature on the application of spatial concepts and cognitive science to understanding new environments, seems to treat signposting superficially, it contains references to "clear

Much urban history can be understood through the examining of types. There is a substantial body of literature on building and urban morphology, though a taxonomy of the communicative dimensions of buildings and structures has not been afforded much attention. Good Morelli, in her analysis of the medieval pilgrimage, notes profound lacuna in architectural knowledge related to the infrastructure of movement.[40] In the case of signposts, the historical trace is most certainly scant. Some traces appear in modern histories of regulatory spheres, where signage can be traced, for example, through examination of zoning and highway regulations.[41] Important work also deals with histories and theories of visual symbols and communication.[42]

Signage often functions as an implementation tool for classification systems: boundaries of types can be marked by signposts, access may be guarded, with conditions of access specified, modes of required behavior suggested. Signage can be seen as imposing order, structuring, validating, and normalizing the built environment and the rules and conditions of its use. In "Reckless Walking Must be Discouraged", Steven Davies traces the alterations to the built environment that resulted from the introduction of the automobile into urban space and the subsequent reorganization of traffic patterns and the power dynamic between pedestrian and driver.[43] As one of the consequences of this change of transportation mode, Davies discusses the profound social and spatial re-

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locations which can be easily remembered and associated with broad patterns of activity" and argues that these "may be more fruitful than providing precise and detailed symbols." This may actually speak more to the need for understanding signage in a broader perspective than dismissing it as an appendage... Canter, "Way-marking and Signposting," p. 247.

[40] Good Morelli, *Medieval Pilgrims' Hospices.*

[41] Krampen, "Icons of the Road".

[42] Sassoon and Gaur, *Signs, Symbols and Icons;* Müller-Brockmann, *A History of Visual Communication.*

orientation largely implemented through regulatory signage. The obvious physical changes (new roads, streets patterns, physical alterations of urban landscape, re-shaping of urban form, and reconfiguring of street patterns, changing scale, distances, etc.) went hand in hand with an increasing number of restrictions and regulations and a growing array of regulatory detail inscribed into the visual urban environment.

The change of scale of advertising to accommodate the fast moving viewer has often been discussed, particularly in literature related to the commercial landscape of North America.[44] Reconfigurations of modes of navigation through our immersive visual environments, created by the combination of visual messages embedded in its built form and its communicative layers, has not yet gained much scholarship interest or cultural critique. And these reconfigurations signal and broadcast important shifts in the ways we deal with information. In a trip on an expressway, for example, we no longer rely on cues from the surrounding landscape; we closely follow the unfolding itinerary and instructions presented on the signage interface. The appropriateness of the term 'information highway' becomes clear when we consider modes of dealing with

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[43] Steven Davies, "Reckless Walking Must Be Discouraged": The Automobile Revolution and the Shaping of Modern Urban Canada to 1930, *Urban History Review* (XVIII, no. 2, October 1989), pp. 123-138.

[44] The redefinition of space and social boundaries resulted in signage making the landscape legible for the viewing motorist and the travelling tourist with an introduction of town names and signs pointing to landmarks or facilities. Standardization of signage systems, and regulatory requirements related to appropriate marking of landmarks, followed. Increasingly, navigation was re-oriented from the focus on the physical presence of the landmarks to a strict reliance on the cues provided by conventional road sign systems. For an analysis of commercial landscapes, see Venturi, *Learning from Las Vegas*. See Anderson, *Vanishing Roadside America* for a very insightful analysis of changing patterns of viewing the landscape between the more leisurely drives of the first American highway system and the new interstate highways. See also: Warren Belasco, *Americans on the Road: From Autocamp to Motel, 1910-1940* (Cambridge: The MIT Press, 1979); Joseph Interrate, "You Can't Go to Town in a Bathtub: Automobile Movement and the Reorganization of Rural American Space, 1900-1930," *Radical History Review*, 21 (1980) pp. 153-64.

navigational information, rather than the merely metaphoric suggestion of movement through cyberspace. It is the strict following of cues from the navigational environment that is strikingly similar and of essence here.[45]

Bowker and Leigh Star claim that examining classifications necessitates the bringing together of a sociology of knowledge and technology, history, and information science, "we rub these ad hoc classifications against an increasingly elaborate large-scale system of formal categories and standards." [46] If we are to understand large scale environments, we need also to understand the dynamics of the perceptual, visual field of markers and their embedding in classifications. We need to look at both the informal "folk", small-scale, private classifications and signposts, and those formal, standardized, and widespread; and we need to do that within a context of the visual media of communication. Information systems combine the ordinary with the formal; the technical problems of storage and retrieval with the communicational problems of querying and organizing; the textual with the iconic; words with images. As Bowker and Leigh Star suggest, we need to survey the continuum, from desk-top organization to wide-scale infrastructure, and to bring into the analysis a mixture of formal and informal classifications.[47]

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[45] The rhetoric surrounding the introduction of the regulations of the pedestrian within the city, is rather telling when we compare it to the contemporary discourse that speaks of necessity of being wired, getting online, not getting behind. Pedestrians who were concerned with the reorganization of their environments, and the rural communities opposing the standardized signs, were depicted as the opponents of progress and new technology as "not yet graduated from the parochial, colonial, or way-back attitude." Davies, "Reckless Walking," p. 134

[46] Even, or particularly, the environments that are said "impossible to regulate" operate based on numerous standards, like the Internet, where to send a single e-mail message one uses, as noted by Bowker and Leigh Star, more than 200 formally elected standards for information transmission. Bowker and Leigh Star, *Sorting Things Out.*

[47] Lakoff speaks of "a folk theory of classification." quoted in Bowker and Leigh Star, *Sorting*, p. 32, after Lakoff, *Women, Fire*, p. 121.

The importance of examining the effects of the reorganization of media of communication on data classification, codifying and cataloguing, and on standardizing practices, has been recognized by many scholars. Elizabeth Eisenstein, for example, discusses the issues of diversity and uniformity concomitantly played out during the transformation of writing from script to print.[48] She points to the importance of examining these two issues together and the limited usefulness of assumptions that new developments can or do replace the older ones completely. Her reflections on the complexity of layering of media, can easily be applied to contemporary technologies of communication: "Given the use of new media, woodcut and metal engravings, to depict medieval cosmologies, we cannot think simply of mere survival but must consider a more complex process whereby long-lived schemes were presented in new visual forms." [49] She makes a similar analysis of transformations in the nature of collective memory evidenced in the changing mnemonic functions of artifacts and media of communication, and changes in patterns of thinking spurred by the new ways of arranging information.[50]

The systemic approach to signage is a useful methodological tool that necessarily brings together a number of disciplines crucial to the analysis of complex communicative systems. Eisenstein, in her approach, cautions against offering "symptoms of cultural crisis... in guise of diagnosis."[51] This is possible only when the subject is investigated in

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[48] Elizabeth L. Eisenstein, *The Printing Revolution in Early Modern Europe* (Cambridge: Cambridge University Press, 1983).

[49] Ibid., p. 50.

[50] Ibid., pp. 34-35, 64. Particularly interesting is her discussion of memory theatres and the work of Francis Yates, *The Art of Memory*. Eisenstein suggests that it may be more important to examine transformations of collective memories and the displacement of mnemonic functions than speak of a loss of memory theatres. p. 34.

[51] Eisenstein refers to Marshall McLuhan's *The Gutenberg Galaxy* in these terms, though she values the questions McLuhan raised about the actual effects of the advent of printing, she questions his simplified analysis. *The Printing Revolution*, p. ix.

some depth and in relation to a number of parallel developments; historical analysis is often unavoidable.[52]

In order to understand the dynamics of the development and proliferation of signs, it is essential to take a broader perspective, to see signs in relation to their progressively organized and standardized environments and to the need to mark growing systems of classification and structure. Signposts, with their form, articulation and the substrate upon which they are inscribed, are as much a part of the built communicative environment as are its systems of classification. The proliferation of signs as surface-applied images and texts is certainly characteristic of contemporary environments; however it merely signals the numerous processes of changing representation and notational systems; it ought not to be seen as a phenomenon in itself. Signage is rather a visible component of classification systems reflecting social knowledge and values, hierarchies and modes of representation; it cannot be adequately understood if seen as a mere surface display.

If visual perception is not "a passive recording of stimulus material but an active concern of the mind", as Rudolf Arnheim maintained, the analysis of signage requires "observing all the changes the subject undergoes and induces because of its place and function in its setting."[53] As this thesis argued, the relationship between communication and place is essential to understanding the complexities of the visually perceptible communicational environments we are immersed in. With the themes of orientation,

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[52] Bowker and Leigh Star suggest the importance of studying historical links as argued by Michel Foucault in *Archaeology of Knowledge*; with an archaeological dig necessary to understanding the consequences and the origins of a range of social categories and practices related to the phenomenon at hand. *Sorting Things Out*, p. 5.

[53] Rudolf Arnheim, *Visual Thinking* (Berkeley: University of California Press, 1969), p. 38.

navigation, and interface becoming pervasive within the new communication technologies, it is increasingly necessary to attend to the original mediating role of the built environment and the navigational dimensions of place. It is here, within our foundational spatial orientation and wayfinding, that we turn for metaphors, conceptual structures, and grounding as we chart our ways through emerging informational environments. In the examination of signage as a system of interfaces used in negotiating informational environments, as way-markers in a process of wayfinding, this thesis demonstrated some ways in which the concepts of wayfinding and navigation can be useful for communication scholarship. As it argued, fruitful cues for the theorizing and understanding of emerging informational realms are necessarily drawn from the communicative dimensions of the most familiar immersive environments and their related practices: the physical spaces and built environments that we inhabit and negotiate daily.

FIGURE 3.10-2

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Bibliography

Perseus Project. 2000. Tufts University. Available: http://www.perseus.tufts.edu/.

New York's Great Outdoors. 2000. Available: http://www.stayfreemagazine.org/admap.

Spatial Cognition and Virtual Spaces. 2000. Available: http://kmi.open.ac.uk/people/sbs/spatial.html2000.

Abughazzeh, T. M. "Signs, Advertising and Imageability of Buildings - Perceptual Selection in the View from the Street in Amman, Jordan." Habitat International 21.2 (1997): 255-67.

Abuobeid, N. "Abstract and Scenographic Imagery – the Effect of Environmental Form on Wayfinding." Journal of Environmental Psychology 18.2 (1998): 159-73.

Adler, Bruno. Karty Piervobytnykh Narodov. Tom CXIX. Vypusk 2. Trudy geograficheskovo otdielenia. Izviestia Imperatorskogo Obschestva lubitieli yestestvoznaniya, antropologii y etnografii izviestiasostoyaschago pri Imperatorskom Moskovskom Universiteti, St. Petersburg, 1910.

Alexander, Christopher. A Pattern Language. Oxford: Oxford University Press, 1973.

Allen, Gary. "Spatial Abilities, Cognitive Maps and Wayfinding." Wayfinding Behavior, Cognitive Mapping and Other Spatial Processes. Ed. R. G. Gollege. Baltimore and London: The Johns Hopkins University Press, 1999. 46-80.

Amant, R. S., S. Long, and M. S. Dulberg. "Experimental Evaluation of Intelligent Assistance for Navigation." Knowledge-Based Systems 11.1 (1998).

Anderson, Warren H. Vanishing Roadside America. Tucson, Arizona: The University of Arizona Press, 1981.

Angenot, Marc. Critique of Semiotic Reason. New York and Ottawa: Legas, 1994.

Appleyard, David, Kevin Lynch, and Robert Myer. The View from the Road. Cambridge, Mas.: The MIT Press, 1964.

Arendt, Hannah. The Human Condition. Chicago:: University of Chicago Press, 1959.

Arnheim, Rudolf. The Dynamics of Architectural Form. Berkeley: University of California Press, 1977.

---. Visual Thinking. London: Faber & Faber, 1969.

Arthur, Paul, and Romedi Passini. Wayfinding, People, Signs, and Architecture. Toronto, Montreal: McGraw Hill - Ryerson, 1992.

Bachelard, Gaston. The Poetics of Space. Boston: Beacon Press, 1992 (1958).

Bacon, Edmund. Design of Cities. New York: Penguin Books, 1986.

Baeder, John. Sign Language. Street Signs as Folk Art. New York: Harry N. Abrams, 1996.

Bahn, Paul, ed. Lost Cities. London: Weldenfeld & Nicolson, 1997.

Band, Achter. Meners Konverlations - Lexicon. Leipzig und Wien: Bibliographisches Institut, 1890.

Barbey, Brono, and Jan Krok-Paszkowski. Portrait of Poland. London: Thames and Hudson, 1982.

Barry, Michael. "Intelligent Cities: Using Information Networks to Gain Competitive Advantage." Environment and Planning B: Planning and Design 17.2 (1990): 247-56.

Barthes, Roland. The Semiotic Challenge. Trans. Richard Howard. New York: Hill & Wang, 1988.

---. Empire of Signs. New York: Hill & Wang, 1982.

---. Elements of Semiology. Trans. Annette Lavers. New York: Hill and Wang, 1977.

Baudrillard, Jean. Simulacra and Simulation. Ann Arbor: The University of Mitchigan Press, 1997.

---. The System of Objects. Trans. James Benedict. London and New York: Verso, 1996.

Beck, Collen M. "Cross-Cutting Relationships: The Relative Dating of Ancient Roads on the North Coast of Peru." Ancient Road Networks and Settlement Hierarchies in the New Wold. Ed. Charles D. Trombold. New Directions in Archaeology. Cambridge and New York: Cambridge University Press, 1991. 66-79.

Beck, R. J., and D. Wood. "Cognitive Transformation of Information from Urban Geographic Fields to Mental Maps." Environment and Behaviour 8.2 (1976): 199-238.

Behrens, Roy R. Design in Visual Arts. Englewood Cliffs, N. J.: Prentice Hall, 1984.

Belasco, Warren. Americans on the Road: From Autocamp to Motel, 1910-1940. Cambridge, Mass.: The MIT Press, 1979.

Bender, Barbara, ed. Landscape: Politics and Perspectives. Providence/Oxford: Berg, 1993.

Benedikt, Michael, ed. Cyberspace: First Steps. Cambridge, Mass. and London, England: The MIT Press, 1994.

---. For an Architecture of Reality. New York: Lumen Books, 1987.

Benevolo, Leonardo. Miasto W Dziejach Europy. Trans. Hanna Cieśla. Tworzenie Europy. Ed. Jacques Le Goff. Warszawa: Wydawnictwo Krąg, 1995.

Benjamin, Walter. Reflections. Trans. Edmund Jephcott. New York: Schocken Books, 1986.

---. One-Way Street and Other Writings. London: Harcourt Brace Jovanovich, 1985 (1932).

---. Illuminations. Essays and Reflections. Trans. Harry Zohn. New York: Schocken Books, 1968.

Berger, Arthur Asa. Seeing Is Believing. An Introduction to Visual Communication. 2nd ed. Mountain View, California: Mayfield Publishing Company, 1998.

---. Signs in Contemporary Culture. New York: Longman, 1984.

Berger, John. About Looking. New York: Pantheon, 1988.

—. The Sense of Sight. New York: Pantheon Books, 1985.

—. Ways of Seeing. New York: Penguin, 1972.

Bergson, Henri. Matter and Memory. Trans. W.W. Palmer. New York: Doubleday, 1959.

Berndt, R. M., and C. Berndt. The Speaking Land. Ringwood, Victoria: Penguin, 1989.

Bernstein, M. "The Navigation Problem Reconsidered." Hypertext/Hypermedia Handbook. Eds. E. Berk and J. Devlin. New York: McGraw-Hill, 1991.

Betsky, Aaron. Violated Perfection. Architecture and the Fragmentation of the Modern. New York: Rizzoli, 1990.

Biermann, A. K. "That There Is No Iconic Sign." Philosophy and Phenomenological Research 23 (1962): 243-95.

Birkerts, Sven. The Gutenberg Elegies: The Fate of Reading in an Electronic Age. Boston and London: Faber and Faber, 1994.

Bischoff, Dan. "Signs of the Times." Metropolis 1998: 39-42,44,47.

Blake, Peter. God's Own Junkyard. The Planned Deterioration of America's Landscape. New York: Holt, Rinehart and Winston, 1964.

Blakemore, Michael. "From Way-Finding to Map-Making: The Spatial Information Field of Aboriginal Peoples." Progress in Human Geography. (1981): 1-24.

Blight, J.T. Ancient Crosses and Other Antiquities in the West of Cornwall. London, Penzance, Dublin, 1856.

Bloomer, Kent C., and Charles W. Moore. Body, Memory, and Architecture. New Haven and London: Yale University Press, 1977.

Böhn, Aleksander. Architektura Krajobrazu, Jej Początki I Rozwój. Kraków: Politechnika Krakowska, 1994.

Bolter, Jay David. Writing Space. The Computer, Hypertext, and the History of Writing. Hillsdale, New Jersey: Lawrence Erlbaum Associates, Publishers, 1991.

Bonnel, Yves. "Bornes Et Colonnes Indicatives Du Premier Empire Dans Le Department Du Bas-Rhin." Review d'Alsace (France).110 (1984): 141-54.

Borgmann, Albert. "The Destitution of Space: From Cosmic Order to Cyber Disorientation." Harvard Design Magazine Winter/Spring (2000): 12-17.

—. Holding on to Reality. The Nature of Information at the Turn of the Millennium. Chicago and London: The University of Chicago Press, 1999.

—. Crossing the Postmodern Divide. Chicago and London: The University of Chicago Press, 1992.

—. Technology and the Character and Contemporary Life. A Philosophical Inquiry. Chicago: Chicago University Press, 1984.

Bosselman, Peter. Representation of Places: Reality and Realism in City Design. Berkeley: University of California Press, 1998.

Bowker, Geoffrey, and Susan Leigh Star. Sorting Things Out. Classsification and Its Consequences. Cambridge, Mass.: The MIT Press, 1999.

Boyer, M. Christine. Cybercities: Visual Perception in the Age of Electronic Communication. New York: Princeton Architectural Press, 1996.

---. The City of Collective Memory: Its Historical Imagery and Architectural Entertainments. Cambridge, Ma.: The MIT Press, 1994.

Bradley, James. "New York Trades Public Places for Private Dollars." Metropolis 1996: 17, 24.

Braudel, F. On History. London: Weidenfeld & Nickolson, 1980.

Brenneman, Walter L. Jr. "The Circle and the Cross: Loric and Sacred Space in the Holy Wells of Ireland." Dwelling, Place and Environment, Towards a Phenomenological Understanding of Person and World. Eds. David Seamon and Robert Mugerauer. New York: Columbia University Press, 1985.

Brind Morrow, Susan. The Names of Things. Life, Language, and Beginnings in the Egyptian Desert. New York: Riverhead Books, 1997.

Broadbent, Geoffrey, Richard Bunt, and Charles Jencks, eds. Signs, Symbols, and Architecture. New Yrk: Wiley, 1980.

Bronowski, Jacob. The Visionary Eye: Essays in the Arts, Literature, and Science. Cambridge, MA and London, England: The MIT Press, 1979.

Brown, Barbara, Holly Wright, and Craig Brown. "Post-Occupancy Evaluation of Wayfinding in a Pediatric Hospital: Research Findings and Implications Fro Instrcution." Journal of Architectural & Planning Research 14.1 (1997): 35-51.

Brückner, Aleksander. Słownik Etymologiczny Języka Polskiego. Warszawa: Wiedza Powszechna, 1989.

Bujak, Adam. Misteria. Warszawa: Wydawnictwo "Sport i Turystyka", 1989.

Bunbury, E. H. History of Ancient Geography. London: John Murray, 1883.

Calvino, Italo. Invisible Cities. London: Picador, 1983.

Canter, David. "Way-Finding and Signposting: Penance or Prosthesis?" Information Design: The Design of Signs and Printed Matter. Eds. Ronald Easterby and Harm Zwaga. New York: John Wiley & Sons, 1984. 245-64.

---. The Psychology of Place. London: The Architectural Press, 1977.

Canter, D., R. Rivers, and G. Storrs. "Characterising User Navigation through Complex Data Structures." Behaviour and Information Technology 4.2 (1985): 93-102.

Cantor, Norman F., ed. The Encyclopedia of Middle Ages. New York: Viking, 1999.

Card, Stuart K., Jack D. MacKinlay, and Ben Shneiderman. Readings in Information Visualization: Using Vision to Think. San Francisco: Morgan Kaufmann Publishers, 1999.

Carey, James W. "Everything That Rises Must Diverge: Notes on Communications, Technology and the Symbolic Construction of the Social." Beyond Agendas: New Directions in Communication Research. Ed. Philip Gaunt. Westport, Conn.: Greenwod Press, 1993. 171-84.

—. Communication as Culture. Essays on Media and Society. New York and London: Routledge, 1989.

Carmichael, David, et al., eds. Sacred Sites, Sacred Places. London and New York: Routledge, 1994.

Carpenter, Edward. "Wayfinding: Design Breakthrough or a Trendy Buzzword?" Print 43.1 (1989): 92-163.

Casey, Edward S. Remembering. A Phenomenological Study. 2nd ed. Bloomington and London: Indiana University Press, 2000.

—. Imagining. A Phenomenological Study. 2nd ed. Bloomington and London: Indiana University Press, 2000.

—. The Fate of Place. A Philosophical History. Berkely/Los Angeles/London: University of California Press, 1997.

—. Getting Back into Place. Toward a Renewed Understanding of the Place-World. Studies in Continental Thought. Ed. John Sallis. Bloomington & Indianopolis: Indiana University Press, 1993.

—. Spirit and Soul. Essays in Philosophical Psychology. Dallas, Texas: Spring Publications Inc., 1991.

Cassirer, Ernst. The Philosophy of Symbolic Forms. Vol. I: Language. New Haven: Yale Universiy Press, 1957.

—. Language and Myth. New York: Dover, 1946.

—. An Essay on Man. New Haven: Yale University Press, 1944.

Casson, Lionel. Travel in the Ancient World. Baltimore and London: The Johns Hopkins University Press, 1994.

Castells, Manuel. The Net and the Self: Economy, Society and Culture in the Information Age. Oxford: Blackwell, 1997.

—. The Informational City: Information Technology, Economic Restructuring , and the Urban-Regional Process. New York: Basil Blackwell, 1989.

Castro, Ricardo L. "Sounding the Path: Dwelling and Dreaming." Chora: Intervals in the Philosophy of Architecture 3. Eds. Alberto Pérez-Gómez and Steven Parcell. Vol. 3. Montreal & Kingston: McGill-Queen's University Press, 1999. 26-44.

Chalmers, Matthew. "Using a Landscape Metaphor to Represent a Corpus of Documents." Spatial Information theory: A Theoretical Basis for GIS: European Conference, COSIT'93. Eds. Andrew U. Frank and Irene Campari: Springer-Verlag, 1993.

Chan, J. L., and K. M. Stanney. "A Theoretical Model of Wayfinding in Virtual Environments: Proposed Strategies for Navigational Aiding." Presence-Teleoperators & Virtual Environments 8.6 (1999): 671-85.

Chatwin, Bruce. The Songlines. New York: Penguin, 1987.

Chmielewska, Ella. "Symbols of Architecture and Technology." Canadian Congress of Landscape Architects. Edmonton, 1997.

—. "Dwelling in Postmodernity: Elaboration on the Meaning of Home and Housing." unpublished thesis Master of Urban Planning. McGill University, 1996.

Clement, Clara Erskin. A Handbook of Legendary and Mythological Art. Cambridge: The Riverside Press, 1879.

Cobley, Paul, ed. The Communication Theory Reader. New York and London: Routledge, 1996.

Collins, Jim. Architecture of Excess: Cultural Life in the Information Age. New York and London: Routledge, 1995.

Colomina, Beatriz. Privacy and Publicity. Modern Architecture as Mass Media. Cambridge, Mass.: The MIT Press, 1994.

—. Architectureproduction. New York: Princeton Architectural Press, 1988.

Constantine, Mildred, and Egbert Jacobson. Sign Language for Buildings and Landscape. New York: Reinhold Publishing, 1961.

Cooney, Gabriel. "Social Landscapes in Irish Prehistory." The Archaeology and Anthropology of Landscape. Shaping Your Landscape. Eds. Peter J. Ucko and Robert Layton. London and New York: Routledge, 1999. 46-64.

—. "Sacred and Secular Neolithic Landscapes in Ireland." Sacred Sites, Sacred Places. Eds. David Carmichael, et al. London and New York: Routledge, 1994.

Coppock, Patrick. "a Conversation on Information"- an Interview with Umberto Eco. 1995. http://www.cudenver.edu/~mryder/itc_data/eco/eco.html2000.

Corbet, William Paul. "Oklahoma Highways: From Indian Trails to Urban Expressways." Ph. D Thesis. Oklahoma State University, 1982.

Cosgrove, Denis, and Stephhen Daniels, eds. The Iconography of Landscape. Essays on the Symbolic Representation, Design, and Use of Past Environmnents. Cambridge: Cambridge University Press, 1988.

Crowe, Norman. Nature and the Idea of a Man-Made World. An Investigation into the Evolutionary Roots of Form and Order in the Built Environment. Cambridge, Mass.: The MIT Press, 1995.

Crowley, David, J. "Harold Innis and the Modern Perspective of Communication." Culture, Communication, and Dependency. The Tradition of H. A. Innis. Eds. William H. Melody, Liona Salter and Paul Heyer. Norwood, N. J.: Ablex Publishing, 1981.

Crowley, David, and Paul Heyer, eds. Communication in History: Technology, Culture, Society. New York: Longman, 1999.

Crowley, David, and David Mitchell, eds. Communication Theory Today. Stanford, California: Stanford University Press, 1994.

Curtis, Deborah. Introduction to Visual Literacy. Eaglewod Cliffs, N. J.: Prentice Hall, 1987.

Darken, Rudolph, and john Silbert. "Wayfinding Strategies and Behaviors in Large Virtual Worlds." Conference on Human Factors in computing Systems-Proceedings. ACM, New York, 1996. 142-49.

Davidson, Cynthia. Anyplace. New York and Cambridge, Mass.: Anyone Coropation and The MIT Press, 1995.

Davies, Steven. ""Reckless Walking Must Be Discouraged": The Automobile Revolution and the Shaping of Modern Urban Canada to 1930." Urban History Review XVIII.2 (1989): 123-38.

de Certeau, Michel. The Practice of Everyday Life. Berkeley: University of California Press, 1988.

de Poli, Franco. Bosch. Trans. Wojciech Jekiel. Geniusze Sztuki. Warszawa: Krajowa Agencja Wydawnicza, 1987.

Deakin, Ann K. "Landmarks as Navigational Aids on Street Maps." Cartography & Geographic Information System 23.1 (1996): 21-36.

Deborg, Guy. The Society of the Spectacle. New York: Zone Books, 1995 (1967).

Deely, John. Basics of Semiotics. Bloomington & Indianapolis: Indiana University Press, 1990.

Deken, Joseph. Computer Images: State of the Art. New York: Stewart, Tabori & Chang, 1983.

Delano Smith, Catherine. "Cartography in the Prehistoric Period in the Old World." History of Cartography, Volume 1. Eds. J. B. Harley and David Woodland. Vol. 3. Chicago and London: The University of Chicago Press, 1987. 54-101.

Deleuze, Gilles, and Félix Guattari. A Thousand Plateaus, Capitalism and Schizophrenia. Trans. Brian Massumi. Minneapolis and London: University of Minnesota Press, 1988.

Dervin, Brenda. "Chaos, Order, and Sense-Making: A Proposed Theory for Information Design." Information Design. Ed. Robert Jacobson. Cambridge, Mass.: The MIT Press, 1999. 35-57.

Deubner, L. Der Ithyphallische Hermes. Stuttgard, 1934.

Devenson, Alison M. "Small Medieval Towns." Ph. D Thesis. University of Southhampton, 1995.

Dewy, John. Democracy and Education. New York: McMillan, 1916.

Digital Design Lab. Spatial Worlds for Information Retrievel and Learning (Swirl). Columbia University. Available: www.arch.columbia.edu/DDL/research/SWIRL/.

---. Spatial Interfaces for Learning on-Line (Silo). Columbia University. Available: www.arch.columbia.edu/DDL/research/SILO/2000.

Doblin, Jay. Trademark Design. Dot Zero #2. New York: Finch, Pruyn and Co., 1966.

Domański, Grzegorz. "Szlaki Handlowe W Okresie Poznolateńskim I Wpływów Rzymskich W Sudetach Polskich." Acta Archeologica Carpathica IX fasc.1.1 (1967): 85-90.

Dondis, Donis. A Primer of Visual Literacy. Cambridge, Mass.: M.I.T. Press, 1973.

Downs, Roger, and David Stea, eds. Maps in Mind. New York: Harper and Row, 1977.

---, eds. Image and the Environment: Cognitive Mapping and Spatial Behavior. Chicago: Aldine, 1973.

Dripps, R. D. The First Home. Myth, Paradigm, and Thetask of Architecture. Cambridge, Mass. and London, England: The MIT Press, 1997.

Droste, F. G. "The Grammar of Traffic Regulations." Semiotica 5.6 (1972): 257-62.

Duncan, Hugh Danzel. Symbols and Society. New York: Oxford University Press, 1968.

Duncan, James, and David Ley, eds. Place/Culture/Representation. London and New York: Routledge, 1993.

Dunham-Jones, Ellen. "Temporary Contracts. On the Economy of the Post-Industrial Landscape." Harvard Design Review. Fall 1997 (1997): 10-13.

Earle, Timothy. "Paths and Roads in Evolutionary Perspective." Ancient Road Networks and Settlement Hierarchies in the New World. Ed. Charles D. Trombold. New Directions in Archeology. Cambridge and New York: Cambridge University Press, 1991. 11-16.

Easterling, Keller. Organization Space: Landscapes, Highways, and Houses in America. Cambridge, Mass.: The MIT Press, 1999.

Eco, Umberto. Travels in Hyperreality. Trans. William Weaver. New York: Harcourt Brace Jovanovich, 1986.

---. Semiotics and the Philosophy of Language. Bloomington: Indiana University Press, 1984.

---. A Theory of Semiotics. Advances in Semiotics. Ed. Thomas A. Sebeok. Bloomington and London: University of Indiana Press, 1979.

---. "Introduction to a Semiotics of Iconic Signs." Versus VS.2 (1972): 1-15.

Edmondson, William. Abstraction and Organization in Signs and Sign Systems. Exeter: Intellect Books, 1999.

Edwards, D. M., and L. Hardman. "Lost in Hyperspace: Cognitive Mapping and Navigation in a Hypertext Environment." Hypertext: Theory into Practice. Ed. Ray McAleese. Oxford: Intellect Ltd., 1989.

Eisenstein, Elizabeth. The Printing Revolution in Early Modern Europe. Cambridge: Cambridge University Press, 1983.

Eliade, Mircea. Images and Symbols. Studies in Religious Symbolism. Trans. Philip Mairet. New York: Sheed and Ward, 1961.

—. The Sacred and the Profane. New York: Harper Torchbook, 1961.

Elvins, T. Todd, David R. Nadeau, and David Kirsh. "Worldlets-3d Thumbnails for Wayfinding in Virtual Environments." User Interface Software and Technology. New York, NY: Proceedings of the ACM Symposium, 1997.

Elvis, T. Todd. "Visfiles: Virtually Lost in Virtual Worlds: Wyfinding without a Cognitive Map." Computer Graphics (ACM) 31.3 (1997): 15-17.

Evans, Walker, and Andrei Codrescu. Signs. Los Angeles: The J. Paul Getty Museum, 1998.

Ewald, William, and Daniel Mandelker. Street Graphics. A Concept and a System. Washington, D.D.: The Amrican Society of Landscape Architects, 1971.

Fiske, John. Introduction to Communication Studies. London and New York: Routledge, 1990.

Forbes, R. J. Notes on the History of Ancient Roads and Their Construction. Amsterdam: Adolf M. Hakkert, 1964 [1934].

Francaviglia, Richard V. Main Street Revisisted: Time, Space, and Image in Small Town America.: University of Iowa Press, 1996.

Franck, Karen A., and Lynda H. Scneekloth, eds. Ordering Space. Types in Architecture and Design. New York: Van Nostrand Reinhold, 1994.

Frey, Nancy Louise. Pilgrim Stories. On and Off the Road to Santiago. Berkeley, California: University of California Press, 1998.

Fürtwangler, Adolf. Masterpieces of Greek Sculpture. London: William Heinemann, 1895.

Gandelman, Claude. Reading Pictures, Viewing Text. Bloomington, Ind.: Indiana University Press, 1991.

Gardner, Howard. Multiple Intelligences. New York: Harper Collins, 1993.

Garver, Newton, and Seung-Chong Lee. Derrida & Wittgenstein. Philadelphia: Temple University Press, 1994.

Geertz, Clifford. After the Fact, Two Countries, Four Decades, One Anthropologist. Cambridge, Mass.: Harvard University Press, 1995.

—. The Interpretation of Cultures. New York: Basic Books, 1973.

Giddens, Anthony. The Consequences of Modernity. Stanford, California: Stanford University Press, 1990.

Glaser, Anton. History of Binary and Other Nondecimal Numeration. Los Angeles: Tomash, 1981.

Gleber, Anke. The Art of Taking a Walk. Flanerie, Literature, and Film in Weimar Culture. Princeton, NJ.: Princeton University Press, 1999.

Golledge, Reginald G., ed. Wayfinding Behavior. Cognitive Mapping and Other Spatial Processes. Baltimore and London: The Johns Hopkins University Press, 1999.

Good Morelli, Laura. "Medieval Pilgrims' Hospices on the Road to Santiago De Compostela." Ph. D Thesis. Yale University, 1998.

Gore, Ormsby W. Ancient Monuments. Southern England. Vol. II. London: His Majesty's Stationery Office, 1936.

Gore, W. Ormsby. Ancient Monuments. England: East Anglia and Midlands. Vol. III. London: His Majesty's Stationery Office, 1936.

Gottdiener, Mark, and Alexandros Ph. Lagopoulos, eds. The City as the Sign: An Introduction to Urban Semiotics. New York: Columbia University Press, 1986.

Gowans, Alan. Learning to See. Bowling Green, Ohio: Bowling Green University Popular Press, 1981.

Graham, Stephen, and Simon Marvin. Telecomunications and the City. Electronic Spaces, Urban Places. London and New York: Routledge, 1996.

Gray, Elizabeth. "Signposts to the Past: Re-Inventing Political Symbols, Moscow 1985-1996." Ph.D Thesis. University of Cambridge, 1998.

Greiman, April. Hybrid Imagery: The Fusion of Technology and Graphic Design. New York: Watson-Guptill Publications, 1991.

Guénon, René. Fundamental Symbols. The Universal Language of Sacred Science. Trans. Jr. Alvin Moore. Cambridge, UK: Quinta Essentia, 1995 (1962).

Guillet, Edwin C. Pioneer Inns and Taverns. Vol. 1 and 2. Toronto: The Ontario Publishing Co., 1964.

Guthrie, W. K. The Greeks and Their Gods. Boston: Beacon Press, 1950.

Habraken, N. J. The Structure of the Ordinary. Form and Control in the Built Environment. Ed. Jonathan Teicher. Cambridge, Mass and London: The MIT Press, 1998.

Hall, Edward T. The Hidden Dimension. New York: Anchor Books/Doubleday, 1990 (1966).

---. The Silent Language. New York: Doubleday, 1981 (1959).

Hall, John Clark. A Concise Anglo-Saxon Dictionary. 4 ed. Cambridge: University Press, 1960.

Harley, J. B. "Maps, Knowledge, and Power." The Iconography of Landscape. Eds. Denis Cosgrove and Stephen Daniels, 1988.

—. "The Map and the Development of the History of Cartography." History of Cartography. Volume 1. Eds. J. B. Harley and David Woodland. Chicago: The University of Chicago Press, 1987. 1-42.

Harley, J. B., and David Woodland, eds. The History of Cartography. Cartography in Prehistoric, Ancient, and Medieval Europe and the Mediterranean. Vol. 1. Chicago and London: The University of Chicago Press, 1987.

Harries, Karsten. The Broken Frame: Three Lectures. Washingon, D.C.: The Catholic University of America Press, 1989.

Harris, J. Rendel. The Origin of the Cult of Hermes. reprinted from the Bulletin of the John Rylands Library vol.13, No.1, Jan. 1929 ed. Manchestser: The Manchester University Press, 1929.

Harvey, David. "From Space to Place and Back Again: Reflections on the Condition of Postmodernity." Mapping the Futures. Local Cultures Global Changes. Eds. Jon Bird and Barry Curtis. London and New York: Routledge, 1993. 3-29.

—. The Condition of Postmodernity. Cambridge, Mass.: Blackwell, 1992.

—. The Urban Experience. Baltimore: The Johns Hopkins University Press, 1989.

—. Consciousness and the Urban Experience. Baltimore: John Hopkins University Press, 1985.

Hassig, Ross. "Roads, Routes, and Ties That Bind." Ancient Road Networks and Settlement Hierarchies in the New Wold. Ed. Charles D. Trombold. New Directions in Archeology. Cambridge and New York: Cambridge University Press, 1991. 17-27.

Havelock, E. The Muse Learns to Write: Reflections on Orality and Literacy from Antiquity to the Presesnt. New Haven: Yale University Press, 1986.

Havelock, Eric, and Jackson P. Herschell. Communication Arts in the Ancient World.:, 1978.

Henkin, Martin. City Reading. Written Words and Public Spaces in Antebellum New York. New York: Columbia University Press, 1998.

Heyer, Paul. Communications and History. New York: Greenwood Press, 1988.

Hindly, Geoffrey. A History of Roads. London: P. Davies, 1971.

Hinsdale, W. B. "Indian Overland Travelways." Wisconsin Archeologist 9.2 (1929).

Hiss, Tony. The Experience of Place. New York: Alfred A. Knopf, 1990.

Hitzer, Hans. Die Straße: Vom Trampelpfad Zur Autobahn. Lebensaden Von Der Urzeit Bis Heute. Munchen: G. D. W. Callwey, 1971.

Hodder, Ian, ed. The Meaning of Things: Material Culture and Symbolic Expression. London: Unwin Hyman, 1989.

Holder, Ian, Michael Sjanks, and Alexandra Alexandri, eds. Interpreting Archaeology. Finding Meaning in the Past. London: Routledge, 1995.

Hołub-Pacewiczowa, Zofia. "Oblicze Ziemi Polskiej." Polska I Jej Dorobek Dziejowy W Ciagu Tysiąca Lat Istnienia. Ed. Henryk Paszkiewicz. Londyn: Księgarnia Polska Polonia, 1956. 7-26.

Honeywill, Paul. Visual Language for the World Wide Web. Exeter: Intellect Books, 1999.

Horn, Robert E. Visual Language: Global Communication for the 21st Century. New York, 1999.

---. Mapping Hypertext: The Analysis, Organization and Display of Knowledge for the Next Generation of on-Line Text and Graphics. New York: Lexington Institute Press, 1990.

Hornblower, Simon, and Anthony Spawforth, eds. The Oxford Companion to Clasical Civilization. Oxford and New York: Oxford University Press, 1998.

Howard, David, and Alan M. MacEacheren. "Interface Design for Geographic Visualization: Tools for Representing Reliability." Cartography & Cartographic Infromation System 23.2 (1996): 59-77.

Hughes, Robert. America Visions. Epic History of Art in America. New York: Alfred A. Knopf, 1997.

---. Barcelona. New York: Alfred A. Knopf, 1992.

Hyslop, John. "Observations About Research on Prehistoric Roads in South America." Ancient Road Networks and Settlement Hierarchies in the New Wold. Ed. Charles D. Trombold. New Directions in Archeology. Cambridge and New York: Cambridge University Press, 1991. 28-33.

Ingram, Robert J. "Legibility Enhancement for Information Visualization." Ph.D Thesis. University of Nottingham, 1995.

Innis, Harold. The Bias of Communication. Toronto: University of Toronto Press, 1981 (1951).

Interrate, Joseph. ""You Can't Go Downtown in a Bathtub: Automobile Movement and the Reorganization of Rural American Space, 1900-1930." Radical History Review 21 (1980): 153-64.

Irani, Bohman Jamshed. "Expression in Architecture." M. Arch Thesis. McGill University, 1983.

Jackle, John A. The Tourist, Travel in Twentieth-Century North America.: University of Nebraska Press, 1985.

Jackson, John Brinckerhoff. Landscape in Sight, Looking at America. New Haven and London: Yale University Press, 1997.

Jacobson, Robert, ed. Information Design. Cambridge, Mass.: The MIT Press, 1999.

Jacobson, Roman. Selected Writings. The Hague: Mouton, 1971 [1960].

Jacobson, Robert, and M. Halle. Fundamentals of Language. The Hague: Mouton, 1956.

Jakle, John A. The Visual Elements of Landscape. Amherts: The University of Massachusetts Press, 1987.

James, Claus R., and Karen James. Visual Environment, Sight, Signs, and by-Law. New York: Collier-MacMillan, 1971.

James, William. The Principles of Psychology. New York: Dover Publications, 1950.

Jarman, Neil. "Intersecting Belfast." Landscape: Politics and Perspectives. Ed. Barbara Bender. Providence/Oxford: Berg, 1993. 107-38.

Jencks, Chris. "Watching Your Step: The History and Practice of the Flaneur." Visual Culture. Ed. Chris Jencks. London: Routledge, 1995. 142-60.

—, ed. Visual Culture. London: Routledge, 1995.

Jencks, Charles. The Architecture of the Jumping Universe: A Polemic, How Complexity Science Is Changing Architecture and Science. New York: St. Martin's Press, 1995.

---. The Language of Post-Modern Architecture. New York: Rizzoli, 1977.

—. Meaning in Architecture. London: Barrie & Rockliff the Cresset, 1969.

Jhally, S. The Codes of Advertising: Fetishism and the Political Economy in the Consumer Society. New York: St. Martin's Press, 1987.

Jonassen, David H. Dynamicons as Dynamic Graphic Interfaces: Interpreting the Meaning of a Visual Representation. Exeter: Intellect Books, 1998.

Jones, Steven, ed. Cybersociety: Computer Mediated Communication and Community. Thousand Oaks, California: Sage, 1995.

Jussim, Estelle. Visual Communication and the Graphic Arts. New York: Bowker, 1974.

Kamekura, Yusaku. Trademarks and Symbols of the World. New York: Reinhold, 1965.

Keever, Hillary. "No Longer Are Sunday..." Adbusters. Journal of the Mental Environment 1999: 48.

Kemble, Horace. "Indian Trees." Southwest lore, Gunnison, Colorado. (1947): 78-79.

Kepes, Gyorgy, ed. Sign, Image, Symbol. New York: George Braziller, 1966.

—. Language of Vision. Chicago: Paul Theobald, 1944.

Kerényi, Karl. Hermes, Guide of Souls, The Mythogem of the Masculine Source of Life. Trans. Murray Stein. Zurich, Switzerland: Spring Publications, 1976.

—. The Gods of the Greeks. London: Thames and Hudson, 1951.

Kornecki, Marian. "Wieś I Miasteczko: O Czym Mówimy?" Wieś i miasteczko u progu zagłady. Materiały Konferencji Naukowej Stowarzyszenia Historyków Sztuki. Wojnowicze 1988. Warszawa: Państwowe Wydawnictwo Naukowe, 1991. 11-29.

Korzybski, Adam. Science and Sanity. New York: Science Press, 1941.

Kostoff, Spiro. A History of Architecture: Settings and Rituals. New York: Oxford University Press, 1985.

Krajewski, Bruce. Travelling with Hermes. Hermeneutics and Rhetoric. Amherst: The University of Massachusetts Press, 1992.

Krampen, Martin. "The Icons of the Road." Semiotica. (1983).

---. Meaning in the Urban Environment. London, 1979.

---. "Signs and Symbols in Graphic Communication." Design Quarterly.62 (1965).

Krell, David Farrell. Archeticture. Ecstasies of Space, Time and the Human Body. New York: State University of New York Press, 1995.

Kulterman, Udo. Visible Cities – Invisible Cities: Urban and Historical Continuity. St. Louis: School of Architecture, Washington ?, 1988.

Kundera, Milan. Slowness. New York:. Harper Collins Publishers, 1996.

---. Immortality. New York: Grove Weidenfeld, 1990.

Lagueux, Maurice. "A Typology of the Building-Site Relation in Architecture." LSE Cities Programme.DP/5 (2000).

Lakoff, George. Women, Fire, and Dangerous Things. What Categories Reveal About the Mind. Chicago and London: The University of Chicago Press, 1987.

Lakoff, George, and Mark Johnson. Philosophy in the Flesh. The Embodied Mind and Its Challenge to the Western Thought.:, 1999.

---. The Metaphors We Live By. Chicago: University of Chicago Press, 1980.

Landow, George P. Hyper/Text/Theory. Baltimore & London: The Johns Hopkins University Press, 1994.

Lang, Peter, and Tam Miller, eds. Suburban Discipline. New York: Princeton Achitectural Press, 1997.

Latour, Bruno. We Have Never Been Modern. Cambridge, Mass.: Harvard University Press, 1993.

---. Science in Action: How to Follow Scientists and Engineers through Society. Milton Keynes: Open University Press, 1987.

Latour, Bruno, and Emilie Hermant. Paris Ville Invisible. Paris: Institut Synthélabo, 1998.

Laurel, Brenda, ed. The Art of Human-Computer Interaction. Reading, Mass: Addison-Wesley Pub. Co., 1990.

Lawton, C.A. "Stategies for Indoor Wayfinding: The Role of Orientation." Journal of Environmental Psychology 16.2 (1996): 137-45.

Lay, M. G. Ways of the World. A History of the World's Roads and of the Vehicles That Used Them. New Brunswick, N.J.: Rudgers University Press, 1992.

Leach, Neil. Rethinking Architecture. A Reader in Cultural Theory. London and New York: Routledge, 1997.

Lefebvre, Henri. Writings on Cities. Trans. Eleonore Kofman and Elizabeth Lebas. New York: Blackwell Publishers, 1996.

---. The Production of Space. Trans. David Nicholson Smith. Oxford: Blackwell Publishers, 1991.

Lewis, Malcolm. "The Origins of Cartography." The History of Cartography. Volume 1. Eds. J. B. Harley and David Wooland. Chicago: The University of Chicago Press, 1987. 50-53.

Liberman, J. Ben. Types of Typefaces. New York: Sterling, 1968.

Lightman, Allen. Einstein's Dream. New York: Warner Books, 1993.

Lopez-Pedroza, Rafael. Hermes and His Children. Dallas: Spring Publications, 1977.

Lupton, Ellen. Mixing Messages: Graphic Design in Contemporary Culture.: Princeton Architectural Press, 1996.

Lynch, Kevin. What Time Is This Place? Cambridge, Mass.: The MIT Press, 1993.

---. Good City Form. Cambridge, Mass.: The MIT Press, 1984.

---. The Image of the City. Cambridge, Mass.: The MIT Press, 1960.

Maass, Wolfgang. "From Vision to Multimodal Communication: Incremental Route Description." Artificial Intelligence Review 8.2-3 (1994): 159-74.

Malay, Rod. Graphic Communication. Urban Complex. Ottawa: the Community Planning Association of Canada, 1975.

Mann, Thomas, and Karl Kerényi. Mythology and Humanism – the Correspondence of Thomas Mann and Karl Kerényi. Trans. Alex Gelley. Ithaca: Cornell University Press, 1975.

Marciniak, Katarzyna. "The Perception and Treatment of Prehistoric and Contemporary Places and Sites in Poland." Sacred Sites, Sacred Places. Eds. David Carmichael, et al. London and New York: Routledge, 1994. 140-51.

Margolies, John. Fun Along the Road. American Tourist Attractions. Boston: Little, Brown and Company, nd.

Marling, Karal Ann. The Colossus of Roads. Myth and Symbol Along the American Highway. Minneapolis: University of Minnesota Press, 1984.

Martin, Gregory. Hieronymus Bosch. London: Thames and Hudson, 1978.

Massumi, Brian. "Buildings, Biograms, and Body Topologic.". unpublished essay, 1999.

Mattelart, Armand. The Invention of Communication. Trans. Susan Emanuel. Minneapolis and London: University of Minnesota Press, 1996.

McGillen, Clare D., and William P. MacLauchlan. Hermes-Bound: The Policy and Technology of Telecommunications. West Lafayette, Ind.: Pudue University Press, 1978.

McKim, Robert H. Thinking Visually. Belmont, Calif.: Wadsworth, 1980.

McLendon, Charles B., and Nick Blackistone. Signage, Graphical Communication in the Built World. New York: McGraw-Hill, 1982.

McLuhan, Eric. Electric Language: Understanding the Present. Toronto: Stoddardt Publishing, 1998.

McLuhan, Marshall. Understanding Media: The Extensions of Man. New York: McGraw-Hill, 1965.

---. The Gutenberg Galaxy: The Making of Typographical Man. Toronto: University of Toronto Press, 1962.

Meggs, Phillip B. A History of Graphic Design. New York: Van Nostrand Reinhol Company, 1983.

Mehrabian, Albert. Silent Messages. Belmont, Calif.: Wadsworth, 1971.

Melody, William H., Liora Salter, and Paul Heyer, eds. Culture, Communication, and Dependency, The Tradition of H. A. Innis. Norwood, N.J.: Ablex Publishing, 1981.

Messaris, Paul. Visual Literacy: Image, Mind & Reality. Boulder, Col.: Westview Press, 1994.

Meyrowitz, Joshua. No Sense of Place: The Impact of Electronic Communication on Social Behavior. New York, Oxford: Oxford University Press, 1986.

Miller, Perry. The Life of the Mind in America. New York: Harcourt, Brace and World, 1965.

Minai, Asghar Talave. Architecture as Environmental Communication. Berlin, NY: Mouton, 1984.

Ministere des communications du Québec. "Paysage, Rue, Architecture... At Affiche. Aménagement Et Urbanisme. Les Millieux Et Leurs Composanters Physiques.". Québec: Les Publications du Québec, 1991.

Mitchell, William J. E-Topia. Cambridge, Mass.: The MIT Press, 2000.

---. City of Bits. Space, Place, and the Infobahn. Cambridge, Ma./London: The MIT Press, 1995.

Moholy-Nagy, Laszlo. Vision in Motion. Chicago: Paul Theobald, 1947.

Moore, G., and Reginald G. Golledge. Environmental Knowing. Stradsburg, Pa.: Dowden, Hutchinson, and Ross, 1976.

Morris, Charles. Signs, Language, and Behavior. New York: Prentice Hall, 1946.

Morris, Charles W. Foundations of the Theory of Signs. Chicago, Ill.: The University of Chicago Press, 1938.

Moss, Michael A., ed. Marshall Mcluhan, Essays: Media Research, Technology, Art, Communication. Amsterdam: OPA Amsterdam B. V., 1997.

Mottas, F. , and J. C. Decourt. "Roman Roads and Milestones in Thessaly." Bulletin de Correspondence Hellenique 121.1 (1997): 311-54.

Mukarovský, Jan. Structure, Sign and Function: Selected Essays by Jan Mukarovský. Trans. John Burbank and Peter Steiner. Yale Russian and East European Studies. New Haven: Yale University Press, 1978.

Mulk, Inga-Maria. "Sacrificial Places and Their Meaning in Saami Society." Sacred Sites, Sacred Places. Eds. David Carmichael, et al. London and New York: Routledge, 1994. 121-31.

Müller-Brockmann, Josef. A History of Visual Communication. Teufen, Switzerland: Verlag Arthur Niggli, 1971.

Mumford, Lewis. The City in History. Its Origins, Its Transformations, and Its Prospects. New York: Harcourt Brace Jovanovich, 1989 (1961).

---. The Highway and the City. New York: Harcourt, Brace & World, 1963.

---. Art and Technics. New York: Columbia University Press, 1952.

---. Technics and Civilization. New York: Harcourt, Brace and World, 1934.

Nadolny, Sten. The God of Impertinence. Trans. Breon Mitchell. New York: Viking, 1997.

Nasar, Jack L., ed. Environmental Aesthetics. Theory, Research, and Applications. Cambridge: Cambridge University Press, 1988.

Nebenzahl, Kenneth. Maps of the Holy Land. Images of *Terra Sancta* through Two Millennia. New York: Abbeville Press, 1986.

Negroponte, Nicolas. Being Digital. New York: Alfred A. Knopf, 1995.

Neisser, U. Cognition and Reality. San Francisco: Freeman and Co., 1976.

Newton, Arthur Percival. Travel and Travellers of the Middle Ages. New York: Barnes & Noble, 1968.

Nielsen, J. Hypertext and Hypermedia. San Diego, Cal.: Academic Press, 1990.

Noll, Michael A. "Computers and the Visual Arts." Design and Planning.2 (1967).

Norberg-Schultz, Christian. The Concept of Dwelling. New York: Electa/Rizzoli, 1985.

---. Intentions in Architecture. Rome: Allen & Uniwin Ltd., 1963.

Novitz, David. Pictures and Their Use in Communication. The Hague: Martinus Nijhoff, 1977.

OED. 1998. Available: http://dictionary.oed.com1999.

Olsen, Donald J. The City as a Work of Art. New Haven and London: Yale University Press, 1986.

Ong, Walter. Interfaces of the World. Ithaca: Cornell University Press, 1977.

Ong, Walter J. "Information and/or Communication: Interactions." Communication Research trends 16.3 (1996): 3-16.

—. Orality and Literacy: The Technologizing of the World. London: Methuen, 1982.

Otto, Walter. The Homeric Gods. The Spiritual Significance of Greek Religion. London: Thames and Hudson, nd.

Ovsyannikov, O. V., and N. M. Terebikhin. "Sacred Space in the Culture of the Arctic Regions." Sacred Sites, Sacred Places. Eds. David Carmichael, et al. London and New York: Routledge, 1994. 44-81.

Pacey, A. The Culture of Technology. Cambridge, Mass.: The MIT Press, 1991.

Palladio, Andrea. The Four Books of Architecture. facsimile of the 1738 edition published by Isaac Ware ed. New York: Dover, 1965 (1570).

Parkhurst, Helen Huss. Cathedral. A Gothic Pilgrimage. Boston: Houghton Mifflin Company, 1936.

Passini, Romedi. "Information Design. An Old Hag in Fashionable Clothes?" Information Design. Ed. Robert Jacobson. Cambridge, Mass.: The MIT Press, 1999. 84-98.

—. "Wayfinding Design: Logic, Application and Some Thoughts on Universality." Design Studies 17.3 (1996): 319-31.

—. Wayfinding in Architecture. Toronto, Montreal, New York: Van Nostrand Reinhold Company, 1984.

—. "Wayfinding. A Study of Spatial Problem Solving." Ph. D Thesis. Pennsylvania State University, 1977.

Paszkiewicz, Henryk, ed. Polska I Jej Dorobek Dziejowy W Ciągu Tysiąca Lat Istnienia. Londyn: Księgarnia Polska Orbis-Polonia, 1956.

Pawley, Martin. Theory and Design in the Second Machine Age. Oxford: Basil Blackwell, 1990.

Paz, Octavio. Convergences. Essays on Art and Literature. London: Bloomsbury, 1990.

Pearson, Michael Parker, and Colin Richards, eds. Architecture and Order. Approaches to Social Space. London and New York: Routledge, 1994.

Peirce, C. S. Collected Papers. Cambridge, Mass.: Harvard University Press, 1958.

Pelletier, Louise, and Alberto Pérez-Gómez. Architecture, Ethics and Technology. Montreal and Kingston: McGill-Queen's University Press, 1994.

Pelton, J. Future View: Communication, Technology and Society in the 21st Century. New York: Johnson Press, 1992.

Pennick, Nigel. The Celtic Cross. An Illustrated History and Celebration. London: Blandford, 1997.

Pérez-Gómez, Alberto. "Abstraction in Modern Architecture. Some Reflections in Parallel to Gnosticism and Hermeneutics." Carlton Book. Ed. Alberto Pérez-Gómez. Ottawa: Carlton School of Architecture, 1986. 182-93.

---. "The City as a Paradigm of Symbolic Order." Carlton Book. Ottawa: Carlton School of Architecture, 1986. 5-18.

---. Architecture and the Crisis of Modern Science. Cambridge, Mass: The MIT Press, 1983.

Pérez-Gómez, Alberto, and Stephen Percell. Chora: Intervals in the Philosophy of Architecture 3. Montreal & Kingston: McGill-Queen's University Press, 1999.

Perrella, Stephen. "Skin Deep." Blueprint 2000: 45-52.

---. "Hypersurface Architecture." Architectural Design.133 (1998).

Preziosi, Donald. The Semiotics of the Built Environment. An Inroduction to Architectonic Analysis. Advances in Semiotics. Ed. Thomas A. Sebeok. Bloomington and London: Indiana University Press, 1979.

Preziozi, Donald. Architecture, Language and Meaning. The Origins of the Built World and Its Semiotic Organization. The Hague: Mouton de Gruyter, 1979.

Price, Chester B. "Historic Indian Trails of New Hampshire." New Hampshire Archaeologist.March (1958).

Raban, Jonathan. Bad Land. An American Romance. New York: Pantheon Books, 1996.

---. Soft City. London: Collins Harvill, 1974.

Rapoport, Amos. Human Aspects of Urban Form: Toward a Man-Environment Approach to Urban Form and Design. Toronto: Pergamon Press, 1977.

---. House, Form and Culture. Englewood Cliffs, N.J.: Prentice-Hall, 1969.

Reeves, Byron, and Clifford Nass. The Media Equation. How People Treat Computers, Television, and New Media Like Real People and Places. Cambridge: Cambridge University Press, 1998.

Rhodes, Robin Francis. Architecture and Meaning of the Athenian Acropolis. New York: Cambridge University Press, 1995.

Rice, R. E. "Issues and Concepts in Research on Computer-Mediated Communication Systems." Communication Yearbook 12 (1989): 436-76.

Rimmer, Alfred. Ancient Stone Crosses of England. London: Virtue, Spalding, 1875.

Roskill, Mark. The Languages of Landscape. University Park, Pennsylvania: The Pennsylvania State University Press, 1997.

Ruesch, Jurgen, and Weldon Kees. Nonverbal Communication. Notes on the Visual Perception and Human Relations. Berkeley, Los Angeles, London: University of California Press, 1956.

Sakthivel, Madhumathi, Patrick Patterson, and Carolina Cruz-Neira. "Gender Differences in Navigating Virtual Worlds." Biomedical Sciences Instrumentation 35 (1999): 353-58.

Salingaros, Nicos A. "Urban Space and Its Informational Field." Journal of Urban Design 4.1 (1999): 29-49.

Sassoon, Rosemary, and Albertine Gaur. Signs, Symbols and Icons: Pre-History to the Computer Age. Exeter: Intellect Books, 1997.

Saussure, Ferdinand de. Course in General Linguistics. Trans. Charles Bally and Albert Sechehaduer. New York: McGraw-Hill, 1966.

Schmittel, Wolfgang. Process Visual. Development of a Corporate Identity. Zürich: ABC Editions, 1978.

Schoenauer, Norbert. 6,000 Years of Housing. New York: W. W. Norton & Company, 2000.

Schramm, Wilbur, and William E. Poter. Men, Women, Messages, and Media. Understanding Human Communication. NNew York: Harper & Row, 1980.

Schreiber, Hermann. The History of Roads. From Amber Route to Motorway. Trans. Stewart Thomson. London: Barrie and Rockliff, 1961.

Schwartzman, SArnold. Designage. The Art of Decorative Signage. San Francisco: Chronicle Books, 1998.

Scully, Vincent. The Earth, the Temple, and the Gods. New Haven and London: Yale University Press, 1972.

Seamon, David, and Robert Mugerauer, eds. Dwelling, Place, and Environment. Towards a Phenomenology of Person and World. New York: Columbia Universiy Press, 1989.

Sebeok, Thomas A. Signs: An Introduction to Semiotics. Toronto and Bufallo: University of Toronto Press, 1994.

---. A Sign Is Just a Sign. Bloomington: Indiana University Press, 1991.

---, ed. Style in Language. Cambridge, Mass.: The MIT Press, 1960.

Sennett, Richard. Flesh and Stone. The Body and the City in Western Civilization. New York and London: W. W. Norton & Company, 1994.

Serres, Michel. Hermes. Literature, Science, Philosophy. Baltimore & London: The Johns Hopkins University Press, 1982.

Serres, Michel, and Bruno Latour. Conversations on Science, Culture, and Time. Trans. Roxanne Lapidus. Studies in Literature and Science. Ed. N. Katherine Hayles. Ann Arbor: The University of Michigan Press, 1998.

Seward Barry, Ann Marie. Visual Intelligence: Perception, Image, and Manipulation in Visual Communication. New York: State University of New York, 1997.

Seweryn, Tadeusz. Kapliczki I Krzyże Przydrożne W Polsce. Warszawa: Instytut Wydawniczy Pax, 1958.

Shepheard, Paul. What Is Architecture? An Essay on Landscapes, Buildings, and Machines. Cambridge, Mass and London: The MIT Press, 1994.

Shlain, Leonard. The Alphabet Versus the Goddess. The Conflict between Word and Image. New York: Viking, 1998.

Shum, Simon. "Real and Virtual Spaces: Mapping from Spatial Cognition to Hypertext." Hypermedia 2.2 (1990): 133-58.

Siderakis, Kriti. "Plains, Trains, and Automobiles: Thye Designof New Europe." Metropolis 1997: 52-57, 98-99.

Singer, Charles, and F. J. Holmyard, eds. A History of Technology. Oxford: Claredon Press, 1958.

Slater, Don. "Photography and Modern Vision. The Spectacle of "Natural Magic"." Visual Culture. Ed. Chris Jenks. London and New York: Routledge, 1995. 218-37.

Smith, Claire. "Ancestors, Place and People: Social Landscape in Aboriginal Australia." The Archaelogy and Anthropology of Landscape: Shaping Your Landscape. Eds. Peter J. Ucko and Robert Layton. London and New York: Routledge, 1999. 189-205.

Smith, Catherine Delano. "Prehistoric Maps and the History of Cartography." The History of Cartography. Volume 1. Eds. J. B. Harley and David Woodward. Chicago and London: University of Chicago Press, 1987. 45-49.

Sokolnicki, Michal. "W Niewoli I U Progu Wyzwolenia." Polska I Jej Dorobek Dziejowy W Ciagu Tysiąca Lat Istnienia. Ed. Henryk Paszkiewicz. Londyn: Księgarnia Polska Orbis-Polonia, 1956. 433-55.

Sonesson, W. J. Pictorial Concepts: Inquiries into the Semiotic Heritage and Its Relevance for the Analysis of the Visual World. Lund: Lund University Press, 1989.

Sorkin, Michael. Local Code. The Constitution of a City at 42° N Latitude. New York: Princeton Architectural Press, 1993.

Sosnoski, James J. Modern Skeletons in Postmodern Closets: A Cultural Studies Alternative. Charlottesville and London: University Press of Virginia, 1995.

Spencer, Herbert. The Visible World. Problems of Legibility. London, 1968.

Strickland, Stephanie. True North. 1998. StorySpace1999.

Studnicki, F. "Traffic Signs." Semiotica 2.2 (1970): 151-72.

Subrahmanian, V. S., et al. Hermes: A Hetrogeneous Reasoning and Mediator System. 2000. Available: http://www.cs.umd.edu/project/hermes/overview/peaper2000.

Sulimirski, Tadeusz. "Czasy Prehistoryczne." Polska I Jej Dorobek Dziejowy W Ciagu Tysiąca Lat Istnienia. Ed. Henryk Paszkiewicz. Londyn: Księgarnia Polska Orbis-Polonia, 1956. 80-86.

Sumień, Tadeusz. Forma Miasta. Kontekst I Anatomia. Warszawa: Instytut Gospodarki Przestrzennej i Komunalnej, 1992.

Taylor, Charles. The Malaise of Modernity. Concord, On: Anansi, 1992.

Theodoratus, Dorothea J., and Frank LaPena. "Wintu Sacred Geography of Northern California." Sacred Sites, Sacred Places. Eds. David Carmichael, et al. London and New York: Routledge, 1994. 20-31.

Thiel, Philip. People, Paths and Purposes. Notations for a Participatory Envirotechture. Seatle and London: University of Washington Press, 1996.

Thorndyke, P. Performance Models for Spatial Cognition and Locational Cognition. Washington, DC: Rand Corporation, 1980.

Tilley, Christopher. Metaphor and Material Culture. Oxford: Blackwell Publishers, 1999.

---. A Phenomenology of Landscape. Places, Paths, and Monuments. Oxford: Berg, 1994.

Toynbee, Arnold, ed. Cities of Destiny. New York: McGraw-Hill, 1967.

Tozer, H. F. A History of Ancient Geography. 2nd ed. New York: Biblio and Tannen, 1964.

Trombold, Charles D., ed. Ancient Road Networks and Settlement Hierarchies in the New Wold. Cambridge and New York: Cambridge University Press, 1991.

---. "An Introduction to the Study of Ancient New World Road Networks." Ancient Road Networks and Settlement Hierarchies in the New Wold. Ed. Charles D. Trombold. New Directions in Archeology. Cambridge and New York: Cambridge University Press, 1991. 1-9.

Tuan, Y.-F. Space and Place: The Perspective of Experience. Minneapolis: University of Minnesota Press, 1977.

Tufte, Edward. Visual Explanations: Images and Quantities, Evidence and Narrative. Cheshire, Con.: Graphics Press, 1997.

---. Envisioning Information. Cheshire, Con.: Graphics Press, 1990.

---. The Visual Display of Quantative Information. Cheshire, Con.: Graphics Press, 1983.

Turner, Victor. Blazing the Trail. Way Marks in the Exploration of Symbols. Tucson and London: The University of Arizona Press, 1992.

Ucko, Peter J., and Robert Layton, eds. The Archaeology and Anthropology of Landscape. Shaping Your Landscape. London: Routledge, 1999.

University Charrette. "Signs of Life: Outdoor Advertising in the Urban Landscape." Canadian Centre for Architecture. Montreal, 1997.

Urry, John. Consuming Places. London and New York: Routledge, 1995.

Vattimo, Gianni. The Transparent Society. Baltimore: The Johns Hopkins University Press, 1992.

---. The End of Modernity. Baltimore: The Hohns Hopkins University Press, 1991.

Venturi, Robert. Iconography and Electronics Upon a Generic Architecture. Cambridge, Mass.: The MIT Press, 1998.

Venturi, Robert, Denise Scott Brown, and Steven Izenour. Learning from Las Vegas. Cambridge, MA: The MIT Press, 1977.

Venturi, Robert, and Steven Izenour. "Signs of Life: Symbols in the American City." (Exhibition catalog). New York: Aperture Inc., 1976.

Vesely, Dalibor. "Architecture and the Question of Technology." Architecture, Ethics, and Technology. Ed. Alberto Pérez-Gómez. Montreal & Kingston: McGill-Queen's, 1994. 28-47.

—. "Architecture and the Conflict of Representation." AA Files 8.January (1985): 21-37.

Virilio, Paul. The Vision Machine. Trans. Julie Rose. Perspectives. Eds. Collin MacCabe and Paul Willemen. Bloomington and Indianopolis: Indiana University Press, 1994.

—. The Lost Dimension. Trans. Daniel Moshenberg. New York: Semiotxt(e), 1991.

Vitruvius, Marcus. Vitruvius. The Ten Books Fo Architecture. Trans. Morris H. Morgan. Cambridge: Harvard Univerity Press, 1914.

Wachtel, Edward. "Visions of Order: The Influence of Technology on Space Conceptions." Ph.D Thesis. New York University, 1990.

Walicki, Michał, ed. Dzieje Sztuki Polskiej. Vol. I: Sztuka polska przedromańska i romańska do schyłku XII wieku. Warszawa: Państwowe Wydawnictwo Naukowe, 1971.

Wallace, Aurora. "The Architecture of News: Nineteenth Century Newspaper Buildings in New York." Ph. D Thesis. McGill University, 2000.

Wallace, Dwight T. "The Chincha Roads: Economics and Symbolism." Ancient Road Networks and Settlement Hierarchies in the New Wold. Ed. Charles D. Trombold. New Directions in Archaeology. Cambridge and New York: Cambridge University Press, 1991. 253-63.

Wallis, Michael. Route 66: The Mother Road.: St. Martin's Press, 1990.

Warner, Sam Bass Jr. The Urban Wilderness. A History of the American City. Berkely: University of California Press, 1995 (1972).

Weinberg, Steven. The Last Three Minutes. 2nd ed. New York: Basic Books, 1993.

Whitfield, Peter. New Found Lands. Maps in the History of Exploration. New York: Routledge, 1998.

Whyte, William H. City. Rediscovering the Center. New York: Doubleday, 1988.

Wilburn, Peter. Information Graphics: A Survey of Typographic, Diagrammatic and Cartographic Communication. New York: Van Nostrand Reinhold Cpmpany, 1989.

Williams, Raymond. Keywords. A Vocabulary of Culture and Society. New York: Flamingo, 1979.

Witney, Dudley. The Lighthouse. Toronto: McLellan and Stewart, 1975.

Wittgenstein, Ludwig. Notebooks 1914-1916. Oxford: Oxford University Press, 1961.

---. Philosophical Investigations. 3rd ed. New York: McMillan, 1953.

Wojtowicz, Piotr. "Życie Gospodarczo-Społeczne Dawnej Polski." Polska I Jej Dorobek Dziejowy W Ciągu Tysiąca Lat Istnienia. Ed. Henryk Paszkiewicz. Londyn: Księgarnia Polska Orbis-Polonia, 1956. 252-79.

Worth, Sol. Studying Visual Communication. Philadelphia: University of Pennsylvania Press, 1981.

Yates, Francis C. The Art of Memory. Chicago: University of Chicago Press, 1966.

Zawadowski, L. "A Classification of Signs and Semantic Systems." Sign, Language Culture. Eds. A. J. Greimas, et al. The Hague and Paris: Mouton, 1970. 28-49.

Zin, Wiktor. Piękno Utracone. Warszawa: Krajowa Agencja Wydawnicza, 1989.