#### **Chapter 5: Communication models**

From an exploration of the relationship between typography and language, we have reached a wider perspective in which it is seen in terms of the relations between writers and readers. The obvious way to diagram this relationship—so obvious as to make it a truism—is to link writer and reader by a line passing through text (or medium). All theories of language or communication at some point have to state their view of the writer-text-reader relationship, even if it is to exclude much of it from their field, and many illustrate their explanations with variations of the same simple diagram. Bloomfield, for example, who excludes contextual or pragmatic matters from the scope of linguistics, includes a simple model at one point (Figure 5.1). (It leaves little room for doubt about where he stands on the primacy of speech.)

speaker's situation speech hearer's response

Figure 5.1. From Bloomfield (1935: 139)

Many more recent versions of this model can be traced to Lasswell's classic formulation, 'Who says what, in what channel, to whom, with what effect?' (Smith, Lasswell & Casey 1946: 121), and Shannon & Weaver's (1949) mathematical model of communication. Their information theory diagram (Figure 5.2) was originally designed to describe the transmission of electronic information (signals) along wires, but was subsequently adopted in many other fields.<sup>98</sup> Different versions embellish the diagram in order to model in more detail how their authors believe that messages are

 $<sup>^{98}</sup>$  The analogy between electronic and human communication was anticipated by the art historian Roger Fry (1939):

<sup>&#</sup>x27;If we take an analogy from the wireless—the artist is the transmitter, the work of art the medium and the spectator the receiver...for the message to come through, the receiver must be more or less in tune with the transmitter'.

# encoded, transmitted and so on. Johnson & Klare (1961) reviewed a range of general communication models based on information theory.

noise Source transmitter message signal channel signal receiver message destination code

Figure 5.2 A simple Shannon-Weaver type model of communication (this one is from Eco 1976: 33).

As a model it was attractive because it suggested the application of precise mathematics to the rather intractable problems of human communication. Hindsight, however, shows that graphic communication, in particular, proved rather more resistant to statistical research techniques than was anticipated. Being unsegmented, graphic images present too great a challenge to what was essentially a statistical theory about the probability of 'bits' of information surviving transmission without interference (Green & Courtis 1966).

The information theory metaphor undeniably contains the basic ingredients of a communication system (the source of a communication, its vehicle and its user), but it can be easily misunderstood. Although as sensitive a commentator as Gombrich (1963: 60) could remark that 'what this theory has taught us unmathematical laymen to see with greater clarity is the process of interpretation that is bound up with the reception of any signal' (my emphasis), a cursory look at the famous diagram too often leads to the assumption of what might be termed a 'transport' or 'container' metaphor for communication: that communication is a unidirectional process, that messages 'contain' meaning, and that the outcome of an idealized communication act is the assimilation by a receiver of a meaning identical to that transmitted.<sup>99</sup> Communication

<sup>99</sup>Ong (1982: 166) refers to a 'pipeline' model in which

<sup>&#</sup>x27;the naive reader presumes the prior presence of an extra-mental referent which the word presumably captures and passes on through a kind of pipeline to the psyche'. Richards (1926: 175) also comments critically on those

<sup>&#</sup>x27;who define communication as the actual transference of experiences in the strictest possible sense of transference—the sense in which a penny can be transferred from one pocket to another'.

Lakoff & Johnson (1980b) discuss a number of metaphors for cognition and communication and

effectiveness so defined (whether explicitly or not) is easy to measure, and the transport metaphor represents an implicit assumption of many experiments in educational psychology,<sup>100</sup> including those on typographic cuing, reviewed in Chapter 1. Meyer (1985: 29), for example, explains that, according to her cognitive model of text comprehension,

'readers are assumed to construct memory representations of text propositions which are similar in terms of both hierarchical relationships and content to the content structure of the writer.'

This may be valid for some of the documents that such studies aim to improve (for example, training manuals), but the transport model in its usual form attributes an unrealistic passivity to readers, and fails to give adequate recognition to reader-initiated aspects of reading.

The problem is easy to see in relation to graphic displays such as maps. Although a route map places limits on what may be found out from it, each traveller receives a different message depending on where he or she is starting from and wants to go. There is only a 'transmitter' of that message in a very remote sense, and the reader can hardly be described in such passive terms as 'receiver', since he or she is supplying the structural and logical framework for the particular message received—in other words, the argument.

There is perhaps no need to overstress this point, since 'bottom-up', datadriven models of communication have generally gone out of fashion. Even so, many who research communication processes do not explicitly declare their model of writer-text-reader relations, and the transport metaphor seems to be the 'default option'. This is partly owing to the words and phrases that spring to mind when we want to talk about communication. Reddy (1979) has identified what he calls the 'conduit metaphor' for language. He lists a large number of everyday expressions about language

the need for scholars to be aware of the metaphors that underlie their models and theories.

<sup>&</sup>lt;sup>100</sup> Brian Lewis talked of a similar 'medical' metaphor prevalent among educational theorists. A knowledge deficiency is diagnosed and a course of treatment prescribed until knowledge levels, as measured by the psychologist's instrumentation, are normal. In the context of mass media research, Tunstall (1970: 4) talks similarly of the 'hypodermic' model of communication.

to illustrate his thesis that the metaphor is deeply entrenched in our culture—for example: 'His words carry little meaning', 'Try to pack more thought into fewer words', 'It's hard to get that idea across to him'.<sup>101</sup> Because such expressions are so common, it seems we are predisposed to think of language and media as containing meanings.

Closely related to the conduit or container metaphor is what we might term the 'reader as data terminal' model. The assumption that readers are input devices for streams of transmitted data is enshrined in certain editorial practices. For example, the use of 'op.cit.' in footnoting assumes that the reader can remember the work referred to even when it was first mentioned many pages previously.

#### Coding and decoding

The classic information theory model (Figure 5.2) assumes that the transmitter and receiver share a common set of conventions or codes. The identification of these codes has been the task of the relatively new discipline of semiology.<sup>102</sup> Semiologists find codes in a wide range of phenomena—even those which by their nature seem indivisible and analogue, such as film, architecture, fashion and so on.

<sup>&</sup>lt;sup>101</sup> Ong (1958) claims that the view of books as containers for knowledge has identifiable roots in the development of humanist thinking in the sixteenth century and can be seen in changes in contemporary publishing practices. He describes the medieval revival of the Greek technique of topoi (places) in which knowledge is thought of as stored under easy-to-remember headings. According to Ong, this essentially mnemonic technique was (misguidedly) transformed into a system of 'place-logic'. As evidence for the new assumption that books are places or containers, Ong cites the development of the title. He detects a progression from the direct dialogue of the manuscript tradition, where 'books open with a direct address to the reader without the formality of a title at all: "Here, dear reader, you have a book..." ', to descriptive titles (eg, 'A book called...') and eventually the simple label-like titles we have today—'books, and their various parts, were becoming objects which should have simple labels and tags' (Ong 1958: 313). He does not seem to consider the more prosaic explanation that the proliferation of books following the introduction of printing might have demanded more precise and succinct titles for cataloguing and reference.

<sup>&</sup>lt;sup>102</sup> Generally speaking, 'semiology', the term used by de Saussure to describe his proposed 'science of signs', is used by those working in the European tradition. 'Semiotics' is used in connection with the American tradition founded independently by CS Peirce (1839–1914), although the word itself has a long history.

In graphic design, perhaps the most thorough exponent of the semiological approach is Bertin (1967/1984), who is unequivocal in the introduction to his Semiology of graphics that:

'in the visual arts, for example, the semiological approach to graphics provides a rigorous analysis of the visual means used by the artist. It defines the basic properties and laws governing the arts and suggests objective criteria for art criticism.' (p. xi)

Not all media are equally explicit, and Bertin restricts his analysis to rulebound diagrammatic and cartographic images on the grounds that they are monosemic, as distinct from polysemic or pansemic. Monosemic, polysemic and pansemic images are those which are, respectively, capable of only one interpretation, capable of several interpretations, and capable of an infinite number of interpretations. Pansemic images are comparatively rare (abstract painting might be an example). In practice most but not all pictures are polysemic, although as we have noted they are usually anchored to one interpretation by a caption. Diagrams are (in Bertin's opinion, at least) said to be monosemic, so long as they make use of explicitly coded graphic conventions.<sup>103</sup>

Bertin is absolutely clear—to the extent of printing it in bold type—about his assumption of a 'container' metaphor:

Whether we are studying the means, properties and limits ofthe graphic system, or planning a design, it is first necessary tostrictly separate the content (theINFORMATION to betransmitted) from the container (thePROPERTIES of the graphicsystem). ' (p. 5, Bertin's emphasis)

Although welcomed by statisticians, attracted by the certainties offered by 'a grammar for graphics',<sup>104</sup> for some other Anglo-Saxon minds Bertin's

<sup>&</sup>lt;sup>103</sup> Against this view, however, we might consider comments made by Anderson (1981: 116) on the rhetoric of diagrams in academic books: 'one can get away with a little in prose explanation, a lot in a table, and an infinity in a diagram'—quite a nice definition of monosemy, polysemy and pansemy respectively.

work confirms their worst fears about semiology: replete with technical terms and classification schemes,<sup>105</sup> the book 'contains' information but fails to communicate it. This is not to say that is not frequently insightful and thought-provoking, but that the needs and questions of the reader seem to be as absent from Bertin the author as from Bertin the theorist.

Bertin's consideration of the role of reader is mostly limited to the definition of what he terms 'retinal variables'—aspects of the human perceptual system that might be thought analogous to the technical limitations of an electronic receiving device. This seems to reinforce those critics (for example, Sperber & Wilson 1986; Buchanan 1985) who accuse semiologists of an obsession with codes and fixed meanings, to the detriment of inference, rhetoric and other reader-centred factors.

Sperber & Wilson (1986) have recently criticized the coding model that they attribute to many linguists,<sup>106</sup> and to semiologists in particular. They point out that:

'[although] it is true that a language is a code which pairs phonetic and semantic representations of sentences...there is a gap between the semantic representation of sentences and the thoughts actually communicated by utterances. This gap is filled not by more coding, but by inference.' (p. 9)<sup>107</sup>

Whereas the notion of decoding implies the mechanical recovery of a message put into coded form by a sender, Sperber & Wilson's alternative, an inference model, appears to assign a more creative role to the audience, who must draw inferences from evidence supplied.

<sup>&</sup>lt;sup>104</sup> This phrase is from Howard Wainer's introduction to the 1984 English translation, which he was instrumental in organizing.

<sup>&</sup>lt;sup>105</sup> If grammar is Parliament and logic is King, this style of comprehensive classification of sign systems is the Common Market, obsessed by the harmonization of standards.

 $<sup>^{106}</sup>$  Their criticism, although independent, is based on many of the same arguments as that of Harris (1981), whose 'language myth' was discussed in Chapter 3.

<sup>&</sup>lt;sup>107</sup> Sperber & Wilson's inference theory builds on the work of the philosopher HP Grice (1975), whose theory of conversational implicature has made a considerable impact on the study of pragmatics and discourse processes. It is described in more detail in Chapter 8.

Sperber & Wilson's characterization of semiology—they are particularly scathing about Barthes—is something of an oversimplification. A number of prominent semiologists have written perceptively about the role of the reader. In S/Z, regarded as something of a departure from his earlier, more rigid structuralism (Eagleton 1983), Barthes (1970/1975) distinguishes between readerly and writerly literature: the former is self-contained, explicit and allows the reader to look through the language to a portrayed world; the latter focuses readers on language itself and gives them a role in creating meaning. Barthes does, however, remain strongly committed to the concept of codes, although he stretches the ordinary meaning of the term somewhat. For example, although one might think of connotation (as distinct from denotation) as personalized and uncoded, Barthes (1977) explains it by reference to de Saussure's distinction between syntagmatic and associative relationships. For Barthes, words and images connote certain meanings because they are associated along 'semic axes' whose reconstitution 'will clearly only be possible once a massive inventory of the systems of connotation has been carried out' (Barthes 1977: 49). Barthes does not attempt such an inventory, and it is unclear whether it is a serious suggestion, but the very breadth (it would need to encompass images, words, gestures, objects, indeed anything) and depth (the individual's psyche does not escape) of such an agenda is what makes semiology attractive to some, threatening to others, and impracticable to yet others.

Where Barthes is inspired, polemical and somewhat extravagant in his claims, Eco's argument is meticulous, although sometimes complex (Eco 1976, 1981). He is careful to define the code as a 'mere regulative hypothesis' with which to analyse actual instances of signs, and he argues that the code has too many transient aspects to be defined. His reasoning is bound up with the role of the reader, or 'addressee', in his semiotic theory.

Eco, whose notion of closed and open texts is similar in some respects to

Barthes' readerly and writerly, has made the role of the reader a central part of his semiotic theory. He amends the traditional communication model (Figure 5.2) by separating the sender's code from the addressee's, and introducing 'context' and an 'effort to reconstruct the sender's codes' into the process of interpretation (Figure 5.3). In effect, Eco is giving the reader more work to do, beyond the simple decoding of a signal. Indeed, he talks elsewhere (Eco 1976: 156) of the 'labor of inference'.



Figure 5.3 Eco's revised communication model (Eco 1981: 5)<sup>108</sup>

As Figure 5.3 illustrates, for Eco the code is something potentially, but not necessarily, shared by participants in the communication process. Instead of a single code, he considers it more reasonable to speak of a 'complex network of subcodes' that may be strong or weak, and that are subject to constant change as each juxtaposition of elements creates a new, if temporary, connotation. To deal with the problem of shifting and

<sup>&</sup>lt;sup>108</sup> It is worth noting that, although the diagram also appears in his earlier A theory of semiotics (Eco 1976), there is a difference between the two versions that could be important. In the earlier version, the arrows between 'text as expression', 'context, circumstances' and 'codes, subcodes' are reversed: they flow from top-left to bottom-right.

| text as<br>expression          | addressee         | interpreted<br>text as<br>content |
|--------------------------------|-------------------|-----------------------------------|
| context,<br>circum-<br>stances | codes<br>subcodes |                                   |

The accompanying text does not make it clear whether this is intentional or erroneous. Although it is tempting to see the reversal of the arrows as a shift towards an attribution of greater initiative to the reader, a second major difference cancels out that impression. Whereas, in the version shown in Figure 5.3, 'sender' is connected to 'addressee' via the series of left-to-right arrows along the top of the diagram, the original version uses lines only, with no direction of flow indicated.

potentially incompatible sender- and addressee-codes, Eco proposes the twin concepts of undercoding and overcoding, which, although he does not explicitly say so, appear to relate mainly to addressee and sender respectively. Undercoding is mainly a problem for the addressee who must assign provisional meanings to text when faced with uncertainty: sometimes these meanings are confirmed or denied in the light of subsequent text. Overcoding describes the use by the sender of readymade phrases, intertextual references, clichés and patterns that narrow down the possibility of misinterpretation by the addressee. The significance of these concepts in the context of this study is that Eco regards paralinguistic and other contextual cues (of which typography might be one) as instances of overcoding that enable the addressee to select appropriate subcodes for the interpretation of the message.

#### **Conversational models**

An overwhelming impression from the semiology of Barthes, Eco and others is of an assumption that (with the exception of poetic or aesthetic texts) messages are created by one person in order to communicate something to another. However much notice they take of the reader, it appears to be assumed that messages are created, conveyed and attended to as complete entities—whether they be complete myths, complete poems, complete advertisements or complete diagrams. In practice, of course, most spoken conversation is very far from this model. It may be significant that those who, like Sperber & Wilson (1986), have emphasized the role of inference have generally taken conversational discourse as their data.

In the light of the dichotomies discussed in Chapter 4, and their various compromises, typography was seen as a tool for making the content of documents accessible to readers with different problems and purposes. I have, in effect, been assuming a model of typographically organized text that provides the basis for a conversation between writer and reader in which control switches between the participants.

The idea of textual dialogue is obviously more acceptable when we consider the use of reference books designed for easy access, but it has been argued that even continuous prose is more conversational than it appears. According to this view, writers 'converse' with an imagined reader whose questions and objections must be anticipated. Apart from those who study conversation itself (for example, Coulthard & Montgomery 1981, Gumperz 1982, Coulthard 1985), conversational theories of written language have also been suggested in the literature of linguistics (Gray 1977; Winter 1977; Widdowson 1979; Hoey 1983), semiotics (Eco 1981), cognitive psychology (Wright 1978; Nystrand 1986) and among literary critics of the 'reader-response' school (Tompkins 1980; Suleiman & Crosman 1980). Crudely summarized, one version of the conversational view is that writers address themselves to an imagined reader (sometimes referred to in the literary critical context as a 'mock', 'model', 'virtual' or 'implied' reader) whose characteristics and attitudes the real reader is expected, and—if the writer is skilful enough—able to assume. It is argued that, just like a participant in a conversation, the imagined reader has questions and expectations to be dealt with by the writer. Thus we are asked to empathize with radically different personalities in order to make sense of books by, say, Austen and Hemingway. As real readers, naturally, we will ask different questions, but we must suspend judgement and hope that the imagined reader eventually asks them.

Conversational theories, discussed further in Chapter 8, are the subject of vigorous debate and represent only one of a range of theories of author-text-reader relations.<sup>109</sup> However, there seems no reason why readers should not switch between different reader-roles: between a close identification with the reader anticipated or imagined by the author, a goal-directed strategy of their own, and the distanced view required for critical scrutiny. And this would certainly seem to be easier in non-fiction

<sup>&</sup>lt;sup>109</sup> Further aspects of the debate between conversational (Nystrand 1986) and autonomous models of text (Olson 1977) is discussed further in Chapter 8.

documents where typographically signalled supports are provided: headings, indexes, lists of contents and other devices that can be grouped under the term access structures(Waller 1979a).

If we accept a conversational view of the relationship between readers and texts, then it would seem that our criteria for well-formed texts should go beyond the language surface and relate to the context in which texts are used. Indeed, this is reinforced by the review in Chapter 1 of several linguists who have addressed typographic issues. It was noticeable that all of them had seen the scope of linguistics as reaching beyond the sentence to whole texts or discourses. Another tendency was toward functionalism: typographic features were seen in relation to the use that is made of texts in addition to the meanings that they might embody.

Writer-text and reader-text relations

Those who employ a conversational model of communication are, in effect, suggesting that the arrows in the usual information theory diagram be reversed. A recent example is Nystrand's (1982) model of 'textual space' (Figure 5.4), an application of a more general model of what he calls 'semantic space'—the sphere of meaning shared by participants in a medium of communication.



Figure 5.4 Top: Nystrand's model of semantic space. Bottom: its application to 'textual space'. From Nystrand (1982: 82).

The reversing of the arrows between reader and text represents the distinction between bottom-up and top-down models. However, in spite of an explicit recognition that students of the writing process need no longer feel intimidated by the advocates of the primacy of speech, Nystrand insists on applying a general semantic model to all media (including speech, music and painting). This is theoretically neat, and enables Nystrand to draw some interesting conclusions about the problems of learning to read, but it fails to acknowledge a major contextual difference between written and spoken texts, and a further distinction between printed texts and both spoken and hand-written ones.

Nystrand argues that when writers and reader share the same textual space, the material text becomes transparent:

'fluent writers are no more aware of pen and paper than fluent readers are aware of the words they see.' (Nystrand 1982: 83) This is true and intuitively acceptable up to a point, but sounds remarkably like the primacy-of-speech argument in its neglect of the contribution made by the materiality of the text itself. Stretching the suffix '-graphic' somewhat, we can say that spoken texts and hand-written texts are both autographic. That is, the text heard or read by the 'receiver' is identical in substance (if not always in significance) to that emitted by its author: the sound-waves (or the ink and paper) are the same. Most printed texts, though, are prepared by the writer over a period of time and mediated by complicated bureaucratic and industrial processes of both production and distribution.<sup>110</sup> As a result, writers of texts and their readers are separated by a change in time, place and material that can be enormous: an Indian student studying Hamlet or an English student reading the Bhagavadgita are separated by hundreds of both miles and years from their writers; those texts are available in technical forms undreamed of at the time they were written.

<sup>&</sup>lt;sup>110</sup> Vachek (1967) recognizes the distinction between written and printed language, but takes the view that printed language is neutral and unmarked. This is superficially true if we restrict our view to simple lines of a common typeface, but if layout, binding and display typography are taken into account, texts originated by different publishers, designers and printing processes can be as distinct from one another as two samples of handwriting.

The contribution of these intervening processes is highlighted in the model shown in Figure 5.5 (Waller 1979b). The straight-line relationship has been replaced by an indirect 'dog-leg' one, reflecting the fact that printed documents separate the addresser and addressee to a degree that the telephone, for example, does not. This simple model stresses the necessity of considering the writer-text-reader relationship as two separate systems Sless (1981, 1986) has also emphasized the separate consideration of what he terms author-message relations and audience-message relations.

Originator------ Medium

Change in time and place

Medium ------ User

Figure 5.5 The indirect nature of printed communication. From Waller (1979b: 216).

Although still connected by lines, in this version of the model their directionality has been removed. In its original context—an introduction to a special issue of the journal Instructional Science on diagrams, the four possible placements for arrows were used to summarize four ways of thinking about their role (Figure 5.6).

| Originator | Medium |      | Statement                   |
|------------|--------|------|-----------------------------|
| Originator | Medium |      | Tools for enquiry & thought |
|            | Medium | User | Aids to learning            |
|            | Medium | User | Aids to problem-solving     |

Figure 5.6 Four relationships between writers, readers and texts, suggesting four roles of diagrams. From Waller (1979b: 217).

I have already stressed the active role of the reader, but this diagram suggests that the normal direction of flow between writer and text can also be reversed. Writers do not simply make statements that are comprehended by readers. The very act of self-expression distances the writer from its content and allows objective inspection and evaluation (Macdonald-Ross, 1979, has documented some aspects of the role of graphic notations in the generation of scientific ideas). The absence of a physical reader does not mean that the communication is no longer conversational. Just as readers enquire of texts as well as receive information, so the composition process objectifies the writer's thoughts and reflects them back for analysis and amendment. In the light of feedback from listeners' expressions and questions, speakers hesitate, back-track, repeat or retract; writers do the same things but privately, in response to their own reaction to what they have written (Hayes & Flower 1980).

The separate relationships between writer & text and reader & text might be summarized through a pair of metaphors in which writers and readers are represented by traders and their customers; the medium is represented by the counter (or its equivalent) over which the relationship is conducted.



Figure 5.7 The transport model

Figure 5.7 represents the transport model of communication as the bar in a wild west saloon, along which the barman slides the whiskey to the cowboy. There is only one brand on offer which exactly matches the cowboy's need. As long as the bar (the text) is perfectly constructed and the cowboy's drinking (reading) skills are adequate, all the whiskey (knowledge) will reach his stomach (memory). By the use of a stomach pump (or in the educational context, a written examination) it should be possible to monitor the success of the transaction. The metaphor could be elaborated along the lines of information theory to suggest that the barman provide extra (redundant) whiskey in case any imperfections (noise) in the bar surface cause the drink to spill.



Figure 5.8 The access model

The alternative open-access model is represented in Figure 5.8 as a supermarket display—the focus for choice and self-selection. In this context, as with text, the trader and customer must make a special effort if they want to communicate directly. Instead, their relationship is normally mediated by the display shelves and is separated by the time that elapses between the stocking of shelves and the purchase of goods. The trader must predict the requirements of the customers by ordering the right products, and must present them logically and attractively so that they can easily be found. The customers make their selection according a preplanned set of goals (a shopping list) or on impulse; they can opt for prepackaged food or assemble ingredients to process themselves. The trader can of course attempt to influence the customers' choice by careful juxtaposition of items (strawberries next to cream) but must present a coherent overall argument (separate shelves for different classes of goods).

## A genre model of typographic communication

The argument so far has been leading up to a simple model that is intended to shed light on the functional constraints that govern the typographer's role in textual communication. Models of communication are typically constructed with a particular context or type of text in mind, whether literary, instructional or technical. Any communication model addressed explicitly to typographers, though, must acknowledge that most of them encounter a wide range of text types from day to day. This model therefore aims to reveal the structures that underlie distinct genres of text. I shall describe the model in three stages.

Writer ------ Writer's text

Readers' text ------ Readers

Figure 5.9 Stage 1: the genre model is an adaptation of the 'dog-leg' model in Figure 5.5

As Figure 5.9 shows, the model emphasizes the separate relationships between writer & text and readers & text. The central vertical line represents the publishing process that results in important physical differences (traditionally, at least) between the writer's text and the readers' text. In conventional book-publishing systems the writer deals with a document that becomes progressively more formal as production processes develop: rough notes become typescript, typescript becomes galleys, galleys become pages. Traditional printing methods require the writer to make most significant decisions in relation to a manuscript and a type specification. The reader, on the other hand, sees a finished product which is expected to betray little of the complexity and difficulties of the writing process.

Figure 5.9 also indicates the conversational nature of the model—writer and readers are seen as 'conversing' with surrogates in the form of the text, beyond which they may imagine a writer or readers whose identity is implied by the content, structure and style of the text. The plural form of 'reader' is used in the model as a reminder that the writer must frequently provide for the needs of a range of different imagined readers. The singular form of 'writer' is used because, even where a number of writers or a team of writers and designers contribute to a publication, readers are normally presented with the semblance of a unified single source—a single imagined writer.<sup>111</sup>

| Writer —           | <br><ul> <li>Writer's text</li> </ul> | <br>Imagined readers |
|--------------------|---------------------------------------|----------------------|
| Imagined writer .  | <br>Readers' text                     | <br>— Readers        |
| Topic<br>structure | Artefact<br>structure                 | Access<br>structure  |

Figure 5.10 Stage 2: each of the three stages in the communication relationship—writing, production and reading—determines an underlying functional constraint on the typographer. In this model, they are termed topic, artefact and access structure.

It is suggested that the three main stages of this model (writing, publishing and reading) account for three kinds of structure which may be, and typically are, overlaid in the same document. I shall call these topic structure, artefact structure and access structure

Topic structure includes those typographic effects whose purpose is to display information about the author's argument—the topic of the discourse. If one purpose of language is to describe the world, then it is easy to see the linearity of language as an imperfection. In its descriptive role, at least, an 'ideal' language would directly map 'reality' (whatever shape that is). To compensate for its linearity, language is rich in spatial metaphor, and this can sometimes be reflected in a more literal use of space to add diagrammatic qualities to an otherwise verbal argument. It should be stressed that the terms topic structure and topicalization are used here in a typographic sense; topic structures are also signalled verbally, and it is in that context that they are usually discussed.

<sup>&</sup>lt;sup>111</sup> The roles of the narrator and implied author in fiction have been discussed most notably by the critic Wayne Booth (1961). In the non-fiction context, the nearest thing would be the Open University's concept of the 'tutorial in print' (Rowntree 1982), the full implications of which have never been properly explored in detail.

Artefact structure presents those features of a typographic display that result from the physical nature of the document or display and its production technology. Page numbers, for example, usually describe units of the artefact (that is, pages) rather than units of the topic. Since everything typographical or spatial uses an aspect of the artefact as a means of signalling (for example, a heading generally begins on a new line), the term must be restricted in some way if it is to be of use. In the context of this argument, it is intended to cover only those features which are motivated by the artefact alone, or whose 'ideal' form is constrained by the artefact. An example of this distinction is the signalling of a new chapter in a conventional book. The use of a new page marks the writer's topic boundary and an access point for the reader, but is not constrained by the shape or size of the page. The amount of blank space remaining at the end of the previous chapter, however, is solely a function of the page size, and is therefore artefactual. Any attempt by the reader to interpret it as topically significant is erroneous.

Access structurerepresents those features that serve to make the document usable by readers and the status of its components clear. These may include aids to interacting with the text as artefact: formats convenient for special purposes; navigational aids for the self-organized reader (for example, a list of contents); and isolated sign-posts that offer guidance at strategic points in the document (for example, 'continued on p. 60'). They also include aids to interacting with the text as topic: typography is often used to delineate the status of different 'voices' in the conversation—components such as quotations, glosses, pedagogical devices (statements of objectives, for example).



Figure 5.11 Stage 3: the complete model proposes that the three underlying structures (topic, artefact and access) are synthesized in practice by conventional structures that are associated with different genres of text.

The complete model (Figure 5.11) suggests that a typical printed text exhibits a combination of topic, artefact and access structures. The management of their combination, I suggest, may be described through a fourth category, conventional structure, which amounts to a definition of typographic genres. The distinction between the three basic structures, it should be stressed, is largely a theoretical one, since in practice they frequently coincide. It has already been noted that new chapters, for example, serve both as access points for the reader's 'conversation' with the book and as topic boundaries. Topic, artefact and access structures are thus heuristic concepts whose main purpose is to form the basis for describing genres of typographically-organized documents. They are ideal types which are never or rarely found in isolation, but which are recognizable in combination.

In most genres, all three kinds of structure appear to be inextricably bound together in conventional ways to the extent that it becomes hard to imagine any other way of presenting the same topic, or addressing the same needs. In particular, it will be argued, conventional ways of expressing and accessing topic structures develop within the artefactual constraints of contemporary technologies. When those technologies change, it may be necessary to separate out the three categories of functional imperatives in order to reassemble them to suit the constraints of the new technology.

An example of this is the problem encountered in making tabular information available through computer displays (McLaren, 1983, and Norrish, 1984, describe examples of such a task). The topic structure of a typical railway timetable, for example, includes two main themes: the network, usually defined in terms of routes (destinations linked by the network) and trains (times, stopping points, facilities). The organization of conventional timetables reflects specific conversational structures, and several parallel versions are sometimes provided.

General purpose timetables for use by people planning journeys are organized by route, with places ranged down the y-axis and trains along the x-axis. The times of trains are placed at the stopping points, while facilities are typically indicated by footnotes and symbols. In-station timetables are organized by time: the times of trains are listed in bold type, with the stopping points and times listed next to each. These are for people at the station who need to know when the next train is, or where the train just coming in is going: their particular conversational need requires a different way of accessing the information. Other in-station timetables are organized by place: travellers look up their destination and find the times of trains from the station they are in.

To display this information on computer terminals requires a different approach. Some new artefactual constraints are introduced: the large broadsheets used for printed timetables cannot be displayed legibly on a screen. But other constraints are lost because the computer does not restrict us to the permanence of print. In the computer version the distinction between topic structure and access structure is particularly clear—in computer jargon it corresponds to the distinction between the data structure and the interface. The timetable information exists in virtual form and, given an appropriate access structure can be actualized in numerous different ways, depending on the user's question: how many trains to London on Sundays? how much does it cost to get to Bristol? how far can I go for £10? when is the next train to Glasgow? what is the quickest journey to Brighton? and so on.

Although it aims to convey the same topic structure as the printed timetable, the different access and artefact structures of computer timetable places it in a different genre: perhaps in the more general genre of computer database, which being relatively new, probably contains a number of sub-genres whose identity will emerge as they become more commonplace.

Interaction of the structures

In order to further illustrate the distinction between the three structures I will refer in the next few chapters to a series of pages from an illustrated non-fiction book which makes heavy use of typographic structuring, both through typographic signalling of text components such as headings, and through the layout of pages.<sup>112</sup> By attempting to 'parse' these pages in terms of the three structures, it is hoped that some conventions and typical characteristics of the genre to which this book belongs might be revealed.

The first of these pages is illustrated (reduced in scale) in Figure 5.12, which demonstrates some simple aspects of the interaction of the three structures. This page, describing 'Mainsheet systems', contains a fairly

<sup>&</sup>lt;sup>112</sup> The handbook of sailing by Bob Bond, published by Pelham Books, London, in 1980. The book was produced for the publisher by a firm of 'book packagers', Dorling Kindersley. The development of book packaging over the last few decades has been an important factor in the evolution of graphically structured texts. The term refers to specialist firms who develop titles from initial concept through to printed object, but on behalf of other publishers. The concept is usually sold to several publishers, in different countries, before it is actually developed in detail. Consequently, development costs which would be too high for a single publisher can be shared. Printing takes place at a single factory, with all editions sharing the same colour printing. The text is then overprinted in a separate run for each publisher's edition.

clear topic structure, as defined by the main headings (indicated in Table 5.1 in bold type according to their hierarchy on the page) and captions to illustrations.

AND GROUP IN Mainsheet systems

Figure 5.12 A page from The Handbook of Sailing, by Bob Bond (Pelham Books 1980)

## **Mainsheet systems**

Centre mainsheet

**Centre mainsheet** side mounting traveller Aft mainsheet

Aft mainsheet Basic system System with pulleys System with transom traveller

#### Knotting the sheets

Double overhand

Figure of eight

Table 5.1 The topic hierarchy represented by the layout of Figure 5.12. Topics represented by illustrations are indicated by italics.

The topic structure is reinforced in the introductory paragraph, where we read 'There are two principal types of mainsheet system: aft or centre...' The introduction also includes comment on the topic and subtopics— it defines mainsheet, indicates that one type is mainly used on racing dinghies, and tells us that the mainsheet system is normally left permanently on the boat. The item on knots, although relevant to the main topic of the page, is both graphically and topically independent. It repeats information given in a special section on knots elsewhere in the book, and has probably been used here as a filler.

However, if we expected the typography of the page to follow this simple hierarchical topic structure, we might be puzzled by the apparent failure to align the small contextualizing illustrations (top right) with their matching sub-headings. If there were no considerations other than to display the topic structure on the page as one might a diagram, then the page could have looked much like Figure 5.13.



Figure 5.13 The previous figure shown as an exploded text-diagram, unconstrained by the page boundary.

Obviously this is not possible, and we must accept the constraints of the artefact structureof the publication, the most obvious features of which are the page size and the layout grid (Figure 5.14). Comparison of a number of pages from The handbook of sailing indicates that the designers have allowed themselves a choice of one-, two-, three- or four-column grids, and that these can be mixed fairly freely within each page.





Figure 5.14 The grid probably used for *The Handbook of Sailing.* 

Figure 5.15 If the two main topics on the page had been equal in length, a symmetrical twocolumn layout might have been possible, displaying a clearly diagrammed topic structure.

Ignoring for a moment the boxed item on knots, we can say that if the two branches of the main topic had contained the same number of elements, it would have been relatively easy to fit them onto this page in a two column format (Figure 5.15).

The two sub-topics are not equal, however, and, as we have seen, an extra item on knots has been recruited to balance the page. By including the knots item and using a three column grid, we could produce the layouts shown in Figure 5.16a and 5.16b, each of which associates the small sketches with their correct topics, and each of which assigns equal status to the two main topics.



Figure 5.16a



Figure 5.16b



Figure 5.17 Two of the pages that accompany the one shown in Figure 5.12.

The key to the layout is found in its access structure If we are able to view the 'Mainsheet systems' page in the context of other pages with which it appears (Figure 5.17), we can see that the top third of most of these pages follows a consistent pattern (Figure 5.18).



Figure 5.18 The consistent access structure of these pages

Each of these pages<sup>113</sup> contains a topic heading, an introductory paragraph and an identical drawing of a dinghy on which the location of the topic is highlighted in blue. The apparently 'ideal' shape for the topic has thus been traded against the need for consistency in the access structure. Within what in Figure 5.18 was termed the 'information block', there is a further consistency in the typographic treatment of text components. Roughly speaking, they are specified as follows:

Page-level heading Intro Heading Main text Caption heading Caption text Running head & folio 22pt roman bold 10pt roman 14pt roman bold 8pt roman 8pt sans serif bold 8pt sans serif 10pt roman

#### Genre and textuality

The model proposed here implies the replacement of a coding model of communication with one that recognizes a greater role for inference and interpretation. Another way of expressing this is suggested by Eco (1976) who, citing the Soviet linguist Lotman (1969), distinguishes between

 $<sup>^{113}</sup>$  It should be stated that I have selected these pages for the purpose of demonstrating a principle. In reality, the consistent access structure shown in Figure 5.18 only extends across a limited set of pages.

grammar-oriented and text-orientedcultures. While grammar-oriented cultures are governed by a system of rules, text-oriented cultures are governed by a repertoire of texts, imposing models of behaviour—in effect, genres.

The analysis of The handbook of sailing demonstrated some aspects of this distinction between grammaticality and textuality—I tried to show how 'grammatical' expectations about the display of topic structures were modified by the circumstances in which they were displayed. The following brief analysis of two examples of another genre, paperback book covers, demonstrates a wider range of factors that have been associated with textuality.



Figure 5.19

Figure 5.20

Figures 5.19 and 5.20 represents the jackets of two books in my home. I

correctly interpret the first as a book called Tom Jones by an author called Henry Fielding. I may have deduced that from a typographic rule that, in the absence of a specific statement that 'This is a book called suchand-such, by an author called so-and-so', the title is printed larger than and below the author's name. Or I may have deduced it from my prior knowledge that there is an author called Henry Fielding. Those who have not heard of this author would be entirely blameless if they misunderstood this title.<sup>114</sup>

If I applied the typographic rule to Figure 5.20, though, I should be puzzled to find a book called Mary Stewart by The Gabriel Hounds. The fact that I don't is not due to the fact that I have heard of an author called Mary Stewart (I had not), but because I know that dogs can't write (or monkeys type, for that matter). I therefore rejected the typographic rule and added to my general knowledge the fact that there is a famous author of that name.

We can apply the same principle to the interpretation of a simple sentence such as 'The cat sat \_\_\_\_\_ the mat', Our identification of the missing word as 'on' is not just a matter of parsing the grammar of the sentence, determining that a preposition is needed and selecting one at random. We also use common sense to reject unlikely options. 'The cat sat on the mat' resembles a reading primer cliché. If the subject had been human, we might have guessed quite differently: 'mending' or 'weaving', for example.

These two approaches to language interpretation have also been described as linguistic and ethnomethodological (Widdowson 1979). While a linguist might look for logical rules linking linguistic signals and patterns to meanings, to be shared by the creator and interpreter of a document, the ethnomethodologist is more interested in the practical reasoning that occurs on an actual occasion of language use (in this case, in a library or

<sup>&</sup>lt;sup>114</sup> I have experienced problems of a similar kind when trying to determine which of several parts of a foreign-language letterhead contains the address, particularly if there are no words I recognize, like Rue or Straße, and given the different conventional order of street, city and district in some countries.

bookshop)—reasoning that usually goes beyond knowledge of language to include all our knowledge of social interaction.

De Beaugrande & Dressler break textuality down into seven standards that characterize actual texts. Table 5.2 lists them in table form to demonstrate why, using practical reasoning, we still understand the cover of the Mary Stewart book in spite of an apparent breakdown of the first (grammatical) standard, cohesion.

| Standard                          | De Beaugrande & Dressler's explanation                                   | My application to<br>Figure 5.20  |
|-----------------------------------|--|---|
| Cohesion                          | Grammatical dependencies on the [text] surface.                          | Title is usually larger than author, but  |
| Coherence                         | Conceptual dependencies in the textual world.                            | 'The Gabriel Hounds' is less likely to be<br>an author than 'Mary Stewart'. Her name<br>is emphasized because |
| Intentionality<br>& Acceptability | The attitudes of the participants towards the text.                      | We know the publisher wants to stress the information that will sell most books. We want to choose a book.    |
| Informativity                     | The incorporation into the new and unexpected into the old and expected. | Here is a new book by a well-known author.  |
| Situationality                    | The setting.   | The cover is on a book which is for sale.   |
| Intertextuality                   | The mutual relevance of separate texts.                                  | The illustration, title and blurb identify it as of the romantic fiction genre.                               |

Table 5.2. Seven standards of textuality, based on de Beaugrande & Dressler (1981: 37).

These seven factors bring together things found in the text and things outside it, and thus form a useful account of what readers expect to find in actual texts. They represent categories of expectations which we bring to real texts in real situations, and consequently they are characterized by the flexibility of heuristics rather than the rigidity of grammar. In the case of the romantic novel, one apparent surface meaning is overridden by several other kinds of expectation and prior knowledge about books, literary genres, authors and publishers.

In the next three chapters I shall look in more detail at the nature and interaction of topic structure, artefact structure and access structure, before moving on to consider, in Chapter 9, the concept of genre.