Chapter 6: Topic structure

In the last chapter I proposed a model of typographic communication in which the visible structure of particular texts reflects three kinds of underlying structural imperative, each stemming from a different part of the writer-text-reader relationship, and whose integration is managed by a fourth structure which I called conventional, or genre structure. In this chapter I shall explore the first of the three, topic structure, in more detail.

Whatever their ultimate motives—to inform, educate or persuade—authors of non-fiction texts are also trying to order their ideas, and this chapter explores the extent to which such ordering may be signalled through typography and layout. That is not to say that page layouts can often represent 'knowledge structures' in a direct sense—we have already noted the constraints imposed by the linearity of language—but the example briefly considered in Chapter 5 (Figure 5.12) indicate that there may be considerable potential for topic structures to be reinforced by their graphic arrangement.

In the distinction between topic and access structures lurks a danger that should be acknowledged at the outset: it may be taken to imply that information can be encoded in a pure form, unadulterated by considerations of audience. In the present context, though, the distinction between topic and access structures is largely a theoretical construct, convenient for the organization of the argument. The progression from topic structure to access structure via artefact structure may be seen as a vehicle to demonstrate the replacement of the transport metaphor for written language with a context-bound and audience-related model in which typography plays a key role. The notion, implied by topic structure,

that topics can be easily encoded is complicated by the recognition of the role of the artefact, and further broken down when we consider the role of the reader.

Nevertheless, perhaps because of the prevalence of Reddy's 'conduit' metaphor in everyday language, many writers do appear to see texts as autonomous expositions of ideas. Sticht (1985), for example, attributes the failure of technical manuals to communicate effectively to an excessive degree of topic-orientation. The technical writers surveyed by Kern & Sticht (1974) saw their task as simply one of assembling and recording all that is known about their topic. A major problem of manuals is identified by Sticht as a tendency by their writers to see school textbooks as a model of good writing. He argues that, whereas textbooks traditionally seek to display the logical connections between ideas, manuals are used by a wide range of people in association with job-related tasks.

Olson (1980) identifies the textbook form as an example of the *archival* form of written language, which he distinguishes from the *communicational*, which, presumably, includes notes to the milkman, personal correspondence and the like. The implication is that the textbook form contains explicit and context-free meanings and is thus relatively autonomous. Olson does not claim that archival texts do not communicate, but that they 'preserve their meanings across speakers and situations'. His theory of autonomous text is discussed more fully in subsequent chapters, but for now we may simply note that, in practice, most uncontroversially archival texts such as dictionaries and manuals are able to communicate because their context, source, status, range of possible readers and organizational principles are made explicit through typographically signalled means.

Olson's terms are similar in intent to the distinction drawn in Chapter 3 between 'fact structure' and 'argument structure'. There may be cases where the facts have some inherent order of their own, and others where the writer may have reason to prefer one arrangement to another.

However, the term 'topic structure' enables us to circumnavigate these distinctions altogether for the time being, since it simply refers to whatever the writer wishes to talk about. Following Grimes (1975: 337), the topic of a text may be defined as 'that part of the surface form that represents the speaker's thematic choice'[115]—whether that form represents a fact structure, an argument structure, or one of the other distinctions that arise in the literature of linguistics, psychology and education—topic and comment, language and metalanguage, for example. To talk of 'topic structure', then, enables us to avoid some of the trickier philosophical questions concerning the structure of knowledge and to confine our interest to those aspects of structure that can be made visible through typography, while still, following Grimes, concentrating on the *writer's* thematic choice. Texts seen as topic structures represent the writer's communication goals organized in the form of arguments, which in turn are expressed at the text surface through verbal language, pictures and typographic layout.

Visual and spatial metaphor

The distinction between fact and argument structures might in any case be minimized by the abundance of visual and spatial metaphors in the literature of linguistics and semantics. For example, the literary critic Northrop Frye (1957: 335) talked of the link between logic and rhetoric—or, we might say, a topic and the way it is addressed to an audience—as

> ' "doodle" or associative diagram, the expression of the conceptual by the spatial…If a writer says "But on the other hand there is a further consideration to be brought forward in support of the opposing argument," he may be writing normal (if wordy) English, but he is also doing precisely what an armchair strategist does when he scrawls plans of battle on a tablecloth. Very often a "structure" or "system" of

[115] The word 'topic' is linked to the speaker's choice of theme and the surface form of language, through its origins in the Greek word τοπος, a place (see Chapter 4, footnote 101). Topics are metaphorical places (ie headings) in which arguments can be found.

thought can be reduced to a diagrammatic pattern—in fact both words are to some extent synonyms of diagram.'[116]

Rather than advocating a literal expression of the conceptual by the spatial, Frye is actually addressing the function of metaphor in non-literary prose. He is concerned that in the effort to 'purify verbal communication from the emotional content of rhetoric', prose becomes, paradoxically, less clear not more.[117]

Analogy and metaphor allow us to discuss argument structures as if they were fact structures. Instances of spatial metaphor in the technical vocabulary of linguists suggest that it might be possible to identify graphic techniques that break away from the hierarchical norm but that still correspond more or less directly to ways in which we are accustomed to organizing words and ideas.

Nash (1980), for example, suggests four kinds of 'rhetorical design' which, he argues, are fundamental to all composition (although usually found in combination). Nash's categories—the Step, the Stack, the Chain and the Balance[118]—may all be interpreted as visual metaphors,.

The *Step* is the easiest one to identify in graphic form. Indeed, Nash suggests that his example (a set of instructions) is an instance of

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[116] We sometimes talk metaphorically of writers 'mapping their domain' and this suggests a happy coincidence in the similarity of the words 'typography' and 'topography'. As a student of the former I was sometimes assumed by others to be studying the latter. The misunderstanding might have been reinforced by the fact that the geography and typography departments shared the same building.

[117] Although Frye does not develop the idea in depth, Lakoff & Johnson (1980a) have built a cognitive theory around their wide-ranging exposition of the pervasiveness of metaphor in everyday thinking. Besides the transport, pipeline, or conduit metaphor for communication, mentioned in Chapter 5, other everyday metaphors identified by Lakoff & Johnson include *Time is money,* exemplified by 'you're *wasting* my time' or 'how do you *spend* your time these days?'; *Argument is war:* 'your claims are *indefensible*', 'he *shot down* all my arguments'.

[118] Nash's book *Designs in prose* is written in textbook form—that is, with student exercises and a general reading list but virtually no citations. It is therefore hard to see how his ideas fit into the general linguistics scene. Although two of his categories of rhetorical design are similar to those of Grimes (1975), they are probably independent. Nash's four varieties of rhetorical design form the basis of Quirk *et al*s' treatment of discourse strategies in their authoritative *Comprehensive grammar of the English language* (1985: 1435).

'programming' (see Chapter 4), and 'could well have been laid out as separate and perhaps numbered sentences' (p. 9). An example of a stepped rhetorical design reflected in typographic layout can be seen in the section headed 'Sail onto boom' in Figure 6.1.

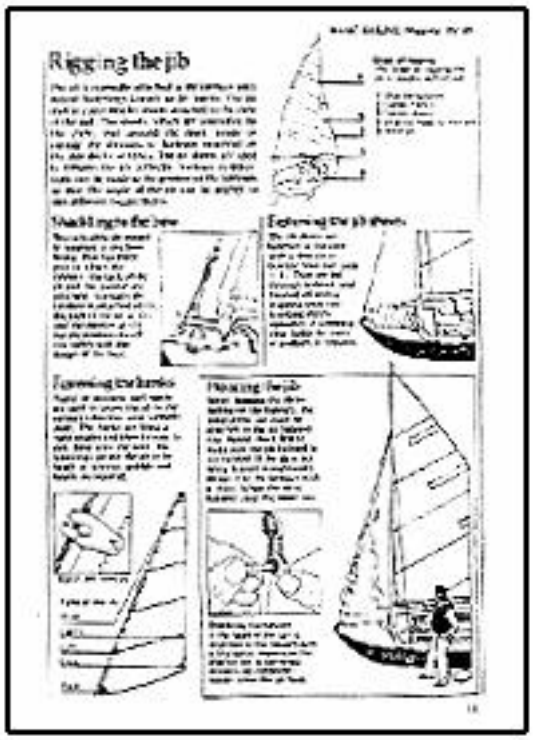

Figure 6.1 The three numbered procedures in the section entitled 'Sail onto boom' are in a *stepped* relationship.

Figure 6.2 The stepped relationship between the elements of this page is indicated by the schematic drawing (top right). However, it is not particularly well reflected in the layout (see comments in text below)

However, we might puzzle over the less clear relationship between rhetorical and graphic design in Figure 6.2. Although the schematic drawing at the top right-hand corner of the page has 'Shackling head to halyard' as step 4, preceding step 5, 'Hoisting the jib', the layout seems to treat step 5 as a separate topic from steps 1–3, and step 4 as a comment on step 5. In both Figure 6.2 and Figure 6.1 the clearly stepped design is diluted by the failure to repeat the enumeration of the steps in the sub-headings; furthermore, the wording of the sub-headings is not consistent with the steps as announced in the schematic summary drawings.

A *stack* design is characterized by the announcement of a topic, followed

by a series of amplifying or explanatory comments. Stacks are, in effect, *lists* of attributes or comments, and may be graphically treated as such. Figure 6.3 contains a small stack of ideas relating to the topic 'rudder and tiller': 'parts of the rudder', 'fitting the rudder', and 'tiller extension' (there seems no reason why this should not have a more prominent heading). Grimes (1975: 245-6) discusses a similar rhetorical pattern, the *star,* whose name also suggests a graphic form. The star is a pattern of persuasive argument in which a number of independent points contribute to a central conclusion.

Figure 6.3 With the exception of the stepped sequence under 'Fitting the rudder', most of this page consists of a *stack* of information about its topic.

Of his four rhetorical designs, Nash's *chains* are the least amenable to graphic treatment since, as the metaphor suggests, they are essentially linearized, As he puts it,

> 'the writer's procedures are less *predictive* than *exploratory;* he works through the expository maze, seeing no more than a sentence ahead, placing his trust in the clues afforded by syntactical or lexical connections.'

So whereas each sentence in a stacked paragraph takes the same initial topic sentence as its point of departure, chained sentences simply relate to their immediate predecessors. In view of this apparent lack of pre-planning it is hard to see why Nash includes chains as 'designs' at all. Judging by his examples, chain structures are more characteristic of literary prose than expository or technical information.

Balanced rhetorical patterns present contrasting viewpoints—proposition and counter-proposition. The Balance would appear to be easily reflected in layout—the point-by-point comparison of two (or more) contrasting options can be easily made in a table, for example. Indeed, the bilateral symmetry implied by the term 'balance' points to an advantage of graphic formats over prose– complex comparisons can be made in a considerably more orderly way.[119] In prose, Nash suggests that balance is often more apparent than real—the writer may simply want to give the appearance of considering both viewpoints, while moving us gently towards his or her preferred view.

In ordinary discourse, Nash suggests,

> 'there is a programme of assertions, examples, qualifications, but these are not presented as a series of distinctly labelled positions. Instead, they are related to each other in a progressively unfolding pattern, the turns and connections of which are demonstrated in various ways: sometimes by means of syntactic devices, sometimes through the kinship of elements in vocabulary, sometimes by the management of punctuation and typography.' (p. 6–7)

However, although Nash thus includes typography among the structuring techniques available to writers, bracketed with punctuation, he does not

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[119] Support for this view may be found in the outcome of an experiment recently reported by myself and my colleague Peter Whalley (Waller & Whalley 1987). We tested two prose versions and a tabular arrangement of a balanced argument comparing aspects of psychoanalysis and behaviour therapy. One prose version presented each side of the argument separately, while the other interwove both viewpoints in an integrated fashion. A previous study (by Schnotz 1982) had supported the hypothesis that the separated prose version would result in a sound comprehension of each therapy, but would inhibit the coherent integration of the two points of view (and vice versa). We confirmed our own hypothesis that a tabular arrangement would disadvantage no one, since it would allow readers to choose an appropriate strategy for their purpose.

provide any detailed guidance.

In practice, the main provision for the typographic signalling of topic structures in most publishers' style guides is for hierarchical structures of headings and sub-headings. A typical hierarchy might provide for chapter headings, and three levels of sub-headings, perhaps termed A, B and C headings. In effect, a single graphic technique must serve for a variety of rhetorical purposes. Arguments may be represented as hierarchical structures, even when the 'ideal' text-diagram might be rather different.[120]

Since topic structures do not always correspond to the structures implied by the hierarchical typographic arrangement enforced by the norms of book publishing (or to any simple, easily diagrammed structure, for that matter), the exact relationships between major points in an argument must usually be specified in some other way—as Nash suggests, through syntax or parallelisms and other 'kinships' in vocabulary. Interestingly, there is a noticeable similarity between Nash's fourfold classification of rhetorical designs and a distinction between four kinds of verbal conjunction made in Halliday & Hasan's (1976) important account of linguistic cohesion in English texts (Table 6.1). So although Nash's categories simply seemed to be a useful starting point for this discussion because of their metaphorical names, confidence in them is enhanced by close parallels with other classifications suggested independently by scholars in related contexts. In another context still, the psychology of text comprehension, Meyer's categories of rhetorical structure are converging in a similar way. She has recently conflated her original eighteen categories (Meyer 1975) into five categories that on examination bear a close relationship to Halliday & Hasan's: *collection*, *description*, *causation*, *problem/solution*, and *comparison* (Meyer 1985).

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[120] The idea that texts are sets of hierarchically related propositions underlies a great deal of research into text comprehension. See the review by Meyer (1985).

Nash's rhetorical designs	Halliday & Hasan's conjunctive relations	Examples of conjunctive adjuncts
Step	temporal	first, then, next, finally
Stack	additive	and, furthermore, for instance
Chain	causal	so, because, consequently
Balance	adversative	but, however, on the other hand, rather

Table 6.1 A comparison of Nash's rhetorical designs and Halliday & Hasan's conjunctive relations[121].

Although *conjunction* is just one of Halliday & Hasan's five kinds of 'cohesive tie', it is of special relevance to the present study. Whereas the other four—*reference, substitution, ellipsis and lexical cohesion*[122]—are embedded in the internal structure and wording of sentences, conjunction is normally achieved through separate, identifiable 'adjuncts'—words and phrases. Halliday & Hasan explain that

> 'conjunctive relations are encoded not in the form of grammatical structures but in the looser, more pliable form of linkages between the components of a text' (p. 321).

So if cohesive relations can be displayed through typography, itself a means of linking text components, they are most likely to be of the conjunctive kind. It should be remembered, of course, that Halliday & Hasan are for the most part interested in relatively short-range relations,

[121] Halliday & Hasan's taxonomy of conjunctive relations is considerably more elaborate than is represented here. Each major type of relation is divided into 'external' and 'internal', and further subdivided as appropriate. The examples of conjunctions shown here are from external categories—a reason for this is discussed below.

[122] The distinction between the other four categories is a subtle one. *Reference* might be exemplified by 'Three blind mice. See how they run', where 'they' refers to 'mice'. *Substitution* is exemplified by 'My axe is too blunt. I must get a sharper one', where 'one' substitutes for 'axe'. Reference is a semantic relation, while substitution is a grammatical relation between linguistic items—whereas the first example could be reversed, so that 'they' refers ahead ('See how they run, the three blind mice'), the same cannot be said of substitution ('I must get a sharper one, because my axe is too blunt' is grammatically unacceptable). *Ellipsis* is described as 'substitution by zero', as in 'Joan bought some carnations, and Catherine some sweet peas'. *Lexical cohesion* is superficially similar to substitution. Where the latter relies on a set of neutral terms (like 'one', or in the case of this sentence, 'the latter'), lexical cohesion does not so much substitute as reiterate with a lexically related expression. The following example includes two instances of lexical replacement, 'children' and 'food': 'Patrick and Theresa won't eat their macaroni. Why are children so fussy about their food?'.

typically between pairs of sentences, rather than the structure of extended arguments. Any extended prose passage will contain a variety of cohesive ties from many of their different categories and sub-categories. But the sort of relations or structures found typographically signalled in the *Handbook of sailing* examples are usually less subtle than those in a typical page of prose. They relate to broad structures found (or imposed) with the page's topic.

Figure 6.4 The identical frame-size of these four methods of carrying a boat, and the absence of a linear sequence of their arrangement, is suggestive of 'or' conjunctions—classed by Halliday & Hasan (1976) as an *additive* conjunctive relation (of the sub-category 'alternative').

Additive relations can be seen as inclusive of Nash's stacks (Figure 6.3). Figure 6.4 gives a further example. *Temporal* relations can be seen in terms of steps (Figure 6.1), although the latter may have causal links also. However the apparent similarity between the Nash and Halliday & Hasan schemes becomes rather more blurred when one examines the equivalence of chain & causal. From Nash's statement that each sentence in a chain takes its predecessor as a point of departure, we can see chain relations as being both causal and additive. Given our present interest in information rather than literary texts, 'causal' is a rather more useful category than 'chain', although it is no easier to show graphically.[123] The equivalence of balance & adversative is also not straightforward, since Halliday & Hasan class balanced constructions as either adversative or additive, according to whether they refer to *external* contrasts (that is, contrasts in the fact structure) or *internal* contrasts (in the linearized argument structure).

[123] The link between 'causal' and 'chain' is reinforced by Grimes (1975: 246), who discusses chain patterns in rhetoric using causal examples.

A problem emerges from this brief comparison of two categorial frameworks. Halliday & Hasan's four categories only correspond to Nash's if we select their external (*fact* structure) examples. But this is the opposite of what we might expect when we recall that Nash's purpose is to classify not fact structures but *argument* structures. The answer lies in the highly metaphorical character of Nash's categories—although he is describing argument structures, he uses the vocabulary of fact structures to do so.

If we look more closely at this vocabulary of fact structures in the context of semantics, once again we find a high degree of visual, or at least visualizable, metaphor. Table 6.2 lists the lexical 'sense relations' discussed by Lyons (1977). Other textbooks (for example, Leech 1981) use similar terms.

Contrast
Binary opposites
gradable (eg, hot/cold)
non-gradable (eg, male/female)
converse (eg, husband/wife)
directional (eg, North/South, up/down)

Non-binary sets
Serially ordered
  gradable scales (eg, poor…fair…excellent)
  non-gradable ranks (eg, private, corporal…field marshal)
Cyclical (eg, …spring, summer, autumn, winter, spring…)

Hierarchy
Class inclusion (eg, animal: cow, sheep, etc)
Part-whole relations (eg, body: arms, legs, etc)

Table 6.2 Sense relations in vocabulary (abstracted in table form from Lyons, 1977, Chapter 9).

Many of these sense relations are suggestive of visual metaphor, and it is quite easy to find a number of them graphically displayed in the *Handbook of sailing*. Figures 6.5 to 6.10 show examples of those compatible with the segmented character of typography.[124]

[124] Examples of the two gradable categories are not shown, since by their nature they are incompatible with the segmented (ie, non-gradable) character of typography. They can be found in diagrams, though. For example, the illustration at the bottom right of Figure 6.2 shows a sail in the process of being hoisted—the binary contrast displayed is 'up vs down'; the infinite number of intermediate grades are hinted at by the obvious motion of the sail (indicated by the arrow and the person pulling on the rope).

Figure 6.5 **Binary contrast, non-gradable:** the use of parallel columns is a typical way of showing an either/or relationship. The use of a different typeface for the main text vs caption relationship could be seen as an example of a **converse** binary contrast.

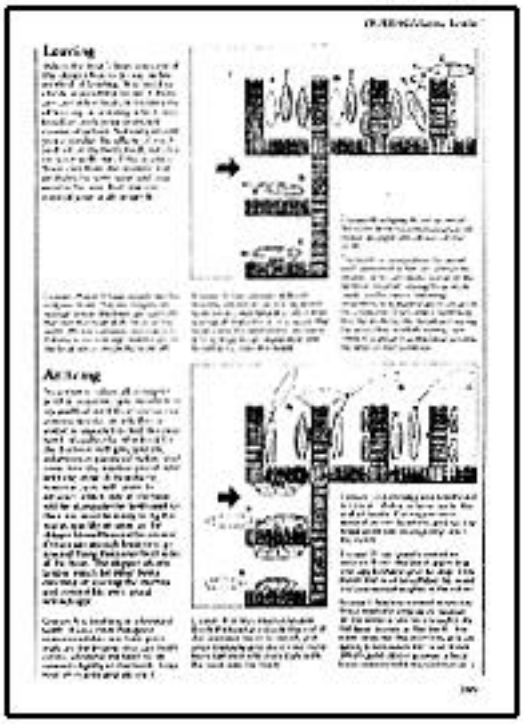

Figure 6.6 **Binary contrast, directional:** here the order in which topics are presented reflects the directional or temporal order of topic—when taking a trip in a boat, you leave before you arrive back. In a different topic, it might have been more appropriate for *arriving* to precede *leaving*, the convention being to show temporal progression in terms of the norms of the writing system; that is, from left to right, top to bottom, in English. Other conceptual relationships are assigned directionality by metaphor: senior people thus rank *above* or *before* junior ones, and so on.

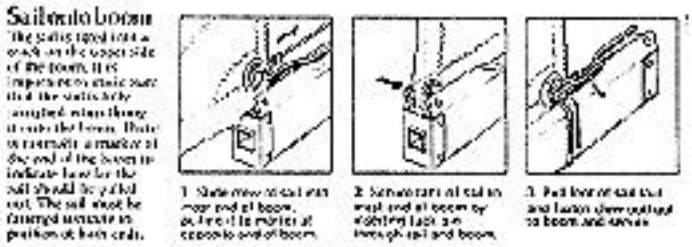

Figure 6.7 **Non-binary sets, serially-ordered non-gradable:** The numbered sequence is an obvious example.

Figure 6.8 **Non-binary sets, cyclical:** In this case the cycle is indicated by using the same illustration for step 4 as for step 1. An alternative might have been to arrange the steps into a circle, but this arrangement is particularly suited to the subject—the progress of the boat through the water.

Figure 6.9 **Hierarchy, class inclusion:** The classic hierarchy, indicated by a hierarchy of headings of varying prominence.

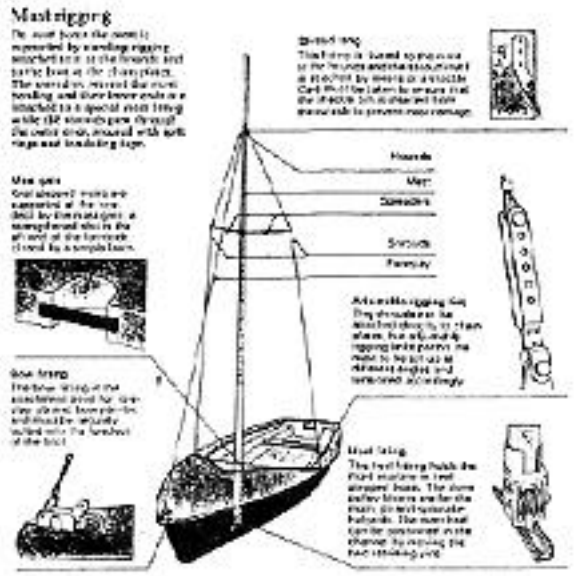

Figure 6.10 **Hierarchy, part-whole relations:** part-whole relations may be shown by a simple typographic hierarchy, or, as in this example, it may be possible to combine the pictorial and verbal modes to indicate the position of the parts within the whole.

Since the scope of all classifications is related to their purpose, it is understandable that some of Lyon's sense relations do not have a direct equivalent in graphic displays, and that some graphic conventions do not find a place in this list. And it is noticeable that some semantic relations work better than others within the rectilinear conventions of typographic layout. In particular, non-gradable sets (equivalent to Nash's steps and balances) are easily chunked and therefore tabulated or split into columns. Gradable sets, on the other hand, can be described in linear prose or by recourse to a separate diagram but with difficulty through layout alone.

The linearity of language is rarely an obstacle to the connection of concepts at the sentence level. Halliday & Hasan's cohesive ties, for example, usually create links between sentences which are both physically close and available in short-term memory. But when a link is to be made across many pages rather than just a few sentences, language alone strains to compensate for its own linearity. Subtleties of sentence construction or inflection no longer suffice, and authors usually introduce

'metalanguage'—whole sentences or paragraphs in which they step back from their argument and comment, seemingly objectively, on its progress. At this metalinguistic level some writers prefer to break out of the linear mode altogether and use graphic techniques. Diagrams are often used, particularly in textbooks, to help readers overview the author's argument (Figure 6.11).

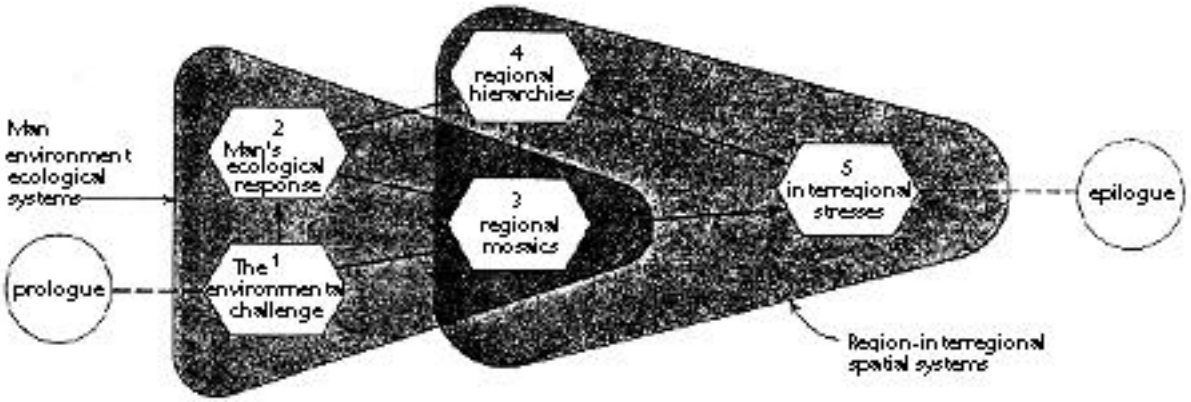

Figure 6.11 Part of a structural diagram included in a geography textbook (P. Haggett, *Geography: a modern synthesis,* 2nd edition, London: Harper & Row, 1975). Actual size, original in two colours.

Whether readers actually use or benefit from such diagrams is still an open question among educational psychologists. Jonassen and Hawk (1984) have tested similar 'graphic organizers' and found advantages for immediate but not delayed recall. It is possible that training is needed to make use of such devices. Indeed, lack of familiarity with diagrams is suggested by Holliday (1976) as a possible explanation of his finding that where the 'information' in the diagram was accompanied by the same 'information' in prose form, readers preferred the familiar prose version. However, experiments which oblige readers to study in controlled conditions cannot measure how effective these devices are for less formal purposes such as browsing or revision. And in the absence of a basis for comparing the content, complexity and style of diagrams, it is difficult to generalize from particular studies.

Table 6.3 was the outcome of an informal survey of diagrams in Open

University and other textbooks (Waller 1981), part of an attempt to encourage authors of continuing education courses to make more use of graphic design in their work.[125] The courses, which cover subjects of general adult interest such as consumer choice, health, parenthood and retirement, were intended to be easy to read and were to some extent modelled on home reference manuals such as *The handbook of sailing.* The table was intended to alert authors to opportunities for displaying their ideas graphically, and the categories bear some relation to Lyons'.

Relationships displayed	*Examples*
Categorial	
discrete	simple lists
hierarchical	chains of command, taxonomies, hierarchical lists
overlapping	Venn diagrams, matrices
comparative/contrastive	continua, parallelisms, reflections and other symmetrical or axial graphic structures
Dynamic	
temporal	calendars, time-lines
serial	non-temporal series of events or processes, including cycles
causal	algorithms, feedback charts, some operating instructions
cumulative	recipes, production process/flow charts where a given feature acquires new characteristics as a result of inputs and interactions
Spatial	
locational	town plans, 'physical' maps
territorial	organizational charts, 'political' maps
networks	route maps, circuit diagrams

Table 6.3 Semantic structures displayed by various genres of network diagram (From Waller 1981).[126]

[125] Wright (1985: 93) comments, on the basis of a study of writing and editing, that 'few amateur writers appear to introduce illustrations spontaneously, even when describing the rules of a board game such as draughts'.

[126] The classification scheme in Table 6.4 owes much to a similar, unpublished exercise undertaken by a colleague, Derek Prior (now of the Community Education Development Centre, Coventry); and it formed part of a joint evaluation project with Mick Jones of the Open University Continuing Education Division, and Jane Wolfson (now of Learning Materials Design, Newport Pagnell).

Table 6.3 classifies topics for diagrams rather than typographic layouts. But since they are almost completely unconstrained by the conventions of linear-interrupted written language, diagrams provide instances of graphically-realizable topic structures in a relatively pure form. And there is a sense in which we can view typographic layouts in terms of 'text-as-diagram' (Waller 1982, 1985).

As Michael Evans (1980) has shown, such diagrams have a long history. The medieval preoccupation with order and especially geometry made diagramming a particularly suitable medium for recording scholastic analysis. Evans describes the use of branching diagrams ('stemmata' is Evans' term), geometric diagrams, and visual metaphors such as trees, wheels. towers and ladders. He includes the diagrammatic use of page layouts in his account:

> 'A different size of initial was used to begin book, chapter and verse in the Bible; different grades of script were used to distinguish between text, commentary and gloss' (p. 34)[127]

Yates (1966) views such diagrams largely as mnemonic devices, seeing them as concrete manifestations of the 'artificial memory' systems of classical rhetoric. The technique was, typically, to imagine a familiar building, and associate the various facts to be remembered with rooms of the building, and things in the rooms. Retrieval was a matter of walking through the building in the mind, and restoring the connection between place and fact. As we have seen, our word 'topic' stems from the Greek word τοπος,place. This technique was evidently effective and very necessary when facts could not so readily be looked up in books or notes.

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[127] Ullman (1932: 117) reports that the typographic indication of the status of text was used as early as the Carolingian period (ninth century):

> 'One of the outstanding characteristics of the Carolingian writing, especially at Tours, was the careful distinction of different styles for different purposes … square capitals were used for book headings, rustic capitals for explicits, uncials for chapter headings, tables of content, and first lines, half-uncials for second lines prefaces and the like. Thus there was established what has been called the hierarchy of scripts.'

Further aspects of medieval page design are discussed in Chapter 7.

Ong (1958), who attributes the development of topic diagrams to the introduction of printing, laments what he sees as the replacement of the medieval oral tradition[128] with the 'reduction to spatial form [that] fixes everything, even sound' (p. 109). Ong has published a number of compelling studies comparing oral and literate cultures (1967, 1982), the general thrust of which is to remind us of the complexity and validity of the oral tradition.

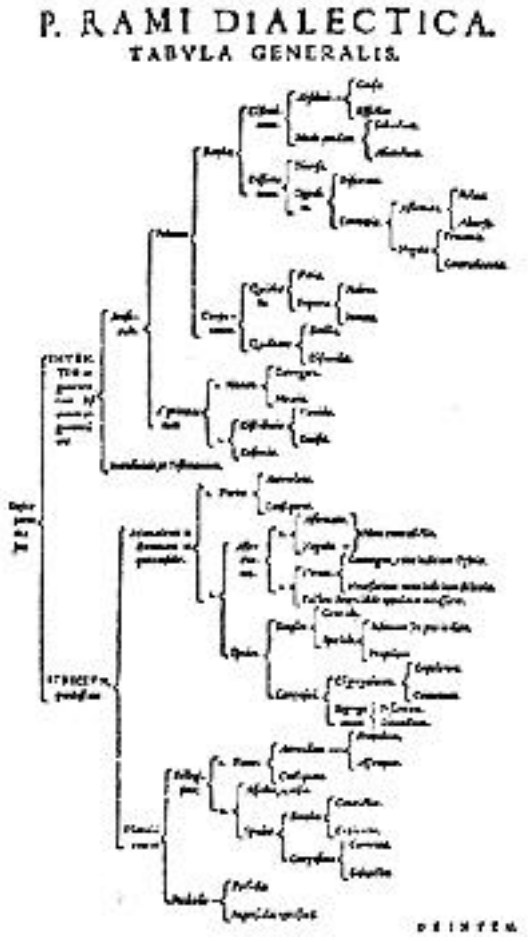

Figure 6.12

Ong (1958) gives a detailed and fascinating account of the career and widespread influence of Peter Ramus, the sixteenth century French scholar whose teaching method was based on the subdivision of topics into sub-topics, typically displayed in branching diagrams that encapsulate knowledge in a seductively complete form (Figure 6.12).[129] Ong is fairly

[128] Ong's identification of the middle ages as an age of oral tradition and of spatial forms with printing has been contested by others; this and other aspects of technological constraints on expression are discussed in Chapter 7.

dismissive of his subject, and somewhat hostile to his method. Since his comments on topic diagrams are not confined to the sixteenth century context, they are of some relevance to the present discussion—although at times hard to fathom and apparently containing the seeds of their own refutation.

For Ong, visualization is at the heart of science and education:

> 'We are today more than ever witnesses of attempts to reduce everything supplied by the other senses—sounds, smells, tastes, pressures—to charts and tables which can be visually assimilated' (p. 108)

This would seem to be an advantage, but Ong argues that it is deceptive. The essence of his objection to diagramming is that there is no spatial or visual analogue for what he calls 'enunciation', the making of judgements, the 'coupling of subject and predicate—and this last term conceals an auditory analogy again; *praedicatum* is the thing cried out or *said*' (p. 110)

Most would agree that diagrams tend to present simplified and often suspiciously symmetrical arguments, and that they are rather harder to analyse and criticize than verbal language. But it is hard to see why Ong needs to generalize from Ramus' diagrams to all literate culture, as he appears to do. Diagrams and charts rarely appear on their own but are mostly surrounded by verbal language. Furthermore, the oral culture that Ong appears to champion is characterized by most scholars, including Ong himself, as heavily reliant on mnemonic techniques—not only the place-mnemonics but rhyme, dichotomy, analogy and myth. These techniques fix knowledge in as permanent a form as the 'pseudo-eternity of repose' Ong attributes to print. And whatever the advantages of dialogue, it would

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[129] Ramus' charts are not altogether different from the hierarchical schemes of 1960s educational theory (Gagné 1965, Ausubel 1963) and the text structure diagrams of recent cognitive psychologists (Britton & Black 1984). Indeed, a comment of Ong's might strike a chord with the more sceptical of educational technologists:

> '…while many of the significant reactions in intellectual history were taking place because of new scientific or philosophical insights, they were occurring more inevitably because of the demands of a practical pedagogy—even when the pedagogical necessity was given a veneer of quasi-scientific explanation' (Ong 1958: 306)

seem to be at least as difficult to question the guardians of oral tradition—whose job is to preserve not to improve—as it is to question a printed book.[130]

Topic diagrams as writing plans

The *distinctio* stage of the scholastic method, which the diagrams discussed by Evans embody, preceded the detailed discussion of evidence, authorities and so on. Today, too, diagrams are frequently used for the initial planning of prose. Indeed, those offering advice on writing (and thinking) frequently recommend diagramming as an aid to creativity (Buzan 1974, Field 1982). And diagrammatic techniques for 'idea-processing' have been available on personal computers for some time, and are integrated into some word-processing programs. Idea-processors allow writers to plan, overview and reorganize documents as hierarchically arranged diagrams of headings.

Saenger (1982) describes a medieval precedent of this development, suggesting that the synthesizing task of twelfth- and thirteenth-century scholasticism led to important changes in ways writers approached their task. Where writing had previously been undertaken in a relatively linear fashion, through dictation or the use of wax tablets of limited capacity, writers found they could no longer organize their 'exceedingly complex thoughts' within these constraints. The introduction of cursive script[131]

> 'meant that authors could revise and rearrange their texts while composing them. This facility aided thirteenth-century scholastic writers to prepare texts rich in cross-references which presupposed that the reader, like the author, had the ability to flip from folio to folio

[130] Indeed, Saenger (1982: 399) comments that
'psychologically speaking, silent reading emboldened the reader, because it placed the source of his curiosity completely under his personal control.'

[131] Clanchy (1979: 89) regards the introduction of cursive script, with its advantages of speed and legibility, as an important aspect of the 'shift from memory to written record', and as a major contribution of the twelfth and thirteenth centuries to the growth of literacy.

in order to relate arguments to their logical antecedents and to compare comments on related but disparate passages of scripture' (Saenger 1982: 386).[132]

This visual planning of arguments is central to the method of production used for books like *The handbook of sailing.*[133] Figure 6.13, for example, shows part of an 'editorial flow-chart' (sometimes known as a 'flat plan') used to plan a similar manual, *The indoor garden book*.

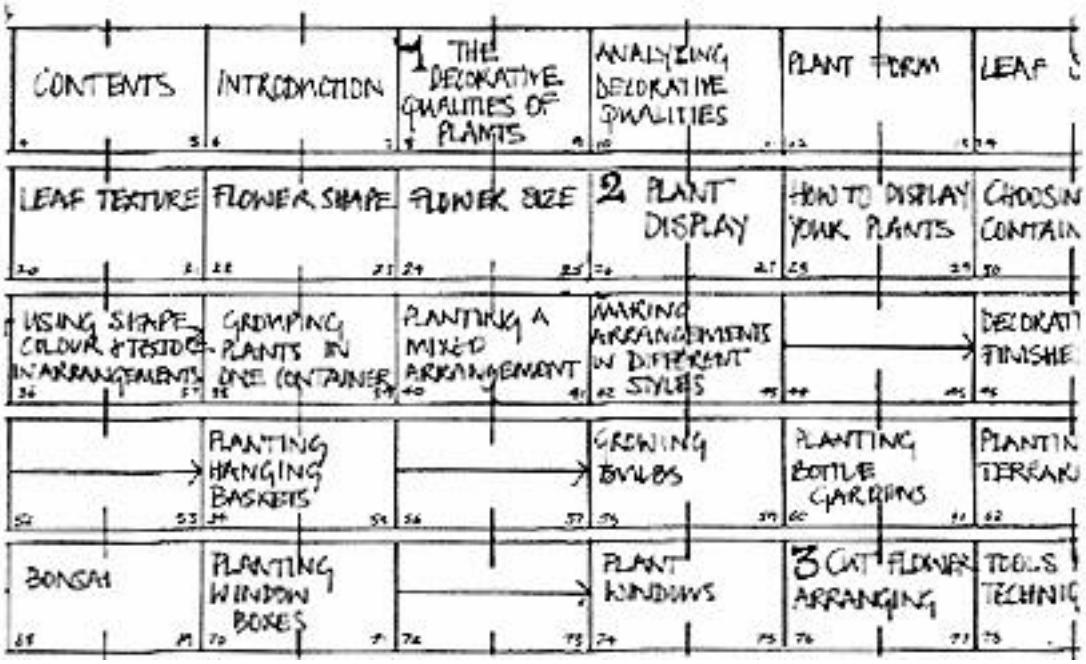

Figure 6.13 'Editorial flow chart used to plan an illustrated book (John Brookes, *The indoor garden book,* London: Dorling Kindersley, 1986)

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[132] Clanchy (1979: 130) also remarks on the changing nature of scholarship in the thirteenth century, comparing the library regulations of Dominican monks with those of a community of Benedictines two centuries earlier. Books were no longer issued once a year for 'mystical contemplation' but needed to be available for rapid consultation and comparison:

> 'The difference in approach towards writing of Lanfranc's Benedictines and Humbert's Dominicans is so fundamental that to use the same term 'literate' to describe them both is misleading.'

Saenger's suggestion that the reader is expected to apply the same flexibility of approach as the writer is echoed in the recent development of 'interactive', 'dynamic' or 'hyper-' text (Weyer 1982; Conklin 1986). These offer readers of electronically-delivered texts the same facilities that the author had on his or her idea-processor: hierarchical nesting of sub-sections, search facilities, note-making, glossaries and so on.

[133] The short account of the production method of this book is based on interviews with staff members of Dorling Kindersley Ltd, the firm also responsible for 'packaging' the *Handbook of sailing.*The interviews form the basis of an audio-cassette for an Open University course on communication (Waller 1987). Rogers (1986) has also recently articulated some of the methods by which book packaging operates.

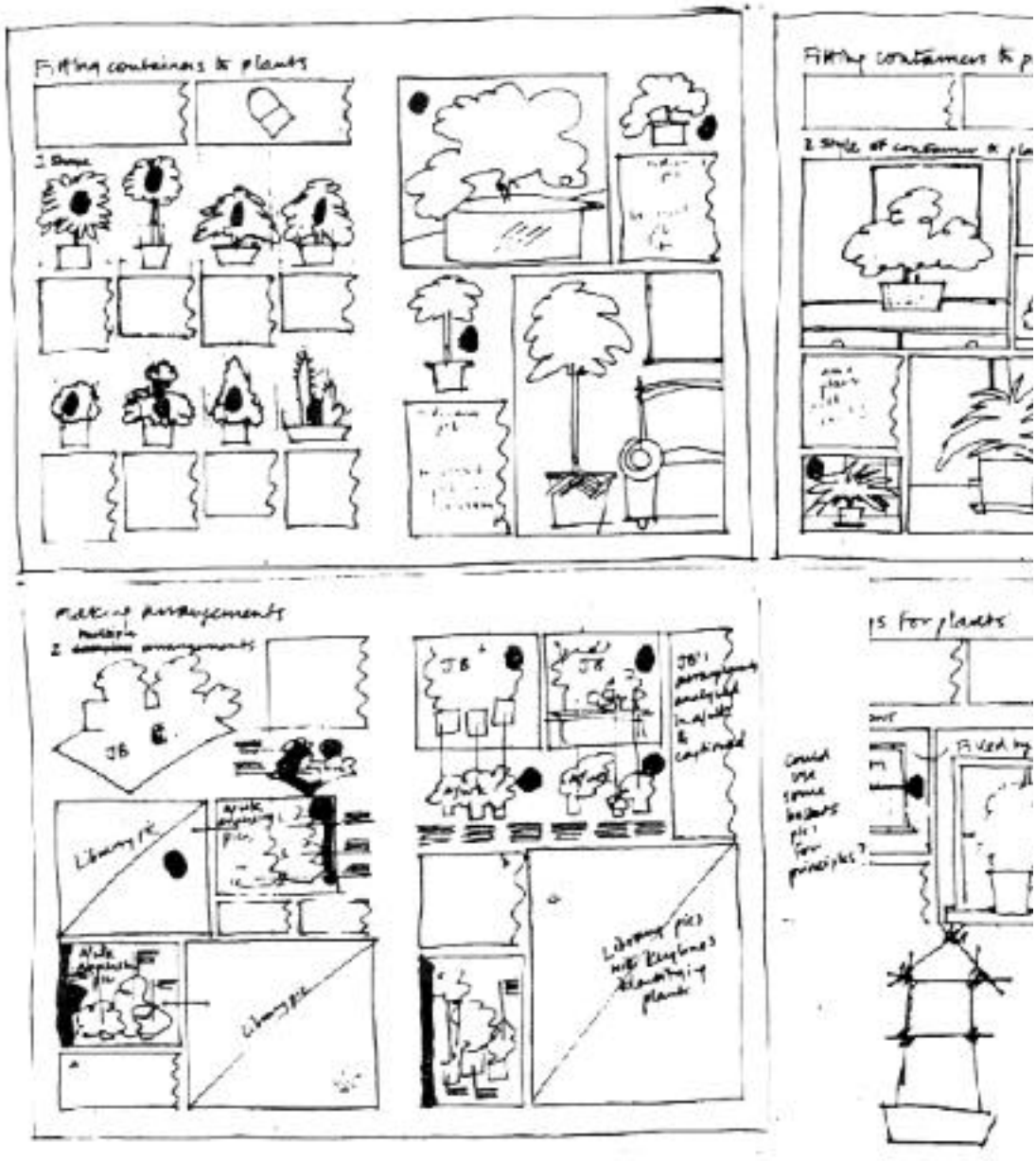

Figure 6.14 Part of a large ‘design flow chart’ used to plan the display of topic on pages

By planning the sequence and length of topics in advance, space is allocated more systematically than might otherwise be the case. Furthermore, as Figure 6.14 (a ‘design flow-chart’) shows, the design of individual pages is also planned in advance, before any of the words are written or the illustrations commissioned. The design of such pages acts as a planning chart for the organization of concepts, the writing of descriptions and the composition of illustrations.

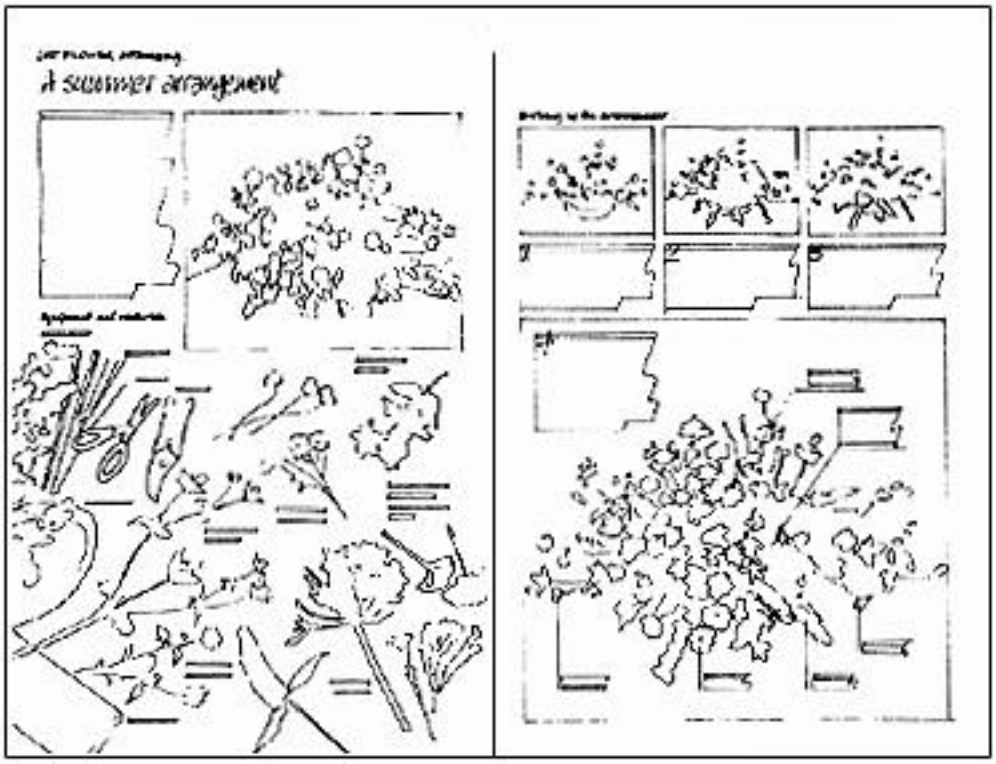

Figure 6.15 This layout has been constructed after the photo-session has helped to determine how many steps are needed to explain the procedure—in this case, a flower arrangement.

In many cases the next step in the preparation of a spread is the photo-session, where aspects of the topic are photographed. In the case of a practical task, the number of illustrations required to demonstrate it properly has a strong influence on the design of the page—the photo-session is one way of revealing the structure of a topic (Figure 6.15). Obviously, the final pages will usually undergo numerous modifications and so look considerably different from the first plan, but these books are nevertheless powerful demonstrations of the principle of text-as-diagram—typography, far from being a decorative embellishment, is as fundamental as any other aspect of the language of these pages.[134]

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[134] Even those aspects of graphic design that might be thought to be simple embellishment turn out to have an important function apart from their marketing value. Although the jacket design is conventionally left to last, book packagers often *start* with it. The effort to agree about the cover design enables a production team to articulate their thoughts about the genre, philosophy and general aim of the project. Agnew (1986) has recently described a similar production process in a paper entitled 'writing backwards'.

Information Mapping

Robert Horn (1985) has attempted to systematize the use of text-as-diagram through his Information Mapping™ system of 'structured writing' (Figure 6.17).[135] His original vision was of a system in which

> 'the physical arrangements of the maps provide a special[136] analogue to the connections and relationships of the information.' (p. 182)

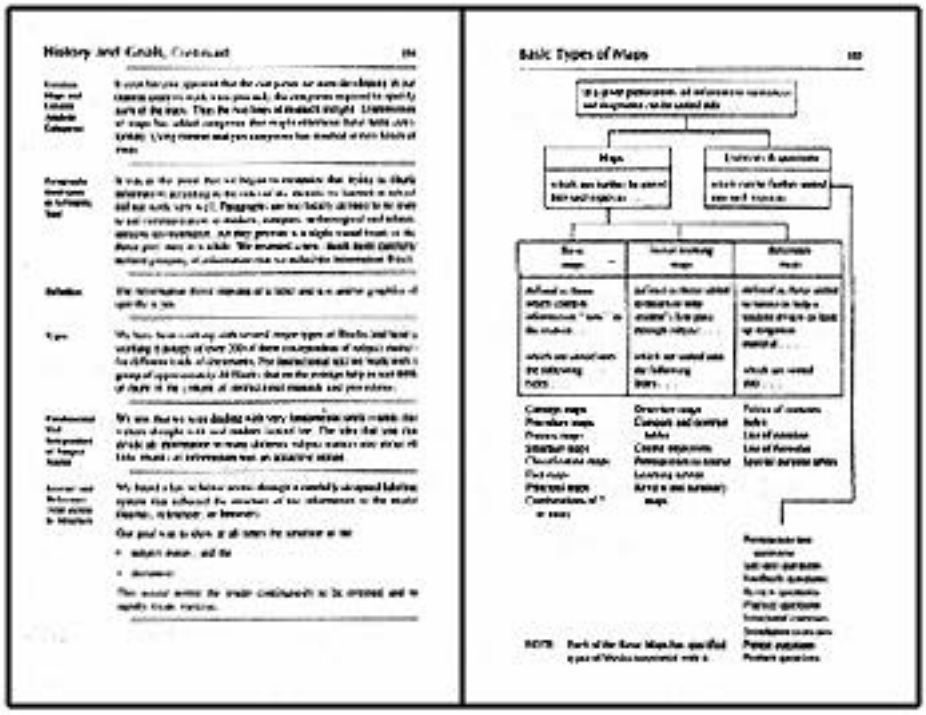

Figure 6.17 A double-page spread from an article by Horn describing his Information Mapping system (Horn 1985). Most pages, such as the left-hand page here, contain series of 'information blocks'—paragraphs with marginal headings. Diagrammatic techniques are sometimes used (right-hand page). (Original 290 x 227 mm.)

Horn claims support from a number of evaluations of the system, which requires writers to identify the status of each text component through graphic segmentation, shaping and labelling. Because it is largely directed at technical publications which are not in the public domain, its impact since it was developed in the early 1970s is hard to assess. Owing to

[135] Horn preserves the term as the trade mark of his technical writing firm by insisting that it is accompanied by the ™ symbol.

[136] This is presumably a misprint or dictation error for 'spatial'.

conservatism, the high cost of the manual and the extra time taken to prepare texts using Horn's guidelines, it is probably rather limited. But although it seems to be a very good idea, there are some significant and instructive flaws in its implementation.

For one thing, the explicit labelling of every turn of the argument leads to an unnatural and unsubtle fragmentation of the text. Since every component is labelled with equal typographic emphasis, it is scarcely easier to pick out the major turning points than if nothing had been labelled. This is a classic problem of categorization: to classify each item under a different label is as unhelpful as to classify them all under one heading.

Secondly, Horn labels each kind of block in the same way: definitions, examples, summaries and facts are displayed in the same typographic voice. His problem, again, is over-systematization: since he claims 'a working typology of over 200 [types of block] (independent of subject matter) for different kinds of document', it would not be possible to distinguish between them all.

Thirdly, although it represents the injection of graphic techniques into verbal language, the system pays insufficient attention to graphic subtleties. As Figure 6.17 illustrates, the use of space, emphasis, rules, and diagramming is often clumsy. In this example, we might identify the excessive capitalization of headings that makes them hard to scan,[137] the equal treatment given to new headings and continuation headings (this gives inadequate emphasis to the change of topic), and the poor diagramming on the right hand page.

Though contact with typographers is leading to improvements, the disappointing graphic execution of published examples of Horn's structured writing highlights the uncompromising nature of visual

[137] Other examples of information mapping do not capitalize headings in this way, so this is probably the result of intervention by the publisher of the book in which this chapter appeared. Nevertheless, the Information Mapping manual remains silent on this question.

imagery.[138] It also reinforces a conclusion reached in Chapter 3: that the exact graphic configuration and rendering of graphic elements is as important—as constitutive to their meaning—as their mere presence or absence. The lack of attention to the graphic implementation of Information Mapping may, of course, be a deliberate compromise. Given that the method is designed to be applied by technical writers with few graphic skills and a variety of reprographic techniques, it is probably wise to keep the rules simple. The constraints imposed by the technology of writing and printing are the subject of the next chapter.

This chapter has reviewed some aspects of the use of typography for displaying the structure of a text's topic. Typography and diagramming were seen as literal instances of visual metaphors used in the context of rhetoric (Nash 1980) and semantics (Lyons 1977). The next chapter will review the next of the three basic structures posited by the genre model—artefact structure.

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[138] As a result of presenting his work at conferences that included typographers, Horn is aware of the graphic deficiencies of his system. The Department of Typography & Graphic Communication at Reading University has produced more elegant typographic solutions to the problems of Information Mapping.