Making connections: typography, layout and language

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Abstract

These working notes summarise a genre theory that accounts for document layout in a three part communication model that recognises not only the effort of the writer to set out a topic and the purposeful effort by a reader to access information, but also the professional and manufacturing processes that intervene. I suggest that layout genres use conventions that at some historical point are rooted in functionality (of document generation, manufacture or use) but which have become conventionalised. It follows that genres will shift over time as reasons to generate or access information change, and as text technologies develop. Case studies are described that illustrate key aspects of the model and offer insight into the way designers think about layout.

Preamble

The genre of this paper

I am new to AAAI symposia, so when I was asked to produce a working paper to precede a short presentation in November, I imagined something quite informal – and allowed time accordingly. However, when I opened the AAAI template it immediately became apparent from its layout that it was of the genre 'academic paper'. [1]

There used to be (and probably still is) a journal called *Evolutionary Theory*, published from authors' camera-ready copy, which published very high quality refereed content but looked completely amateur. It was for fast-track publication and, when I found it in the late 70s, desktop publishing didn't exist, and most articles were provided as camera-ready copy created with an electric typewriter.[2] But a slogan on the cover betrayed a lack of confidence in its stand against aesthetics: 'dedicated to the primacy of content of display'. In writing these notes, I find myself subject to the primacy of display over content – my paper is rather less polished than the format.

I am not usually a complainer, but this is relevant to our subject – so I hope you will forgive a brief introspection about the writing process. For example, the next three paragraphs are an interpolation, and would more comfortably appear in a panel or box if I were able to write in another genre – *textbook* perhaps. Limited to the linearity of prose, I should really spend time crafting my language, and working out a way to knit the anecdote more closely into my argument.[3]

A year or two back I redesigned the medical journal *The Lancet*. Part of the brief was to make it clearer to readers that as well as acting as a primary research journal through its refereed papers and letter, *The Lancet* also contains highly topical and readable medical journalism. In discussions of alternative designs, it became clear that a two column layout (such as AAAI requires) has strong genre associations with journal design, while journalism is more associated with the narrowness of a newspaper column. So by using three columns with (dotted, and so quite informal) vertical rules between for the news sections, we were able to make a clear typographic distinction between the two types of content. Although the three columns also had the functional advantage that we could more flexibly fit several stories on a single page, the genre distinction was the main reason for our choice. It was important to demonstrate to readers that a different style of reading was appropriate for the news pages, and to borrow associations of political and human interest from more obviously entertaining magazines.

My genre model proposes that typographic genre originate from design imperatives that were at one time genuinely functional but which have now taken on a functionality of their own – to signal the genre of a document, and trigger appropriate expectations, interpretations and strategies amongst its users. What, then, are the functional imperatives underlying the two column academic journal and the narrow-column newspaper? Journals published in an A4 or 8_ x 11 format are normally two-column because a single column would give

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[1] Actually, you could argue that the design standard enforced by AAAI is not just of the genre 'academic paper' but 'refereed and copy-edited academic paper', which is not strictly true.

[2] Described in Waller (1982a)

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[3] In his account of the rhetorical role of design in Chapter 1 of his excellent *Designs in Prose*, Nash (1980) argues that some graphically organised documents (eg, those with numerous headings or separate numbered paragraphs) allow writers to display their content programmatically, with the reader left to infer the connections, with no need for the writer to carefully 'score' the reader's performance. Similarly, if I want to use interpolation in a format that does not permit it to be achieved graphically, I have to articulate the start, finish and relevance of my interpolation.

too long a line length for comfortable reading, and journal publishers do not like to waste space. Newspapers have narrow columns because the first fast rotary presses used cylinders that were polygonal rather than round, with flat columns of lead type locked together on a large cylinder[4]. Even after the invention of the stereotype and moulded copper cylinder, the narrow columns were retained because they allowed editors to combine a large number of different stories on the same page – and newspaper readers are notoriously conservative. In fact, for many years after it was technically trivial for headings or advertisements to span several columns, newspapers persisted in running all content within the column structure.

The layout of this paper

By modern standards, the layout of this paper is somewhat mediocre – justified type, and a mixture of centred and left-ranged headings, are not what I would have chosen and, given our topic, might actually detract from my argument.

McKenzie (1986) pointed out that almost every edition of *Ulysses* has betrayed Joyce's authorial intentions by setting them in standard formats that disrupt the line and page breaks in the first edition[5]. Joyce had a practice of making corrections at proof stage that made reference to such things as the page number or the location of a phrase within the line or page – in much the same way that poets control line breaks.

But actually this gives me a way to preview one aspect of my genre model.

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Things to do
Do the shopping
Clean the car
Mow the lawn
Finish my AAAI paper
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Figure 1

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I have to do the shopping, clean the car,
mow the lawn, and then finish my AAAI
paper
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Figure 2

Most readers will be in doubt that the line endings in Figure 1 carry topic-related meaning, but that those in Figure 2 simply indicate that there is no more space on the line. They are artefactual, not topical; decided by someone other than the author. So I should relax about the

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[4] A good source on the recent history of printing is Twyman (1970/1999)

[5] see also Pullum (1984) for a fine diatribe against copy-editors and style manuals.

AAAI layout – because it appears in the context of other papers that look the same, readers will know that it is not part of my authorial contribution.

The genre of this author

In the context of this symposium I straddle the boundary between theory and practice. After training as a typographer, I spent thirteen years as a lecturer with the (UK) Open University's Textual Communication Research Group, researching the role of typography and layout in learning. I left in 1988 to start a design company, Information Design Unit. We write and design information documents for large organisations, and work on a wide range of information types, including reference books, financial statements, user guides, timetables, health promotion, signing systems... and, from time to time, academic journals. So my contribution needs a further apology – it revisits some arguments already published (Waller 1987a, 1990), but it is reinforced by ten years 'clinical experience' and hopefully offers some insight into the motivations designers have when they lay out pages. However, my citations cease in about 1988, and so you may want to view this as a quaint historical document. On the other hand, as the saying goes: if you want new information, read old books; if you want old information, read new books.

Accounting for the layout of an illustrated reference book

Some years ago I took a typical example of a modern illustrated book, where layout[6] is a prominent feature, and attempted to account for the relationship between its content, language and layout[7]. Essentially the exercise was to offer it up to some of typography's neighbouring disciplines to see what they might have to say. Figure 3 illustrates a typical page.

Although many linguistics textbooks tantalisingly introduced the terms 'graphology' and 'graphetics', they turned out to be virtually empty categories – perhaps introduced as a counterpart in written language to phonetics and phonology. It is not surprising, given that the founders of linguistics seem to have regarded written language as a secondary form.

De Saussure placed writing outside the linguistic domain: 'Language and writing are two distinct systems of

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[6] A note on terminology: typography and layout are overlapping terms. Although one or the other is more appropriate to use in particular contexts (ie, typography happens within the paragraph while layout doesn't), I am using them virtually interchangeably here.

[7] *The Handbook of Sailing* by Bob Bond, published by Pelham Books, London, 1980.
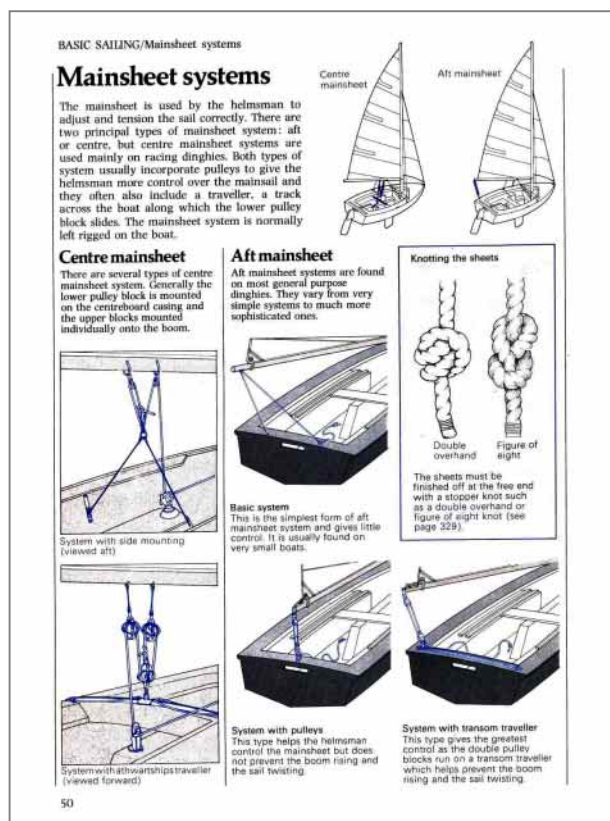
Figure 3

signs; the second exists for the sole purpose of representing the first.' (de Saussure 1916/1974: 23)

Vachek (1973) documents much of this debate and cites the opposition of other influential twentieth century linguists to the view that writing is something more than the transcription of speech. Bloomfield (1935: 21), for example, considered that 'writing is not language, but merely a way of recording language by means of visible marks'[8].

It became clear that those linguists who had mentioned typographic features – for example by preserving it in quoted text samples (Crystal & Davy 1969) using it to differentiate between text types, Werlich 1976), or noticing it enough to list alongside other linguistic signals (van Dijk 1979) were from areas of linguistics that went beyond mainstream linguistics' restriction to spoken to go beyond another key restriction of mainstream linguistics – linearity.

For most of the linguists I encountered, words come in rows, and their job is to describe why they arrive in a particular order, how strings of words, sentences and paragraphs cohere, and how language users overcome the limitations of linearity. Typographic text, on the other hand, laid out in tables, lists, and multi-column pages, is only linear at the sentence level. Above that, it is processed in whatever order the reader chooses as their eye roves around the page making inferences about how the elements relate. These inferences are based on such things as graphic gestalts,[9] explicit pointers in the language, and genre conventions.

Designers[10] are particularly concerned to support this active, strategic style of reading. Readers who use active reading strategies have been found to be more effective in achieving their goals than those who simply read through a text once at an even pace (Pugh 1979). Active reading strategies include initial skimming, look-backs, re-reading, changes of pace, and pauses for thought.

Perhaps texts that combine different elements in a non-linear fashion do so in order to support a non-linear style of reading – to help readers navigate complex content in a way that suits their particular purposes. Some (conventional, linear) texts do this with a supporting diagram – others use layout so that the text becomes the diagram (Waller 1982). And through visual metaphor (for example, 'on the one hand/on the other hand'), other texts conjure up the diagram in the reader's mind.

For example, the section from the sailing handbook shown in Figure 4 shows two kinds of clothing sailors can wear. In a strictly linear text the alternatives would be presented with either a contrastive relationship ('a waterproof suit is ideal for [whatever] but use a wet suit for [something else]'); or a conjunctive relationship ('there are waterproof suits and wet suits').

However, the author (well, actually not the author, but I will come back to that) has decided to show the two alternatives graphically, and has avoided specifying exactly how the two relate.

In Waller (1987b) I try to demonstrate that many other layouts from this book can be analysed in terms of semantic, rhetorical or linguistic frameworks that use categories based on visual metaphor.

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[8] Vachek quotes similar remarks from other influential linguists. The tone of the primacy of speech advocates is emphatic, even intemperate at times. Thus de Saussure (1916/1974) speaks of the 'tyranny of writing', of its 'usurping' role, of 'abuses', of the 'annoying' tendency of grammarians who 'never fail to draw attention to the written form'.

[9] Graphic designers make frequent use of gestalt principles – in particular, similarity, proximity, closure, and continuation – which provide a useful vocabulary for discussing design and layout, although detached from gestalt psychologists explanations for these phenomena.

[10] I use the word 'designers' as a shorthand for 'good designers'... not all designers are focused on articulating the topic or supporting the reader. Although language conventions normally gain currency by frequent use within a language community, many designers, being preoccupied with creativity, do their utmost to ensure that the same design solution is never used twice.

Figure 4

Figure 5

However, although it was quite easy to account for numerous page elements (ie, boxed sections with distinct boundaries) as simple topic diagrams in this way, it often did not work for the page as a single unit. For example, in Figure 3 it is at first puzzling that the two small schematic illustrations at the top right are not aligned with the columns headed 'centre mainsheet' and 'aft mainsheet', with which they share an identical heading. Figure 5, though, demonstrates that the purpose of the small schematic pictures is to locate the topic (mainsheets) within the context of the boat. Other pages have similar schematics highlighting the mast, rudder, sails etc – they are there less to explain the topic than to help the reader navigate within the book. This points to a motivation for layout that I call 'access structure' (Waller 1979).

But look now at the section in Figure 3 entitled 'aft mainsheet'. It is laid out in an L shape for exactly the same reason that the words in a paragraph move to a new line when the edge of the column is reached – the section has reached the foot of the page. There is nothing L-shaped about the topic, nothing helpful to the reader in the shape – it is simply an artefact of the page size.

In accounting for the layout of this page, then, I have identified three kinds of motive:
• explicating the topic
• coping with artefactual constraint
• supporting reading strategy

My genre model assigns one of these to each of the three participants in the textual communication process: *the writer* (ie, the author, or whoever takes primary responsibility for the content[11]); *the text* itself (and the professional and industrial interventions that transform it from 'writer's text' (ie, an author's draft) into 'reader's text' (ie, an edited, designed, printed and distributed document); and *the user* (ie, a reader, customer, etc).
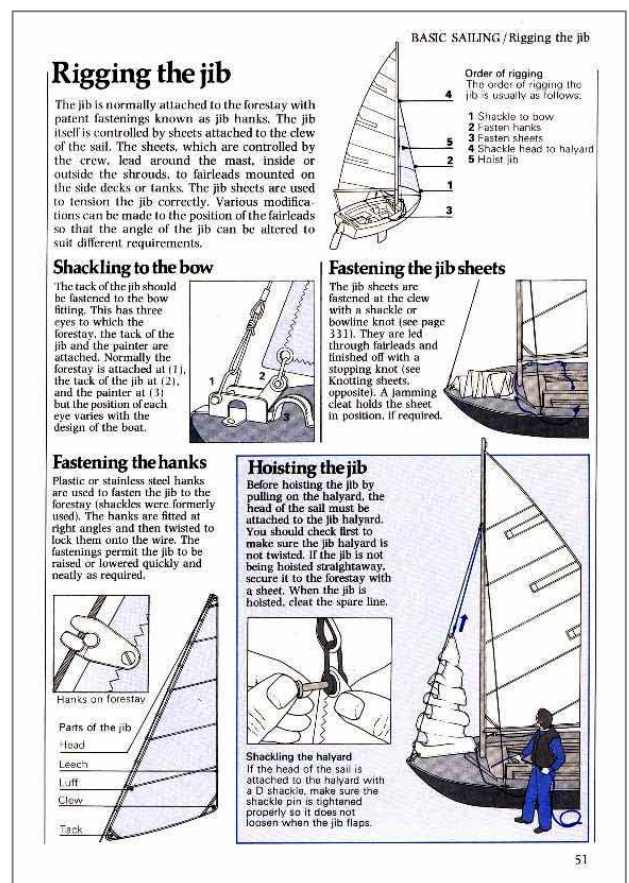
Each of the three is the source of particular design problems, but in practice real documents are holistic solutions. Not only do documents present themselves holistically to the user (and the analyst), but they are usually designed holistically – either through whatever cognitive processes designers adopt when they design, or by references to precedents and established patterns: in other words, genres.

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[11] 'content' is a term I normally avoid, redolent as it is of the container or conduit metaphor for communication (Reddy 1979), but it will do here. It is widely used by designers to mean that which the originator wants said. In a form, 'content' consists of the range of acceptable answers that the form must elicit and it is the designer's job to come up with the questions that achieve the desired effect.

writer ——————— writer's text

editorial, design,
production and
distribution
processes

reader's text ——————— reader

Topic structure   **Artefact structure**   **Access structure**
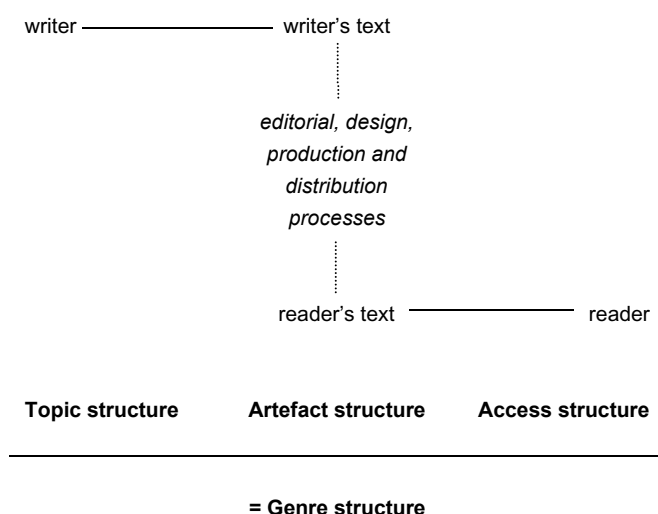
= Genre structure

Figure 6. Genre model, from Waller (1987a)

To belong to a genre, a document is effectively conforming to a set of rules or expectations. These expectations are used as a reference point by all participants in the process – the writer, designer and user. The genre suggests a content agenda, a design template and a strategy for use.

Most identifiable genres (and I tend to favour ordinary language categories – if we have a word for it[12], there is probably a genre) start with relatively unarticulated rules, and members of the genre only belong through a coincidence of purposes and constraints. But in time, rules may be articulated and, although the original functional imperatives have moved on, the genre is effectively frozen. Thus the more rule-bound genres in Table 1 change relatively slowly, while the less rule-bound genres change as needs, technology or fashion allow.

The notion of error in layout

The more rule-bound a genre, the more defined is the concept of error. I am almost certainly committing errors as I attempt to follow AAAI's instructions for submitting this paper – a member of a Level 5 genre.[13] The use of style guides and rules is a challenge for a corpus-based approach to the study of layout, since the samples collected have an enforced similarity that may not represent what good editors and designers would naturally do.

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[12] or feel the need for a word for it – sometimes the word follows later.

[13] For example, will I remember to label theback of each page in pencil?

Similar because highly rule-bound

Basis of genre membership	Examples	Where the 'rules' are articulated
Level 6: Legally enforced	Credit agreements, pharmaceutical information, food labelling, etc	Legislation
Level 5: Institutionally enforced	Scientific journals	APA style (and similar)
	Technical manuals	Govt contracts[14]
Level 4: Recommended by authorities	Book publishing	Copy-editing textbooks (eg, Butcher 1975), typography textbooks (eg, Williamson 1966)
	Letter-writing	Etiquette manuals (analysed by Walker 1983)
Level 3: Ritualised but loosely articulated	Newspapers/ magazines	Journalism textbooks (Evans 1973, 1974; Sellers 1968)
Level 2: Stereotyped through intertextual reference and imitation	Advertising	Criticism (eg, Thomson & Davenport 1980);
	Style and fashion magazines	Semiological analysis (Barthes 1977)
Level 1: Similar only through coincidence of constraints	Amateur advertisements on office noticeboard	Similar examples analysed by Walker (1983)

Similar but not explicitly rule-bound

Table 1. A scale of rule-boundedness for typographic genres.

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[14] It is usual for military contracts to include a specification for the technical manual that is to accompany the equipment to be supplied. The specification may include details of format, illustration and typography. Kern (1985) discusses technical manuals for the US armed forces and provides numerous references to sources of procedures and standards.

Figure 7. A health education spread, and a typical reading strategy.

In the context of a Level 1 genre, however, I make an error only if I fail to achieve my goals. For example, in the case of a handwritten advertisement, if I make my phone number illegible, or if I put emphasis on the wrong elements and fail to attract readers.

De Beaugrande (1984) makes a similar point in relation to punctuation: 'the illusion of uniformity in punctuation arises mainly from coercion by publishers, not from agreement in manuscripts.' (p. 192) As an alternative: 'English instructors […] can uncover and present the punctuating motives observed by skilled writers, and leave the students to decide what options are best. An "error" is then a failure to respect motives, not a departure from unexplained personal biases.' (p. 193) So an error in layout might include a failure to provide a clear access structure or reading path, or a clear indication of the topic structure.

Designers cannot test every page on real users, but they still need some way to evaluate whether they have provided a layout that respects the motives of writers and readers – that will enable readers to achieve their purposes while providing an accurate reflection of the topic structure. In practice they make judgements that are often articulated in terms of gestalt principles (applied quite loosely), and these appear to operate at the macro-level in a way similar to the role of punctuation within the paragraph (Waller 1982b).

Figure 7 is a double spread from a health education textbook (this study is described in Waller 1987b). Below it is a record of the path a typical reader took, as recorded using a device described in Schumacher & Waller (1985).

The text can be seen as 'ungrammatically designed' in several respects. For example:

- There are three scenarios presented to the reader in comic strip format. Yet the two on the right-hand page are joined by overlapping speech bubbles that are conventionally used in comic strips to create a horizontal flow. As the reading record shows, this particular reader read the page in the correct order (that is, the order intended by the writer), but others did not.
- At the foot of the right-hand page there is an activity, presented in three columns, followed by a single passage of commentary split over three columns. The commentary follows on so closely after the activity that graphically the columns are seen by this reader as continuous, and she reads in an inappropriate order.

A useful model of how layout works would need to predict such problems.

Case studies of design projects

Illustrated home reference books

The *Handbook of Sailing* belongs to a genre of book known as 'home reference' books. They are typically on topics such as cookery, gardening, sport, crafts, home maintenance, cars, travel etc. The best known exponents of these (in the UK) are publishers such as Dorling Kindersley, Reader's Digest, BBC Publications and the Automobile Association.

To understand the contribution layout makes to these books, it is helpful to know how they are produced.

Home reference manuals are normally produced by teams of writers, designers and illustrators working for an industry known as 'book packaging'. Books are developed as concepts, and pre-sold to publishers in a number of different countries who share the expensive colour printing, which is then overprinted with text in different languages. Designing for multi-lingual use imposes its own layout constraint –enough space must be left for the expansion factor when text is translated out of English.

The normal model of book production is that the author writes the words, the designer lays them out, the printer prints them, then the sales and marketing department sells the final product. Home reference manuals work in the opposite direction.

Alternative book concepts are tried out for their market appeal, then the print specification is worked out in relation to the anticipated sales and pricing level. A team is then given the task of producing, say, a book on sailing of about 300 pages in a given format (that will ensure good bookshop display), with full colour printing. They will recruit an author with credibility in the marketplace and work with him or her to plan the content.

The entire book is diagrammed (see a real example in Figure 8) allocating appropriate space to each sub-topic. Then individual pages or spreads are planned in outline, and photography or illustration commissioned. Once the photography or illustration is complete, final page planning takes place (Figure 9) and only when the space available for them is known do any words get written. The words are then edited to fit the available space.[15]

The topic structure is the key element in the book, but it is realised not as an author's text but as a graphic layout that diagrams the argument and that provides a navigable access structure for the reader. The artefact structure – the format, printing process, extent, etc – is also a key influence on all decisions that are made.

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[15] An account of this process is given in an Open University course text, with an accompanying audio tape containing interviews with designers and editors (Waller 1987c).

Figure 8. Book planning chart from Dorling Kindersley, London, 1987
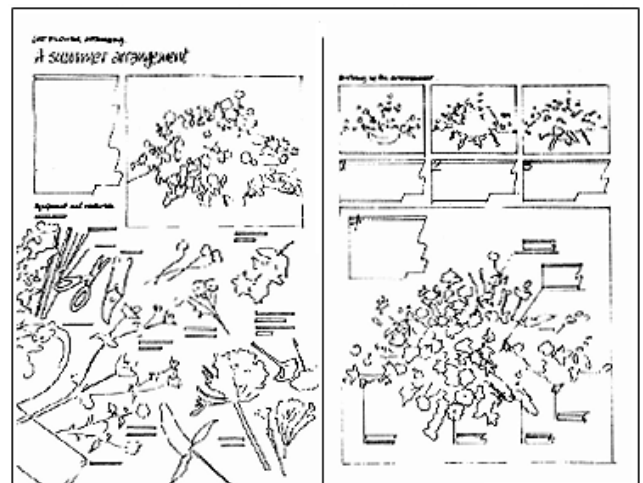

Figure 9. Book planning chart from Dorling Kindersley, London, 1987

Bibles

While home reference manuals demote the status of written text, Bibles are precisely the opposite – the text is considered literally sacred and cannot change – so any variation in the layout of different editions must be explainable in some other way.

The common image of a Bible is of a leather-bound book printed on thin paper with gold edges and a two-column layout. The layout has hardly changed since the sixteenth century, when the Geneva Bible printers were responsible for a number of innovations in book design that we take for granted today (for example, running headings).[16] This is the default Bible, and an edition of almost every new translation is printed in this format. But although a traditional Bible is designed and chosen (by buyers) almost entirely by reference to genre conventions, these all have completely functional roots that still hold
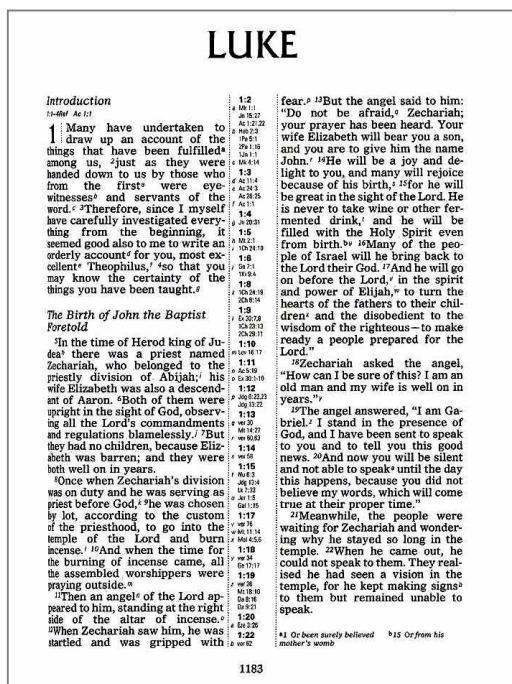
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[16] Black, 1961, 1963

Figure 10. *The New International Version: Popular Cross Reference Edition*, published by Hodder & Stoughton, London, 1992. Designer: Robert Waller, IDU.

good. Religious books tend to be more intensively used than most, and the leather covers are designed to withstand years of wear. The rounded corners prevent the pages becoming folded over as the corners are knocked, and the gold edges hide finger marks. The thin paper enables the book to remain a usable weight.

Figure 10 shows a Bible designed to a traditional brief – the publisher was responding to user requests for a blacker, more legible type than some of the modern layouts offered. In fact, a type intended originally for newspaper printing was chosen, since it was designed to survive under-inking and a narrow column. The two-column format of a traditional Bible allows the designer to fill the page without an excessively long line, and in case of King James Bible (or Authorised Version), allows each verse to constitute a new paragraph without the danger of numerous one-line paragraphs.

Figure 11 is a recent new translation (the Contemporary English Version). The market for this Bible is among new readers from a post-Christian society, who would be puzzled by some of the traditional features. At various times publishers have tried other genre-busting layouts – for example, a bestseller paperback style. But this suggests a reading style that is inappropriate to a document that is not best read from beginning to end like a novel.

Figure 11. *Into the Light* (Contemporary English Version), published by the Bible Society, 1997. Designer: Robert Waller, IDU.

Figure 12. *Into the Light* (Contemporary English Version), published by the Bible Society, 1997. Designer: Robert Waller, IDU.

Because of the sheer length of the Bible, we retained a two-column layout for most pages. Although not illustrated here, we introduced very prominent headings, which correspond to an outline provided at the beginning of each chapter.[17]. And we used to layout to suggest different styles of reading. With the approval of the translator we used a three-column layout with smaller type to create a background-foreground distinction – this is used for certain Old Testament passages such as genealogical lists and the Levitical laws.

As Figure 12 shows, we also used a one-column layout for poetry. This means that all line breaks in the Psalms are meaningful, and none artefactual. Again, the layout signals a different sub-genre and affords a distinct style of reading.

Figure 13. Draft application form designed for a UK utility, 1999. Designer: Richard Bland, IDU.

An application form

My last example is altogether more mundane – application forms for electricity or gas.

Figure 13 shows a form designed to be filled in by hand in a shop or by a salesperson visiting a customer. It is printed on NCR (No Carbon Required) paper which means that the form cannot extend beyond the A4 page. So the layout is highly constrained by artefactual considerations.

Each content element was challenged for relevance with various information owners and can be argued for in terms of: the business process of registering a customer; contractual reasons; compliance with some other requirement (for example the Disability Discrimination Act); compliance with regulator's requirements; credit control; sales and marketing.

The layout uses bold rules and headings to provide the user with a pathway through, and it regroups previously dispersed questions about electricity and gas under logical headings. In forms like this the distinction between language and layout, and the roles of writer and designer, are blurred. The final form is negotiated and crafted using words and typography, in an effort to satisfy the needs of both the business and the customer.

Concluding remarks

The purpose in these notes has been to make a particular kind of contribution to the symposium – firstly, to make connections between the fascinating and welcome work on layout and language that has emerged in recent years, and an earlier generation of work which itself draws on an eclectic range of disciplines – not only linguistics, but cognitive psychology, discourse processes, sociology, bibliography, printing history and others. Secondly, I have introduced some brief case studies that demonstrate that text and layout is created in diverse ways that have an important bearing on any attempts to systematically understand what is going on within a given graphically structured text. Real texts are motivated by purposes and constraints that go beyond the conveying of meaning to the achievement of many other outcomes and transactions.

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