Pleasing the reader by pleasing the eye—Part 1 The role of format and design in readability

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Abstract

Whoever writes wants to be read. Yet, even if we succeed in creating an informative, logically structured, and adequately worded text tailored to our target audience, i.e., text we consider to have an adequate level of readability, our documents may still go unread—or read with antipathy. Next to linguistic factors, therefore, there is a wide range of other aspects determining how well we understand a text, including layout, typography, or cultural adequacy. Documents people can use effectively and with ease have language, graphics, and design combine into a harmonious whole. Good design helps arouse interest and singles a text out from many others that vie for our attention. In short, good design is no luxury. This article is the first in a series of assays on the role of format and design in readability. Rather than attempting to transform writers into graphics designers, the goal is to have writers see the beauty of layout and typography and have them harmoniously blend with the content to be conveyed.

Keywords: Readability, Layout, Typography, Graphics design, Reading process

> I learned about serif and sans serif typefaces, about varying the amount of space between different letter combinations, about what makes great typography great. It was beautiful, historical, artistically subtle in a way that science can't capture, and I found it fascinating'. – Steve Jobs[1]

The more we read and write, the fonder we grow of letters and the spaces and symbols that hold them together. The ways empty page areas, typefaces, punctuation marks, and visuals are arranged on a piece of paper can be as much a part of the story as the content itself. They can make or break a message.

At least that 's what we thought. Seeing, however, that many of today's publications, particularly in the areas of technical, informational, and instructional prose, fall short of what we have come to perceive as essential aspects of our crafts, we started to ask ourselves whether, in these fast-paced times of budget constraints, format and design had become an obsolete luxury reserved for belletristic literature or art. Not long ago, one of the authors (GB) read a novel published by Bloomsbury in 2011, 'Other People's Money' by Justin Cartwright. Not only is the story a brilliant, tongue-in-cheek tragicomedy, even the paperback edition had a pleasant look and feel to it. The last page of the book confirmed that the publisher had taken care to design a book people feel drawn to. It contained a note on the typeface used, explaining that the text was set in Adobe Garamond, who had originally designed it, and when it was first used. But more on typefaces later.

What about format and design in technical documentation? Even if our reports and brochures are impeccably written – what role do layout and typography play in the readability equation? Is it important how our study reports are laid out? What does the design of our marketing brochures say about our company's philosophy and products? Does the visual appearance of a patient informed consent form or package leaflet make a difference to the reader? In a 2007 systematic review of research on the effectiveness of written information available to patients, Raynor *et al.*[2] found that most people failed to value the written medicines information they received. Also, they had concerns not only regarding the use of complex language – an aspect

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professional medical writers tend to be sensitive to –, but also regarding the poor visual presentation of much of the available material – a frequently neglected aspect of documentation. Documents that people can use effectively and efficiently will have language, graphics, and design coalesce into one. As Raynor *et al.*[2] put it, writers must be aware that 'easy to understand text is worthless if people cannot (or cannot be bothered) to find it'.

Assessing the reading ease of written material

It was as early as the 1920s that educators started to devise methods to assess the reading ease of written material.[3] Perhaps the most effective way to assess the suitability of a piece of writing is to evaluate it in a sample of its prospective audience. Due to a lack of time or money, however, this is not always feasible. In the 1950s, therefore, readability formulae gained popularity and came to be widely used in areas such as journalism, health care, and industry.[4] Even today, more than half a century later, well-known names associated with readability testing are those of the forerunners of the métier, such as Rudolf Flesch, Robert Gunning, Edgar Dale, Harry McLaughlin, or Edward Fry. For example, Flesch, who cooperated closely with the Associated Press, and Gunning have had a tremendous influence on journalistic writing,[4] bringing the reading grade level of newspaper front-page stories down from the 16th to the 9th to 12th grade, where they have remained to this day.[3]

What is readability?

There are different ways of defining the concept. George Klare[5] defines readability as 'the ease of understanding or comprehension due to the style of writing'. Style alone, however, is hardly the only factor influencing readability. McLaughlin[6], creator of the Simplified Measure of Gobbledygook (SMOG) formula, provides a more general definition of readability as 'the degree to which a given class of people find certain reading matter compelling and comprehensible', emphasizing the dynamics between a text and a group of readers that share a set of common characteristics, such as reading skill, prior knowledge, or motivation. Dale and Chall, who developed the first version of their readability formula in 1949, define readability more broadly still as the 'sum total (including all the interactions) of all those elements within a given piece of printed material that affect the success a group of readers have with it. The success is the extent to which they understand it, read it at an optimal speed, and find it interesting'.[7]

Elements affecting readability

What, then, are the elements Dale and Chall may have had in mind? Most readability formulae are based on assessing word choice and sentence length, allowing the user to compare the readability level of a given text with a person's reading ability, or terminal educational age. These formulae have been widely shown to be important predictors of the suitability of reading material,[7] and they have a valuable role in guiding and informing the writing process. However, classical readability formulae disregard a wide range of other factors determining how well a reader will understand a text.

Among these are such seemingly mundane aspects as inadequate lighting or noise, bad eyesight, or fatigue. Other influencing factors include the reader's background knowledge, what he wants or needs to know, how much time – or motivation – he has to read and understand something, or what is interesting to a particular person at a given point in time.[6] A high-concept density,[3] common words used in an unfamiliar context, and (a lack of) cohesion or coherence between thoughts and sentences have also been found to affect readability.[8] Overall, therefore, a text with a low grade level may still not be easily understandable for one or more of these reasons. Yet, because the effect of many of these physiological and psychological variables is difficult to quantify, most readability formulae have focused on linguistic predictors of reading ease.

Classical readability formulae have another limitation: they are only applicable to running text,[3] but not to word lists, tables, or figures, which are frequent components of didactic or informative prose. Therefore, alternative tools, such as the Suitability Assessment of Materials (SAM),[3] the PMOSE/IKIRSCH document readability formula,[9] or the User-Friendliness Tool (UFT)[10] have been developed since the 1990s and include previously ignored attributes such as graphics, layout, typography, or cultural appropriateness.

Format and design had been found to influence readability much earlier. In their 1935 landmark study[11] on what makes a book readable, Gray and Leary identified 289 elements contributing to readability based on responses from a large number of individuals with an interest in adult education. They then grouped these elements into four categories, i.e. (1) content, (2) style of expression, (3) format, and (4) features of organization. Not

surprisingly, content and style ranked highest so that, if you provide readers with material that interests them and that is written in a style that matches their needs and tastes, almost 65% of the readability problem has been solved (Fig. 1). This leaves another 35% to be dealt with, i.e. formatting and textual organisation – and these aspects are what we will be focusing on.

Format and design: important aspects of readability

They say that first impressions count. Indeed, it often takes only one glance to decide whether or not we want to read a piece of printed matter. There is, admittedly, a fundamental difference between reading for pleasure and reading for business: Whereas the former is generally a voluntary activity we find inspiring, reading work-related texts can be a chore. In the first case, good design will add yet another dimension to our reading experience – as it did with Justin Cartwright's harmoniously typeset novel. In the second, good design has the potential to turn the chore into enjoyment. To make the most of the finite reading time available to us, clear letters and correct emphasis through effective layout are crucial.[12]

Good design combines form and function. It groups elements that are logically related with each other and emphasizes important textual elements.[12] Good design helps arouse interest, singles a text out from many others that compete with it for our attention, and can make a message memorable.[12] Good design, then, is no luxury.

Why should writers bother about format and design – is this not generally taken care of by experts? This was indeed the case ever since Johannes Gutenberg laid the foundation for the mass production of printed text based on movable letters in the 1440s. For more than 500 years since, a typed or handwritten text was sent to the composing room, where the typesetter – a professional with many years of training – assembled sorts into lines and lines into pages.

A 'seismic shift'[13] in our dealings with layout and type happened in 1984, the year the first Apple Macintosh personal computer hit the shelves – a machine that came with a wide choice of typefaces and marked the beginning of the era of modern desktop publishing, not least because of Steve Jobs' infatuation with anything having to do with letterforms. IBM, Microsoft, and manufacturers of home printers soon followed suit.

Steve Jobs had been enthralled by the power of typography during his stint at Reed College (Portland, Oregon). In his Stanford University commencement speech of 2005,[1] he credited his arts professor, Robert Palladino, for inspiring him to design typography into the Mac. Palladino had taken over the calligraphy programme at Reed from its founder, internationally renowned calligrapher Lloyd J. Reynolds, lover of letters and a disciple of William Morris, who taught generations of students and some of today's finest typographers. 'Letters have fascinated me ever since I found their power and beauty when I was five years old', Reynolds once wrote,[14] and for 35 years, not a single class at Reed College held more students captivated than his.[15]

Two of Reynold's students were Chuck Bigelow and Kris Holmes, co-designers of the Lucinda family of typefaces.[16] Bigelow, who was an associate professor of computer science and art at Stanford University, once said about Reynolds:[15]

> Calligraphy has its beautiful aspects, but that is hardly where Lloyd's classes started or stopped. Lloyd saw calligraphy as the visible means of literate expression and, through that, as a gateway to the history and lore of civilization. Moreover, it is a link between one's own simple, utilitarian practice of handwriting and the accumulation of knowledge and scholarship through the ages. —Chuck Bigelow[15]

Again, more on typefaces later. We are repeatedly going to digress into the history of graphic design because we find it fascinating to see how it all started many centuries ago and how the past helps us appreciate the present. Generations of scribes, printers, and designers have spared no pains to shape and reshape the most basic components and concepts we use as writers: letters and the way they are laid out on a page.

With the freedom of desktop technology now available to most of us has come the challenge to take on many of the compositor's tasks – without, however, drawing on many years of formal training. To save the finer points of typography from getting lost, writers should understand the key concepts of layout and typography. This will not only improve the visual appearance of the templates and documents they design, it will also help them evaluate the work of graphics designers with a critical eye.

This article is the first in a series of assays on the role of format and design in readability in which we are going to look at page layout, typography,

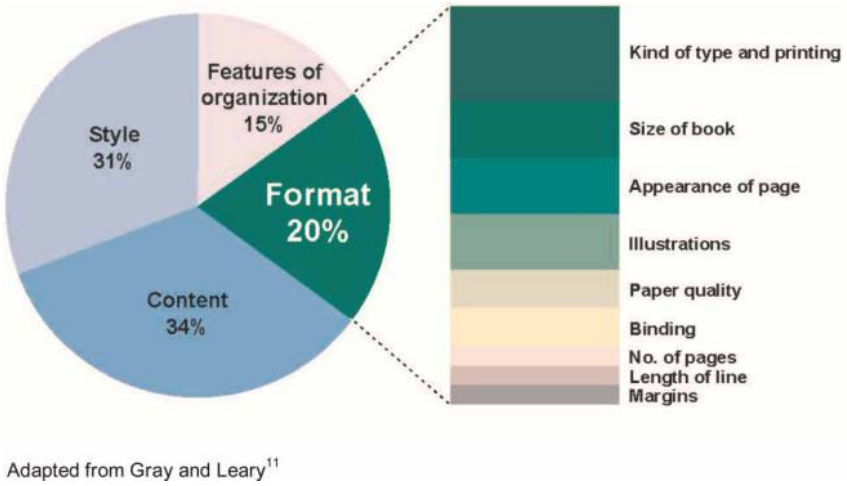


Figure 1: Categories of readability according to Gray and Leary.[11]

and visuals in turn. The intention is not to turn writers into graphics designers. Rather, our goal is to have writers see the beauty of layout and typography and have them harmoniously blend with the content they wish to convey.

The reading process

Underlying any functionally adequate layout is an understanding of how we read. A child, learning to read, thoroughly studies every single letter, then tries to combine two or three letters to form a syllable or word. Over time, words begin to form pictures in our brain and, rather than reading each of the three letters 'd-o-g' individually, the word shape 'dog' will eventually evoke the image of a fur-covered, food-loving animal. With continued training, the number of word shapes stored in our brains increases and we develop the ability to take in the meaning of groups of 3–4 words all at once.

> Letters can be grouped in myriad combinations. Words that are perceived as having meaning are those with which we have become familiar over time. They form a distinct and familiar shape. —Rob Carter[17]

In document design, three aspects of eye movement play an important role, i.e. fixation frequency, fixation pauses, and interfixation saccadic movements. The eye cannot see during interfixation movements, i.e. while in motion. It is only during fixation pauses that we are capable of extracting information from printed text. A normally skilled reader uses 3–4 fixation pauses on an average line of printed matter.

With Western European languages, most interfixation movements occur from left to right. Only some occur from right to left ('regressions'), namely when we re-read text we did not fully understand the first time round. At the end of each line, the eyes make a 'return sweep' that takes them to the beginning of the next line. Also, we generally read from top to bottom (Fig. 2).

At the same time, the eye tends to travel from largest to smallest picture, from most to least colorful, and then to the text. Understanding this and adapting one's layout accordingly will ensure that

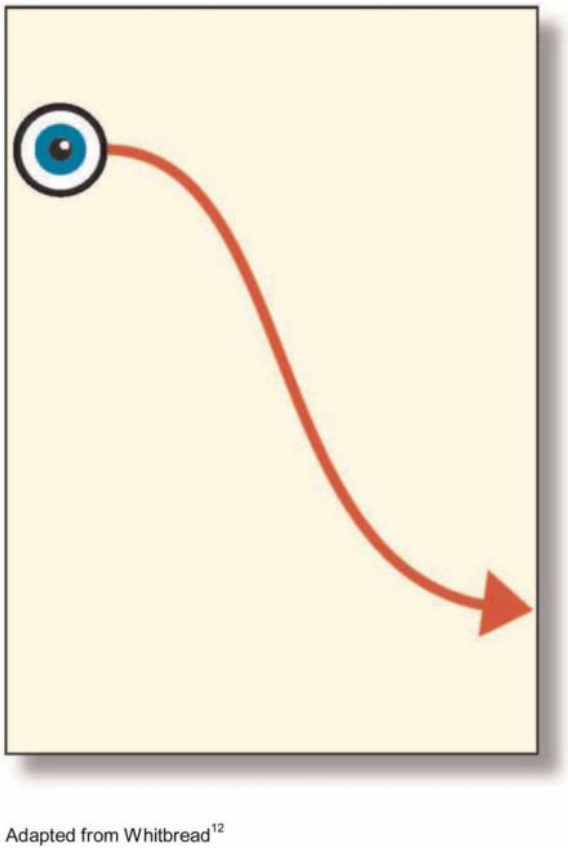
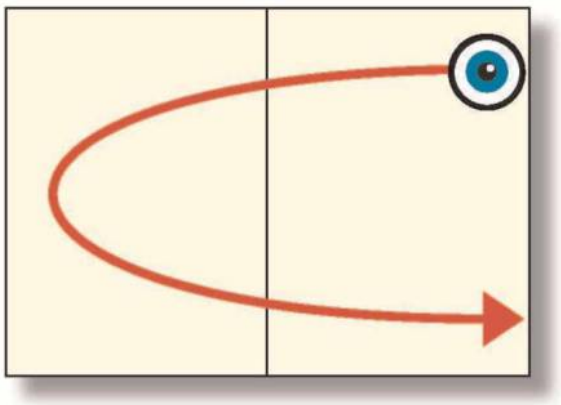
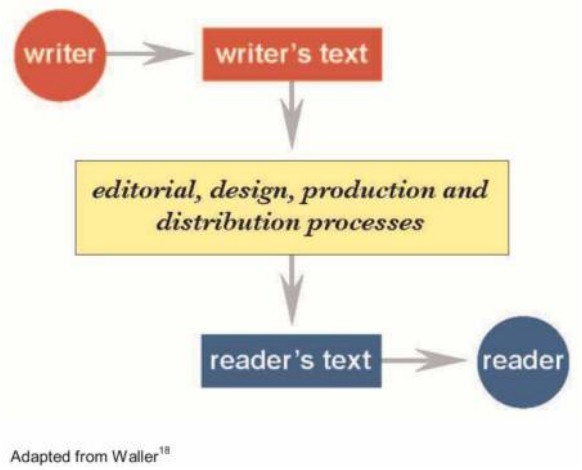


Figure 2: Eye flow: from left to right, from top to bottom.



Adapted from Whitbread[12]

Figure 3: Parabolic eye movement on a two-page spread.



Adapted from Waller[18]

Figure 4: Three-part communication model: writer – text – reader.

text is read rather than hidden. The goal of page design is to limit the number of backward eye movements. Thus, misplacing a particular element on a page may cause the eye to not travel back, and text in these 'fallow' areas is likely to be skipped by the reader, unless his eye is intentionally drawn back to where he left off.[12] For example, text placed above a picture is likely to be lost on the reader, whose eye will first jump to the picture and then continue reading through the bottom of the page.

On double pages, the eye generally moves parabolically from the top right-hand corner to the left and back to the bottom of the right page. This is why right-hand page advertisements in newspapers generally come at a higher cost than those on the left-hand side of a two-page spread.[12] Also, placing a picture on the right-hand page of a two-page layout may mean that the text on the left-hand side does not get read – unless there is something on the left-hand page that drags our eyes back across the spread. In magazine feature stories, the story generally starts on the right-hand page, with the left-hand page carrying a full-page illustration (Fig. 3).[12]

One way of increasing readability, then, is to present documents in such a way as to support the reading process through intuitive layout and typography.

Layout and typography defined

At this point, a brief definition of terms seems in order. Page layout is the part of graphics design that deals with arranging text and visuals on a page. Typography, on the other hand, arranges letters to make language visible. Thus, whereas layout happens on a page, typography happens within paragraphs[18] – even though an exact differentiation between the terms may not always be possible.

British information designer Robert Waller[18] sees layout and typography as one component of a three-part communication model involving the writer, the text (including all those who transform the text from a 'writer's text' into a 'reader's text'), and the reader (Fig. 4).

Thus, layout and typography play a central role in communication. In the late 1990s, Waller redesigned *The Lancet*. The brief was to make the journal, which functions not only as a peer-reviewed medical journal but also contains medical journalism, clearer to its readers. To Waller, the two-column layout was something we generally associate with journal design, whereas journalism is more frequently associated with narrower columns. Therefore, by 'using three columns … for the news sections, we were able to make a clear typographic distinction between the two types of content'.[18]

According to Waller[18], layout and typography add an additional dimension to a 'key restriction of mainstream lingustics—linearity'. Good page layout and typography support active reading, and good designers will focus on 'articulating the topic or supporting the reader'. The more complex the content, the more layout and design features can help make a text accessible – or readable.

Conclusion

Format and design is all about supporting and bringing out the message of a text, giving it its personality, and optimizing its readability. Harmonious page design is no coincidence, and, as the history of printing and typesetting illustrates, it is less a matter of personal taste than we tend to

think. Rather, layout and typography are an additional means of communication that writers have at their disposal to reach their prime goal – arousing the reader's interest and having their message hit home.

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