

Multi-level writing in theory and practice

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Abstract

A multi-level writing style allows the reader more flexibility than traditional forms of exposition. Such a format is generally more easily written, as well. Various formats for different purposes can be used to improve printed communication if the format is tested on a sample of the intended readership; such testing is as important or more important than any particular typographical scheme. This article will cover (1) background and theory, (2) typographical methods, and (3) hierarchical ordering of multi-level writing from my perspective (which lacks acquaintance with what others have done in this regard).

The article is written in a multi-level style, with indentations of material expressing three general levels, as follows:

Main ideas

Elaboration of main points

Parenthetical remarks



||| BACKGROUND AND THEORY

Books and articles, like other mass media, are characterized by a marked degree of one-way communication. For the most part we never meet our readership, nor receive a detailed reply. We write for an imagined audience.

|| Publishing is analogous to the broadcasting of seeds, which may or may not fall on fertile ground; the propagation of ideas is as dependent upon the characteristics of the reader as it is on those of the writer. The greater the “flexibility” of the seed/communication, the greater is the number of niches in which it may take hold, and even grow.

| What really is transmitted in both the seed and the book is information—this is the central idea of Fred Hoyle’s novel *A for Andromeda*.

||| What can be done to make written communication more adaptable? A multi-level format allows the same material to be directed to a number of different audiences, allowing *the reader* to adapt his reading to his own purposes, with greater flexibility than is possible in a standard format.

|| The basic idea is to present the ideas in a typographical format that allows the reader to easily choose alternative paths through the material.^{1,2}

| I must admit that it has been hard for me to acknowledge that most readers do not wish to read, and indeed will never read the entire product of my late night’s work. A few readers may do so if they are charmed by my “inimitable” style, or if they are required to master the material by external circumstance. But others may well skim through the material and turn the page before they reach what I think is the best part! So, given the inevitable, it is probably better for an author to make the reader’s job easier (at least it is an additional way to get some appreciation!); the surprise is that it can make the author’s work easier too!

It can reasonably be asked why the development of a multi-level style has not occurred earlier, given the long history of printing, its profound influence on the spread of knowledge, and the change in Western culture from restricted to universal literacy. In my view there is little 'economic force' for typographical change in publishing technique.

The one-way communication inherent in publishing limits the knowledge of both publishers and authors as to the effectiveness of their products. Thus, change in publishing stems from the economics of production and distribution rather than competition in terms of user efficiency, or even convenience. Said in another way: relatively few books compete for the same economic niche. (An exception to this statement is mass-market grammar and high school texts, which also tend to be more innovative in their approach than texts that sell fewer copies, without direct competition.)

In my experience, publishers are unwilling to consider such relatively easy changes as (1) printing with brown ink on tan paper to relieve eye strain (for a good example of this technique see Kaufman's publication of Hardin's book³), or (2) numbering figures according to the page on which they appear so that the reader is directly referred to that page. This feature was the most popular of all textbook innovations which my students tested. Perhaps, as the typesetter is displaced by computer, such a numbering system will finally be instituted by some philanthropic computer programmer, since the present sequential numbering system is solely for the convenience of the typesetter, certainly not the reader. I see no way that readers can influence the economics of publishing to bring about such desirable format changes.

Though a multi-level format may increase the number of pages in a book and make typesetting more difficult, authors should be aware that these changes will have little, if any, impact upon the retail cost of the book.

The main determinant of the cost of a book is not the length, quality of illustrations, paper, or similar considerations about materials, but the potential size of the market.

For example, placing a cardboard front and back to make a hardcover book adds less than a dollar to production costs; paperback books are inexpensive because their production costs are distributed across a much larger number of volumes sold. Indeed, if you have followed the development of the paperback book since the 1940s, you will realize that as subject matter has become more esoteric, softcover prices have come closer to those of the hardcover versions.

||| Yet, despite immense advances in electronic means of communication, books are still our most efficient means of transmitting large volumes of information.

|| To convince yourself of this, compare books with other communication methods with regard to the following: (1) absolute size, (2) size relative to amount of information, (3) portability, (4) cost, (5) quality of illustrations and ease of reading, (6) ease of content search, (7) adaptability for different reader needs/uses, (8) ease of adding notes or underlining, (9) quality of illustrations, (10) investment required for minimum distribution, (11) adaptability to different author requirements, (12) established modes of production and distribution, (13) the ancillary equipment and power sources needed to “retrieve” the stored information, (14) restriction in use to certain locations or times of day, (15) durability and longevity, and (16) cost of upkeep/repair.

|| While making such comparisons, also consider the lecture as a means of communication. This more primitive (“time-honored”) method survives, for possibly these reasons: 1) the size of the audience is too small for the present economics of lectures/books (including lecturer/author time) to provide a force for change; 2) the efficiency of communication may be of little concern to either the participants or the supporting institution; 3) those who are not visually oriented may not realize that although language is sequential in both spoken and written forms, the written format allows for additional communication of the author’s intentions by means of layout and typography; and 4) the presence of the lecturer may motivate students. Indeed, this final factor may well be highly important for passive learners.

||| No matter what method of communication used, it can be improved if there is a clear feedback from the user/reader/listener to the producer/author/lecturer as to the efficacy of a specific transmittal, whether multi-level or not. (This idea is probably the most important in this paper, and yet the most easily overlooked.)

|| Effective feedback can be arranged in most communication methodology, even in “time-honored” techniques.

|| In lectures feedback can occur when the lecturer observes the audience’s behavior, or receives questions from the audience (Jewett⁴). Tests can be considered a form of feedback to the teacher, though many students prefer other means of return communication. Television receives feedback by statistical sampling of audiences.

|| For feedback with multi-level material that has been produced on 8½" × 11" paper on its side, it is easy to reproduce such material on legal size (8½" × 14") paper so as to give extra space for students to make *line-by-line* comments back to the author. If legal size duplicating equipment is not available, typing a 7" line along

the 11" side of standard paper will provide space for feedback comments. In my experience such feedback will reveal the vast majority of the conceptual and presentation difficulties within two repetitions of the feedback and re-editing process, and the vast majority of improvements have been incorporated by the third cycle (if the reader-ship groups are uniform from repetition to repetition).

The importance of user feedback was emphasized to me when I found that students did not always use my multi-level material as I had expected. I thought that students would quickly learn to judge whether they wished to read all four levels, and that most would opt to ignore the fourth level entirely because it was beyond their needs. I later found that some of the students had used the material in a different way: they read *all* the material (even though they felt the fourth level was not one of their goals), and if they understood the fourth level, they had gained, but if they didn't understand it, they did *not* go back to read it again and master it because the exam was only on the first three levels.

My greatest compliment as a teacher came from a student who had used the text to study for an exam and who, though very compulsive, had gone bowling the night before the exam because he "knew what was expected."

Indeed, I am now convinced that the communication from author/lecturer to student/reader of *what is expected* is the most important message of all, for then students can adapt their activities and study methods to the material at hand, even if it is arranged inefficiently. This insight has led to my adding small paragraph numbers to a text⁵ so that other teachers can easily provide students with a paragraph-by-paragraph indication as to what that individual teacher judges important for a given course.

In my view the main message in a lecture is the indication of what is "important," i.e., what will be on the test; lecturers whose tests are not based upon their class-hour topics are usually disliked.

TYPOGRAPHICAL METHODS

The basic idea of a multi-level format is to clearly and easily distinguish, on a visual basis, different levels in the material. This can be done in a variety of ways.

Traditional techniques of distinguishing material include the use of italics, parentheses, footnotes, and appendices. Italics and parentheses are suitable only for short sections (*italics slow reading speed*), while footnotes are cum-

bersome for the reader who wishes to use them, and appendices are not integrated into the ongoing content. Multi-level writing makes the organization more apparent than is possible by these traditional techniques (which can, however, be added to a multi-level format).

|| The multi-level format that I have used so far^{4,5} is the same as the format of this article: variable spacing from the left-hand margin, reinforced by vertical lines.

| The vertical lines mimic the common practice of students in marking the margins of books for emphasis; the greater the number of lines, the greater the emphasis. The lines are especially needed when a paragraph starts a new page, since at that place there are insufficient visual cues to help in estimating the amount of indentation.

||| Different levels might also be distinguished on the basis of different colors of print, or of “background” color behind the printing (mimicking the use of wide felt-tip markers for emphasis).

| Because I am partly color blind, these methods do not particularly appeal to me, especially since it is not readily obvious what the ranking of one color is versus another. Any typographical method will be easier to use and more easily accepted if it has an underlying ‘intuitive’ basis, as is the case for the vertical line markings.

||| Different size print may be a satisfactory means of distinguishing different levels. This could also be combined with different styles of print.⁶ This method has previously been used for two and rarely three levels, but not for the four levels that are convenient for technical writing.

| Symbols or letters could be used at the left hand side of the written material, with the most important material having an ‘A’ (or ‘1’) at the start of a line, the next level having a ‘B’ (or ‘2’), etc.

||| Another alternative would be to put ‘boxes’ around the written material, though it is not immediately clear whether the presence of a box means that the material is more, or less, important.

| Even *within a given level*, some material may deserve *additional emphasis*, which can be expressed *typographically* by the classic method of *italics*, or by *bold-face*, or by *underlining*. If important parts of rather long sentences are so indicated, shorter complete sentences can be revealed, which may aid in review of the material (as in the preceding sentence).

|| No matter what multi-level method is devised by the author to express his view of the material, it is of utmost importance to test the method on a sample readership.

HIERARCHICAL ORDERING

What hierarchical ordering can be communicated typographically? Of course, this depends upon what the author wishes to communicate about the material by means of the level, but there are a wide variety of possibilities.

This article illustrates one hierarchical ordering, moving left to right from ‘general statements’ to ‘explanation of general statements’ to ‘personal, additional comments (not central to the general topic).’ A similar pattern in a textbook⁵ goes from (1) general statements, to (2) detailed teaching of the concepts stated in level 1, to (3) fine points that will be appreciated by only the most interested 20% of the class (and are not crucial to mastery of subsequent level 1 or level 2 material), to (4) detailed material included for completeness, to impress colleagues, or to serve as reference material for those who wish to study the material for reasons other than the requirements of a class.

In other circumstances, the material might be organized in the opposite manner, with the specific details to the left and generalizations to the right.

For example, a technical repair manual might be organized with the first level containing specific details to be read by every user, while the novice might read past the first level to gain understanding of the general principles of repair that could be learned from the specific example. This might be useful when it is likely that the material will be read out of sequence (depending upon what is to be repaired) rather than from beginning to end.

If the preceding (repair manual) example shows a hierarchical organization of the levels that we can summarize as specific-to-general, then the textbook example cited might be described as general-to-specific. Using similar labelling, we can then indicate other types of hierarchical ordering in a multi-level format: beginning-to-advanced, nonquantitative-to-quantitative, theorem-to-proof, content-to-critique, generalizations-to-examples, instances-to-generalizations, impersonal-to-personal, personal-to-impersonal, etc.

While the multi-level format is readily adapted to hierarchical organization, nonhierarchical separations can also be incorporated. For example, comments to different groups of readers may be typographically indicated without necessarily connoting any hierarchical differences between readers (e.g., some sections addressed to doctors, other parts addressed to lawyers). Or the separations may devolve from the content itself, e.g., a three-column story could have the stream of consciousness of one character in the left column, the simultaneous stream of consciousness of the second character in the right hand column, with the middle column reserved for that which

an outside observer might perceive, such as speech or movements of the two characters. (Spacing from the top of the page down would be used to indicate passage of time, to show which thoughts were simultaneous, and which occurred in response to outside events.)

Does the author gain from the multi-level format? For me it is much easier to write in such a style, because as I write I sense the importance of the material, and can thus indicate it easily. My textbook co-author (Martin Rayner)⁵ has found it easy to adopt, and adapt to, the multi-level style.

It was surprising for me to discover what a large proportion of my previous writing time had been spent trying to indicate verbally to the reader the importance of the material. Such phrases as “an interesting side-issue,” “technically speaking,” “of great importance is the following,” are used much less frequently when the multi-level format communicates these ideas. Furthermore, the sequence of ideas, which can also communicate their relative importance, was no longer as critical, and hence required less planning time.

Separation of the material into levels came about quite naturally and readily when I imagined lecturing to three groups simultaneously (seated from left to right): beginning students, advanced students, and colleagues. As I write, I ‘face’ the group I am ‘speaking’ to, and adjust the amount of indentation accordingly. The beginning students ‘hear’ my comments to my colleagues and should expect not to understand at first, but nevertheless may form the impression that there is a sound basis for the elementary statements. Simultaneously the ‘colleagues’ should be impressed by the good presentation of the elementary material (why else are they at the lecture?), while finding such material adequately supported by the more advanced knowledge addressed specifically to them.

The time-saving feature of multi-level writing has been so great that I routinely write reports and grant applications in two to four levels.

Moreover, the choice of multi-level format and hierarchical order does influence the writing style, most likely for the better, since a commitment to a given format is ‘self-correcting’ for parts that do not meet the format requirements.

For example, the general-to-specific format requires that each paragraph start with the main idea, which will be elaborated upon, or illustrated, within the subsequent lower levels. Such a ‘newspaper’ (most-important-ideas-first) style allows the reader to decide how to best utilize what he is about to read. The absence of a clearly stated generalization (‘goal’) at the start of each first level section is readily apparent when the author has made a commitment to the general-to-specific format.

Egotistically, the writer may like to hide the conclusion he is trying to reach as a 'surprise ending' to show his brilliance (or just to keep from losing the audience?), but such an effect is lost on the reader who skips over the material (and what reader has time to read all material available?).

|| Although it may be initially difficult to state at the outset the point that will be demonstrated in the subsequent material, the writing of the subsequent levels becomes much easier once the author has explicitly stated his intentions.

||| Now that you have read this article, you can test the adequacy of the levels by re-reading the text that comes to the left-hand margin. This material should form a good review of the main concepts in this paper.

The discerning reader may also note that some of the ideas that I find personally interesting and satisfying but not of importance to the main line of presentation have been 'hidden' in the third level, hence only the more 'motivated' readers are thus 'rewarded.' (This just goes to show that the basic personality of an author can emerge despite the constraints of a multi-level style!)

Finally, I leave it to the reader to decide the basis for my use of parentheses, slashes, e.g.'s, single quotation marks, and long nonrestrictive clauses set off by commas all of which are also a form of typographical communication that I have not, and probably will not, analyze.

REFERENCES

1. Jewett, D. L. Query-directed lectures as a means of increasing teaching productivity in science education. *Perspect. Biol. Med.*, 15:460-472, 1972.
2. Jewett, D. L. The role of multi-level textbooks in medical education. *Perspect. Biol. Med.*, 15:450-459, 1972.
3. Hardin, G. *Stalking the Wild Taboo*. Los Altos, California: Wm. Kaufman, Inc., 1973.
4. Jewett, D. L. Self-instruction and tested multi-level textbooks. In Lysaught, J. P. (ed.): *Instructional Technology in Medical Education*. Rochester: University of Rochester, 1973, pp. 161-166.
5. Jewett, D. L., and Rayner, M. D. *Basic Concepts of Neuronal Function: A Multi-level, Self-Teaching Textbook*. Boston: Little, Brown (in Press).
6. Gerstner, K. *Compendium for Literates*. Cambridge: M.I.T. Press, 1974.