

Letterform Research Needs Definition and Direction

A Report from the Editor

With this its tenth issue, the total number of pages published in *The Journal of Typographic Research* passes 1,000. This milestone would seem to provide the opportunity for a report on the *Journal* and on current letterform research.

The most obvious fact about letterform research today is its proliferation. Research has been going on since at least the early nineteenth century; a few scholar-printers and the occasional psychologist have over the past century and a half been interested (almost exclusively) in the history and legibility of printing types. Today, developments in a variety of areas are revealing implications for investigation undreamed of only a generation ago. Research on letterform problems is flourishing in areas of education, psychology, engineering, bibliography, linguistics, archeology, highway safety, electronics, cartography, architecture, graphic design, documentation, mass communications, aesthetics, the visually handicapped, poetry, art history, advertising/journalism, painting & sculpture.

Encouraging as this “twigging phenomenon” may be in the expansion of over-all involvement by science & technology, the humanities, and the arts in letterform investigation, it is not without its problems. In an effort to provide some perspective on these problems, imagine that we were to ask an outside scientist—one who is unaware that our nebulous research area even exists—to examine and to report on the current “state of the art.” We would guess that his first question might be: “Just how is your research effort *organized*?” Our response would have to be, “As a matter of fact, it isn’t!”

There are two obvious indications of our lack of organization: first, letterform research is an academic orphan. Second, letterform research has no professional research body (such as the International Reading Association).

Perhaps the most damaging effect of our not having an established academic home is that the direction and progress of letterform research has remained completely dependent on other disciplines. The choice of research problems has been left to chance interest by individuals whose major concern is oriented elsewhere. The psychologist, the engineer, and the reading specialist when investigating letterform problems are not, in a very real sense, working in letterform research per se. They are working in psychology, in electronics, and in education. Understandably, members of an established research discipline are primarily interested in communicating directly with their peers within that discipline. The result, however, is frustration for any attempt to bring these interests together into some form of over-all organization of letterform research. Because the research tends to be directed internally within separate disciplines, results go unreported and unrecorded as *letterform* research, and their significance for us is lost. The *Journal* has a file of articles from psychological journals that report on experimental work in which letterforms were an integral part of the study but were ignored as a specific topic of research interest. (The responsibility for establishing the essential difference between psychological research on letterforms and letterform research in psychology does not rest with psychology; it rests with us.)

Equally disturbing is the fact that as separate satellite research areas develop—with no over-all organization of letterform research to refer to for a review of pertinent literature—each one, in turn, begins anew. Following prescribed scientific methodology, each area concentrates first on the most obvious, most easily approached problem areas; research multiplies on obsolete and overworked problems. The sophisticated, theoretical problems which would develop naturally out of a co-operative “multi-disciplinary” attack on letterform research are delayed indefinitely. In so diverse a field, the problem becomes one of establishing a research priority, of seeking out the right *questions*:

“A society of change influences its patterns of inquiry by putting a premium on the formulation of new questions and, in general, on the synthetic aspects of knowing. Such a society is by description one that probes at scientific and intellectual frontiers, and a scientific frontier (according to the biologist C. H. Waddington) is where ‘we encounter problems about which we cannot yet ask sensible questions.’ When change

is prevalent, in other words, we are frequently in the position of not knowing just what we need to know. A goodly portion of the society's intellectual effort must then be devoted to formulating new research questions or reformulating old ones in the light of changed circumstances and needs so that inquiry can remain pertinent to the social problems that knowledge can alleviate.

Three consequences follow. First, there is a need to re-examine the knowledge already available for its meaning in the context of the new questions. This is the synthetic aspect of knowing. Second, the need to formulate new questions coupled with the problem-orientation, as distinct from the discipline-orientation, requires that answers be sought from the intersection of several disciplines. This is the impetus for current emphasis on the importance of interdisciplinary or cross-disciplinary inquiry as a supplement to the academic research aimed at expanding knowledge and training scientists. Third, there is a need for further institutionalization of the function of transferring scientific knowledge to social use. . . ."¹

One of the unfortunate results of the parochialism discussed above is the damper it puts on constructive criticism among the research areas. There is a lack of scientific excitement, no cross-fertilization of insights, no clash of ideas. The yeast is missing!

A recent article in *The New York Times* reported that interanimal memory transfer is "a subject of burning dispute and hot pursuit in psychological laboratories everywhere." While we certainly do not have any theoretical breakthroughs to match interanimal memory transfer, can you recall a single theory or problem that caused even the slightest ripple across letterform research? There is a lack of the excitement one would expect to find rampant in an expanding, under-developed research area where pioneering could be an every-month occurrence. Lack of organization is partly responsible, but we suspect there are other more deep-seated reasons.

The *Journal* is unique in at least one respect: a fairly large percentage of its readership appears to be unfamiliar both with the role of a scholarly journal and with the concept of scholarly research as an intellectual battleground. A recent letter to the editor began, "Today arrived the October issue of the *Journal* and offered again a few hours of interesting information. . . ." While we appreciate these kind words, a scholarly journal survives not as a source of interesting information but as an opportunity to *participate* in a process. Participation requires more than curiosity, and it demands an understanding

of the plodding, careful accretion of scientific progress. It is sometime difficult, for example, to convince authors from the design area that what did *not* work may sometimes be as important as what *did*. And our understanding must be broad enough to encompass research that, on first consideration, seems to be totally irrelevant:

“The support of science must not solely depend upon its immediate and visible use for profit. We have had lately a rash of ridicule directed at research projects that seem utterly unrelated to practical life. I recall the mixture of amusement and scorn that, some time around 1920, greeted the news that scientists at Johns Hopkins were working on a proper diet for rats. Yet this was a pioneer study on vitamins, and many of us who today are free from rickets and blessed with sound teeth owe their good fortune to this seemingly frivolous enterprise.”²

Criticism is a vital part of this participation. But from the *Journal's* vantage point we seem to detect confusion between two definitions:

“*Criticism*. [1] the act of criticizing unfavorably; faultfinding; censure. . . . [3] the art of judging or evaluating with knowledge and propriety the soundness of scientific hypothesis and procedures.”³

Criticism [3] is science's most effective cohesive force. Ignored or confused with Criticism [1], participation is stifled, which in turn stifles progress within the discipline. For example, letterform research (particularly strict typographic research) is divided and confused today largely for the lack of criticism which surrounded the late Stanley Morison.

We have implied: first, that there is a natural connection—however tenuous—between the various areas of letterform research; and second, that there may be some mutual benefit to the areas involved in pursuing that connection. We trust, also, that the *Journal's* motives over the past two and one-half years have been obvious: to identify and encourage letterform research but also, indirectly, to see if the ideas are substantial enough and the research extensive enough to support a general theory of letterform research. We believe they are. But granted the importance of these ideas and granted the benefit of organizing, could we convince the constituent parts of the advantages in their considering a new group of peers in letterform research? Would it be possible to bring together interests from such a wide variety of disciplines into a structure that these disciplines cannot or

will not themselves singly support? Consider the contemporary example of linguistics:

“Linguistics as a separate subject is comparatively new. In most universities in the United States a department of linguistics consists mostly of an interdisciplinary committee formed of members of the departments of English, classics, romance languages, German, etc., and members of other departments who happen to take an interest in or have made contributions to the theory of language from an over-all point of view. It is only in recent years that there have been departments of linguistics operating on independent budgets, with full-time members on the staff. Candidates for a Ph.D. in linguistics are often advised to keep an eye on some special related field—literature, history, area studies—so that they can find openings for jobs other than in linguistics as such. All this is, of course, no new story. At the time I was concentrating on physics, people could not understand what one could do with physics except teach. In the 1910’s there was such a profession as a chemist (in the American sense), but not as a physicist. The *Encyclopaedia Britannica*, which was then in its ninth edition, had no article ‘Physics’; it had only ‘Natural Philosophy.’”⁴

Linguistics is in the organizational processes of bringing together a conglomerate academic interest in our *oral* language. As we have been suggesting in the *Journal* for several years, we might very well consider bringing together a conglomerate interest in our *visible* language.

To return to our outside scientist’s examination, his second question might well be, “If your research effort lacks organization, how do the various elements—research, technology, and design—*communicate* with one another?” And our reply would again have to be, “As a matter of fact, they don’t!”

Traditionally, typography has had to live with a vague misunderstanding between those who *work* with letterforms and those who are interested in studying the effects and history of these letterforms. Typographers and other graphic designers have continued to hold research at arm’s length, with an odd mixture of awe and distrust. They do this not without reason. For example, Miles A. Tinker, who has spent a lifetime in legibility research, is concerned exclusively with the psychological phenomena. The relation of his work to other letterform research problems doesn’t interest him, and he has made it quite plain that typographic designers only confuse the issue. As

Fernand Baudin pointed out in his review of Dr. Tinker's latest book, "While the current methods, opinions, and practices of teachers are implicitly and explicitly accepted as sound, as expert and beyond any question; all typographers *en bloc*, whether expert or not, are presented merely as introspective esthetes deserving, on the whole, of contempt [references added]." ⁵

At the same time, our art and design schools, although producing most of our typographic designers, have until quite recently concentrated on the practice of design to the almost total exclusion of letterform history and research. Yet each year instructors and advanced students produce a wealth of visual experimentation on communication problems. These experiments are now mostly meant only as personal or institutional projects, and the results are rarely documented for outside access. Granted, design schools are not research institutions; yet, as with any other universal search for answers to human problems, there is a natural association of all this experimental work that could be encouraged through the development of an experimental design methodology. There are several heartening developments toward this goal, especially in European schools; see, for example, the excellent report on England's Working Party for Typographic Teaching in the last number of the *Journal*. ⁶

Entry of the design schools into the research/experimentation arena is encouraging for another reason: it may portend one way out of an old dilemma in letterform research: the people who could do the research have not been particularly interested in broad letterform problems; the people who are interested in letterform problems could not do the research. This is an over simplification, of course, but it pinpoints an educational alternative we have. Should we attempt to provide (force feed!) the psychologists, engineers, and educators with basic understanding of the creative elements of letterform application? Or, should we concentrate on indoctrinating our design students with electronic technology and scientific methodology? We obviously need both, but it is becoming increasingly clear that a student going into research in *any* field—in design especially but also in liberal arts, social science, or natural science—will be severely handicapped without the ability to program a computer and understand its application for research work.

Today there is increasing uneasiness about the invasion of electronics. Indeed, at this time, we *encourage* your uneasiness!

Item: About five years ago the Standards Institute of the United States gathered together a committee to direct the development of the United States standard optical character recognition typeface. Not one of the 25-man committee had any connection with typography or type design. And although “a USA Standard implies a consensus of those substantially concerned with its scope and provisions,” to our knowledge no notice of its consideration appeared in any typographic/graphic arts publication.⁷

Item: Less than two years ago *Automatic Typographic-quality Typesetting Techniques: A State-of-the-Art Review*, was published; it had developed, according to Director A. V. Astin, out of “a continuing program to collect information and maintain current awareness about research and development activities in the field of information processing and retrieval.”⁸ Even with this commendable program to guide them, the authors demonstrated their total ignorance of the wealth of letterform research that has accumulated over the past century and a half. The following paragraph, for example, was used to conclude the summary section of their monograph:

“[A. C.] McIntosh, for example, makes the following pertinent comments: ‘. . . I wonder whether a very small sum of money by comparison with the hundreds and thousands of pounds which are going into this technology at the moment might be devoted to some fundamental study of readability, typefaces, sizes, hyphenation, justification, and supposed standards of typography. If that study were undertaken on a national basis or an international basis—which, as far as I know, has never been attempted—it might eliminate a lot of the problems into which a tremendous amount of effort is going.’ ”⁹

We must admit to our failure to understand the reluctance of the electronics establishment to consider seriously the contribution 500 years of typographic heritage might make to basic engineering/electronic application of letterforms. One is tempted to write it off, as one wag put it, to being down on that which they are not up on; but there is a basic blindspot here that seems to defy normal rationalization. How did the essentially *practical* solutions of the type designer in adapting two-dimensional letterforms to three-dimensional slivers of

metal—through cold, hard application of “form follows function”—ever get preemptorily lumped under “aesthetics?” Engineer Gutenberg invented, perfected, and exploited both interchangeable parts and mass production techniques 350 years before Eli Whitney’s muskets and 450 years before Henry Ford’s Model T. Following an initial period of reproducing facsimile handwriting in metal, type designers have for 500 years (in anticipation of the best industrial design traditions) been combining the restrictions of the medium with the requirements of the subject matter. With the introduction of electronic phototypesetting, what have the engineers been doing? They have been going through an initial period of reproducing facsimile metal type in cathode ray tubes, slavishly following sixteenth-century Garamond, eighteenth-century Baskerville, and nineteenth-century Bodoni right out of the window.

The engineers have had it all their way, of course, because electronic type design has not been a critical factor in sales. However, there may be an interesting parallel here with the automobile industry. After the initial facsimile horse-and-buggy period and once the jockeying for superior hardware had settled down, it has been more-or-less a toss-up on engineering quality between comparable products from General Motors, Ford, Chrysler, *et al.* Today, what controls Detroit? Design.

If the above seems to indicate that type designers are beating down the engineers’ door to co-operate, nothing could be further from the truth. Type designers have a similar hang-up: mention “computer” and “electronics” to them and they throw up their hands. Any attempt, or suspected attempt, to usurp their design prerogatives is immediately open to suspicion. For example:

The initial report on the computer graphic system *ITSYLF* (or Interactive Synthesizer of Letterforms) was, in our opinion, one of the most important articles the *Journal* has published.¹⁰ *ITSYLF* has the potential of becoming a revolutionary new tool for type design and for typographic research, possibly the most important development since Benton’s punch-cutting machine of 1885. *ITSYLF*, Drs. H. W. Mergler and Paul Vargo explained, was developed primarily to help the type designer “to use the data handling capabilities of modern computers . . . and to manipulate the letterforms based on the designer’s concepts of them.” Briefly, the type designer would be able

to synthesize any existing typeface or any hypothetical¹ new typeface he may consider designing or want to experiment with. Connected with existing CRT systems, *ITSYLF* could show the type designer any proposed new typeface—almost instantaneously—in any size, and composed into paragraphs and pages.

Two responses, one solicited and one unsolicited, indicated in no uncertain terms that the authors' intentions of developing a new tool to *aid* the type designer was completely misinterpreted as a threat to *replace* the type designer. Type designers are understandably sensitive because of repeated attempts since the sixteenth century to establish a system of geometrically "perfect" letterforms.¹¹ Their current distrust of the mechanical-drawing approach by engineers, therefore, should not come as any surprise. Established preconceptions die hard, with type designers as with the engineers' "all type designers are esthetes."

Basic to meaningful communication among a variety of disciplines is a central body of research literature. Any attempt to round up letterform research today requires a journal-by-journal, number-by-number search through scores of periodicals and monographs. There is no systematic indexing under letterform/alphabetic topics either by the journals themselves or in general indexes and reference works. While the number of abstract services is mushrooming throughout the world, not one even superficially covers letterform research. (*The Journal* hopes to inaugurate such an abstract service during 1969 under the direction of Dr. Richard Wiggins of Louisiana State University.) There has been an occasional, selected list of research reports, but none of these have attempted to bring in all of the areas that impinge on letterform research, nor have any made an attempt to locate the research within the larger over-riding research questions or to evaluate critically the research methodology.

We are living on borrowed time; if our research categories are not keyed into the electronic documentation systems being developed today, any movement to bring together letterform research may find itself severely handicapped for the foreseeable future.

The secret of medicine's successful communication network—both horizontally through basic supportive sciences such as biochemistry and vertically from research laboratory through medical schools to every practitioner—is the constant feedback of information.

We all fit in somewhere along the research-technology-design continuum of letterform research; ask yourself: how often have you received or written constructive criticism on a letterform research problem? In a recent *Journal*, John Seybold discussed the lack of co-operation on problem definition by *users* (e.g., typographic designers) of computerized photocomposition:

“What we most require is the sympathetic and imaginative interest of those whose calling it is to establish the yardsticks which measure the product and help to distinguish good from bad. They must learn, as we have had to learn, to move from the particular to the general. Instead of saying that ‘in this case I don’t like this solution because . . .,’ they must be able to re-phrase their criticism so that we can draw from it the following: ‘when these conditions occur, and these alternatives exist, this is the path you should follow.’ Given this degree of assistance, the ultimate result will be not a deterioration of quality, in a mass production era, but greater style, vivacity, variety, and beauty than we have achieved in the practical world of book composition by the application of conventional methods.”¹²

By far the most exciting communication activity between research areas today is at the boundary between the arts and sciences; for example, electronic music and computer art. Basic questions about structure, pattern, form, organization, order, and information are being asked on both sides, and *of* both sides. Is there a better testing ground for experimental collaboration among artists, engineers, and scientists than research on letterforms? Since its earliest beginnings, the alphabet has provided a meeting ground for the interaction between art and science. No educated person can look at letterforms without encountering two conflicting stimuli: the *meaning* of the letters (the underlying “g-ness” of differently-shaped letter g’s) and the *form* of the letters (the presence of genius)—in other words, a convergence of reason and beauty.

We have yet to realize the potential benefit from establishing communication with letterform research of other language systems. A Japanese psychiatrist, for example, has pointed out that children learning to read Oriental characters have only a fraction of the reading problems affecting children who are learning to read roman characters—indicating that prevalent reading problems in Western countries (such as dyslexia) may be due less to the child’s own physical and mental make-up than to problems inherent in the alphabet.¹³

In other words: basic letterform research! And a recent newspaper article reports a Russian proposal for partial reformation of the 33-letter Cyrillic alphabet. It is intended to thin down some of the bulkier letters (e.g., creating three different i's) thus "saving type metal, paper, . . . and space equivalent to two million books in Moscow's 20-million-volume library."¹⁴

There has never been (to our knowledge) a conference designed specifically to bring together the people actually *doing* letterform research, to exchange research findings and to compare notes on techniques and methodology. The value of such a meeting is reason enough to strengthen any development toward a strong professional research organization; indeed, such a meeting may be the initial step.

If our research efforts are to produce the information and understanding we expect of them, every area of letterform interest must be made to realize the present state of near-chaos in research organization and communication. We deceive ourselves and do our profession a grave disservice if our research effort is allowed to continue to drift, subject only to the uncertain whim of technological change and disinterested, outside research and experimentation.

Merald E. Wrolstad, *editor*

1. Emmanuel G. Mesthene, "How Technology Will Shape the Future." *Science*, CLXI (July 12, 1968), 138-39.
2. Paul B. Sears, "Telltale Dust," *The American Scholar*, xxxiii (Spring 1964), 201.
3. *Webster's New International Dictionary of the English Language*, 2nd ed. (Springfield, Mass.: G. & C. Merriam Co., 1961).
4. Yuen Ren Chao, *Language and Symbolic Systems* (Cambridge: Cambridge University Press, 1968), p. 4.
5. Book review: M. A. Tinker, *Bases for Effective Reading*, *Journal of Typographic Research*, I (April 1967), 204-5.
6. "Typographic Education. England: The Working Party on Typographic Teaching," III (January 1969), 91-102.
7. *USA Standard Character Set for Optical Character Recognition*, (New York: USA Standards Institute, 1967), p. 2. It should also be noted that, in contrast to the USA position, the equivalent European committee had the good sense to include Adrian Frutiger as consultant.

8. M. E. Stevens and John L. Little, National Bureau of Standards Monograph 99 (Washington: U.S. Government Printing Office, 1967), p. iii.
9. *Ibid.*, p. 89.
10. H. W. Mergler and Paul Vargo, "One Approach to Computer Assisted Letter Design," *Journal of Typographic Research*, II (October 1968), 299-322.
11. See: Hermann Zapf, "Changes in Letterforms Due to Technical Developments," *Journal of Typographic Research*, II (October 1968), 351-68; and Millard Meiss, "The First Alphabetical Treatises in the Renaissance," *Journal of Typographic Research*, III (January 1969), 3-30.
12. "Aesthetic Values in Computerized Photocomposition," II (October 1968), 350.
13. Kiyoshi Makita, "The Rarity of Reading Disability in Japanese Children," *American Journal of Orthopsychiatry*, xxxviii (July 1968), 599-614. Reports indicate that Dr. Kiyoshi's study caused a flurry of discussion in the British press, but this has not been seen by the writer.
14. "Russian Proposes Alphabet Reform to Eliminate Thick Letters," *The New York Times*, 26 January 1969, p. 3.