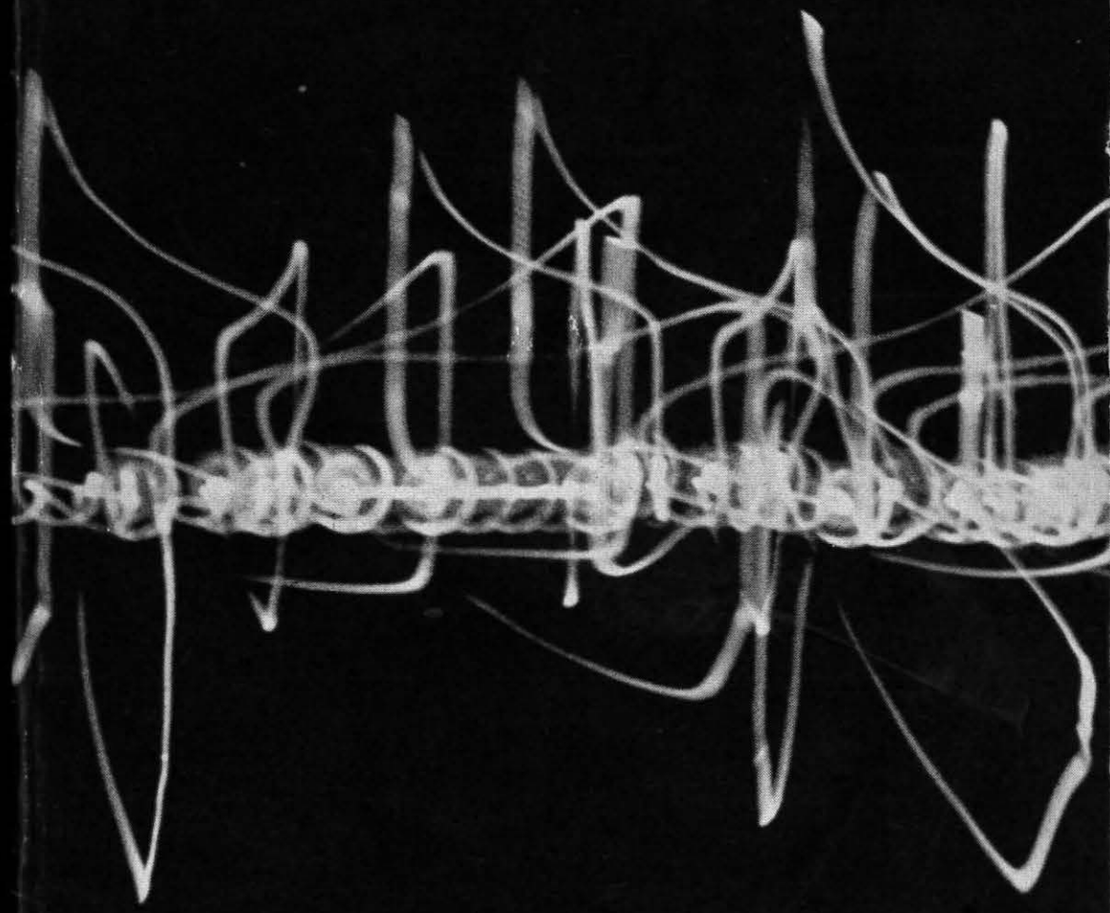
VISIBLE LANGUAGE

The Journal for Research on the Visual Media of Language Expression

Volume VI, Number 2, Spring 1972



VISIBLE LANGUAGE FORMS ON A SURFACE

Conception & Formation →		← *Reception & Interpretation*	
Generation of symbols	*Application & Organization*	*Physical Response*	*Mental Response*
Relation to language generation	Language medium and language structure	Neurophysiological (e.g., vocalism in reading)	Meaning/ form dichotomy
Origin & evolution of the alphabet	Comparative writing systems (e.g., phonetic/ non-phonetic)	Reading/hearing relationships	*Meaning*— language organization and comprehension
Post-typographic electronic generation	Writing/speech relationships; phonetism of the alphabet	Alphabetic efficiency; eye movements; fatigue; search	*Form*— non-verbal communication of letterforms
Alphabetic prototypes	Typographic & electronic letterform display	Legibility & perception	Visible/oral language dichotomy; "primacy of speech"?
Script and type design—hand or machine	Environmental "signing"	Initial visual discrimination training	Visual encoding of verbal materials
Influence of tools	Paleography	Machine reading	Conscious & unconscious
Augmented alphabets (e.g., ita); shorthands; "universal" scripts	Descriptive bibliography		Literacy
Electronic representation of speech	Practice of the arts: calligraphy, concrete poetry, letterforms in plastic media (e.g., Paul Klee)		
Graphology	Comparative sight/sound media (e.g., musical notation)		

"Whenever social historians attempt to suggest the few most significant intellectual achievements of man, nearly always the one mentioned first is 'writing'—or some related reference to man's initial development of a visible language. This journal represents the first concerted effort to organize our investigation of every aspect of this visual medium of language expression."—from an editorial in the Winter 1971 number

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Editor's Report

The lengths to which children will go to postpone the final dousing of the bedroom light are limitless. One little boy who had just learned to read wasn't about to relinquish the new joy without at least a token struggle. "Please, mummy," he said when asked for the third time to put out the light, "just let me finish this word."

We get the feeling sometimes in putting together this journal—article by article—that we are about in the same stage of development in trying to organize visible language research. It's like handsetting type from a California job case, picking out the story letter by letter. You would think with 125 pieces of type in the composing stick (we've published that many articles over five and one-half years) that some sort of message would begin taking shape. But has it?

Perhaps we have left the development too much to chance. This issue of *Visible Language* lends itself particularly well to editorial comment; the authors present interesting ideas that fit together—indeed, seem to belong together—in expanding our concept. If *Visible Language* has a central concern, it is sorting out the relationship among three major divisions of language study: language, per se, and its two media for expression—language in audible form and language in visible form. Critical as it is to all language research, there is still a good deal of fuzzy-minded thinking about this relationship. This journal has no better initial purpose than to help put these basic language elements into proper perspective.

You could say this is also one of Mary Ellen Solt's primary purposes in her discussion and comments on the visual concrete poem. Solt—herself a poet—reminds us that "poetry is first and foremost a form of literature," but also that in the first concrete poetry "form and content were conceived of as an identity;

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and the new poem was made in a constructive way so that its meaning could be fully communicated to the reader only as he perceived the spatial-structural relationships of its particular linguistic materials: words, syllables, letters."

We tend to forget that at their best, the arts are at the leading edge of communication development. And in the study of language we sometimes overlook the crucial role *performance* by artists and other professionals plays in providing both a marketplace for witnessing and a laboratory for understanding the evolving forms of language. The poet—particularly the concrete poet—has much to say to the linguist [for convenience, we will use the term "linguist" to include researchers from any discipline who are interested in the study of language], a lot of it in the linguist's own jargon, as these three passages from Solt demonstrate:

Stéphane Mallarmé's ultimate purpose (Solt quotes Gerald Bruns) "was to 'liberate poetic language' from the 'mediating function' of 'ordinary speech,' which must bridge the gap between 'the world of things and the universe of meaning.' This liberation was to be accomplished through substitution of 'the syntax of music for the syntax of speech.' The syntax of music was 'to be realized typographically... within the spatial field.' "

Solt quotes Augusto De Campos: "Cummings frees the word from its grapheme, and puts its formal, visual, and phonetic elements into focus."

And the concrete poets anticipate our identification of the three language elements: "The Niograndres term *verbivocovisual* introduced the concept of a three-dimensional linguistic area: semantic-audio-visual."

While Solt's major emphasis is on "verbi . . . visual" possibilities in poetry, the "verbivoco . . ." possibilities are still an important element. She points out in the comments accompanying her poems that " 'daughters' plays upon sound contrasts: the hollow sound of 'daughters' and 'poppies' is modified by the introduction of 'i' sounds. . . ." The concrete poets themselves, however, make a distinction between visual poets and sound poets.[1] The interplay between our senses as well as between our senses and comprehension is probably the key to concrete poetry's attraction.

But is this helping to sort things out? We think it is. The

concrete poet is inside language looking out. He has to have the elements of language in perspective—in all their simplicity—and his stock-in-trade is his ability to play on the differentiation at will.

The good designer shares this natural feeling for relationships. His primary job—whether in environmental, industrial, or graphic design—is *organization*. As a designer, Robert David is concerned about the complexities of environmental planning which require some sort of new notation system as a communication tool for designers. In passing, David reminds us that the alphabet is one of our notation systems; his interest in what all notation systems have in common is the reason his article is published here. It can be argued that the single most important fact about man's visible language forms is that they constitute a notation system. Paleographic evidence seems to indicate that the origins of writing and prewriting symbol systems lie in keeping records of one sort or another. Writing has been called man's greatest invention because it makes record-keeping possible—and with it, civilization.

To avoid possible confusion, perhaps we should point out here that we use "writing" and "visible language" more or less interchangeably. However, "visible language" is the more useful term to encompass all the forms the visual representation of verbal language has taken. "Writing" is often too simplistic a term, especially when used by linguists in juxtaposition with "speech." Some of the most important events in man's many adaptations of visual, verbal language have occurred in its non-"writing" forms, e.g., the uniformity of typography which revolutionized the reading process.

A crucial question in the sorting out of our language triad rises at this point: What is writing a notation system for—speech or language? Near the end of his introduction, David discusses the designers' unconscious "thought patterns" being identified and formalized into a "diagrammatic language for design." David is talking here about visual "language," not about verbal language (we should be careful to make this distinction; the concern of this journal, remember, is with visible *verbal* language), but the pertinent point is the concept of a diagrammatic design language as a notation system for unconscious thought. Solt puts it much simpler as the first sentence of her abstract: "The visual poet is concerned with the

relationship of typography to meaning." In other words, David and Solt seem to be answering the question, writing is a notation system for language, per se.

The response of the linguist, on the other hand, might be, "The question makes little sense. Writing, after all, is only speech written down. Writing has to be a notation system for speech." For the time being, let's assume the linguist is right, let's take a look first at how good a notation system writing is for speech. Henry Stern describes Elias Molee's exasperation over the lack of correspondence between written language and spoken language. As a notation system for speech, Molee pointed out that written English is a mess, "a national misfortune"—American chauvinism aside, who can argue with him? And the fact is, it has become progressively worse since Molee's day. Historically, correspondence between spoken and written forms has been generally one of *divergence*, varying of course with specific languages.

Stern documents Molee's dogged attempts to stay the course of natural language development by trying to create an acceptable phonetic alphabet to service his new artificial language. We are not entirely out of sympathy with Molee in his despair over the inflexibility of letterpress printing in reproducing phonetic modifications of the alphabet. Stern had planned to use Molee's special characters in the text of his article, but our printer required an additional $125 for having them made! We settled for an improvised reference system. Nor are we out of sympathy with linguists in their efforts to use print for research on speech and to devise a phonetic notation system for the teaching of reading. Molee was at least a partial realist; he modified his typographic system to fit the current printing medium. Because of the inflexibility of both print and the typewriter, linguists have been forced to add new characters by inverting letters or by adapting punctuation marks and accent marks.

Professional letter designers have an ageless tradition in their minds and in their fingertips for the adaptation of new forms to letters. In his book review, Huib van Krimpen mentions that the typeface Praha Roman "shows an extremely clever solution for one of the impossible Czech accents." Too often this essentially pragmatic exercise is dismissed as the "aesthetics" of letter design. When Gutenberg was devising his facsimile manuscripts, the

practical problems of getting pen forms into metal type far outweighed special aesthetic considerations. The point is, whenever special phonetic characters are needed, the linguist and the letter designer had better begin comparing notes. Perhaps they have; does a reader know?

The question before us, however, is: How good is writing as a notation system for speech? We have mentioned some practical points that indicate how difficult it is to make our present system work; in *Studies in Phonetics and Linguistics* David Abercrombie has carried the question a bit further. "The fact is that one can't really get down a conversation [defined previously as 'genuine spoken language'] in ordinary writing. . . . A phonetic notation of a much more comprehensive kind than we possess at present is needed if we are to write down conversation with any degree of completeness."[2]

Abercrombie acknowledges the use of new electronic equipment making possible a phonetic notation system, and notes that "a lot of material *has* been obtained in this way; and if one studies it carefully and listens to it from the 'outside' and not as one who took part in it, one soon realizes that the whole *structure* of conversation is different from that of prose, spoken or written. It comes as quite a surprise to find how different it is."[3] And in another passage: "But is it true that conversation—ordinary talking—is *really* so different from spoken prose? [T.S.] Eliot speaks of the former's 'fumbling for words, its constant recourse to approximation, its disorder and its unfinished sentences.' But the differences really go much deeper than that; they are not differences in degree, as Eliot seems to imply, but of kind."[4]

In other words, with our present system it is impossible to get genuine spoken language down in writing; the entire structure of the two is different; in fact, we are dealing with two different kinds of language expression. Abercrombie concludes, "Genuine spoken language, or 'conversation' in my sense of the term, has hardly been described at all in any language, whether from the phonetic, phonological, or grammatical point of view. How far it is possible to describe it, and how far it is worth describing, are questions which cannot be answered until more attempts have been made at doing so."[5]

How far *is* it worth trying to describe spoken language in visible form? A phonetic alphabet may be useful to linguists to make research on speech a little easier, but is it useful to man? Yes, as we have indicated before, it is useful in learning to read. Grapheme/phoneme correspondence is a key issue in reading research.

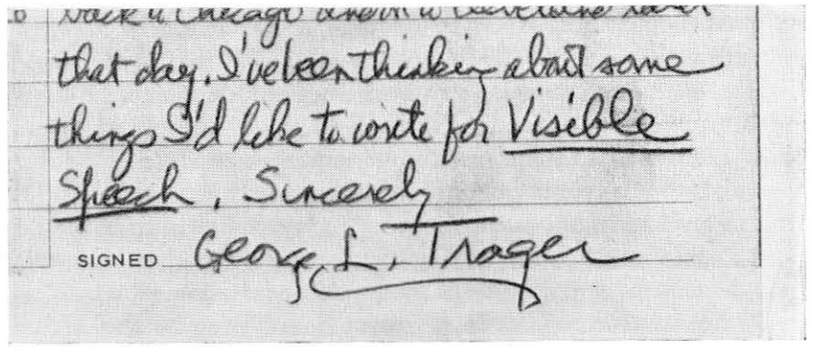
At the end of her study of beginning reading, Myrtle Scott concludes that her results suggest that "grapheme/phoneme correspondence does not have the significant effect which it is thought to have upon the learning of words." It is unfortunate that Scott fails to discuss her findings, because her conclusion has revolutionary implications. What if the grapheme/phoneme correspondence is *not* a significant factor in beginning reading? For one thing, we could do a lot less worrying about describing spoken language in visible form. Or, to return to an earlier discussion, the lack of correspondence adds to the possibility of our suggestion that visible language might be better described, not as a notation system for speech, but for language.

Of course, no single study offers final proof, one way or the other, as we are sure Scott would agree. She has, in fact, already agreed! Although she finds some additional support for her interpretation of the results, the idea is too revolutionary; she ends her article by concentrating on factors that "may have mitigated against an adequate test of the hypotheses." She may be perfectly right in suggesting that her experimental method was suspect. The point that is disturbing to open-minded inquiry into language research, however, is the state of mind which, in a sense, forced Scott not to develop the intriguing possibilities of the unexpected lack of significant results.

We know what forced Scott's rationalization of her results: the primacy of speech syndrome.

Although there is an increasing amount of research calling attention to the unique characteristics of visible language, by far the prevailing theory among linguists is that (1) language and speech are virtually synonymous, and (2) writing is a secondary representation of speech. In his recent book, *Language and Languages*, anthropologist/linguist George L. Trager gives these definitions: "Language is defined as the learned system of arbitrary vocal symbols by means of which human beings . . . communicate in

terms of their culture"; and "A writing system is any conventional system of marks or drawings or analogous artifacts which represents the utterances of a language as such."[6] The general theory is so taken for granted it practically precludes discussion or tighter definition; we offer only Exhibit A, Trager's Freudian slip in a reference to this journal!


that day. I've been thinking about some
things I'd like to write for Visible
Speech. Sincerely
SIGNED George L. Trager

It's time questions were raised about the implications of "the primacy of speech" for language research. We can only suggest a few here.

Primacy, itself, is a fuzzy concept; it's easy to get first and foremost confused, for example. When pressed for evidence, linguists usually point out: (1) childhood acquisition of language develops first through speech; (2) man's initial development of language began with speech; and (3) our study of language is based primarily on investigation of speech. Let's examine these briefly in light of another possible interpretation.

(1) Childhood acquisition of language. There is no question that we *learn* written language by using our ability with spoken language, but is this the way most people—once literate—handle reading and writing? Once we start looking for it, there is mounting evidence that we organize language differently and separately through the two sensory systems. Both systems utilize linear presentation of abstract language symbols, but we process visible language something like ten to twelve times more efficiently than we process audible language. Isn't it possible that a child uses the auditory circuit while learning to read much as he uses training

wheels on his new bicycle? Once he learns the trick, there is little similarity between the learning performance and the mastered performance. Indeed, there appears to be a quantum leap to literacy that suddenly short-circuits the auditory by-pass. When narrowed down to its neurophysiological foundations, linguistic research can only plead that, in racing through a novel, the literate adult first has to vocalize "in some way" all he will comprehend. This is not good enough. In the brain's over-all organization, does it make sense that information received through our primary sensory system —sight—is filtered through a secondary sensory system before comprehension and understanding can take place? Why should the brain, in its constant adaptation for economies, continue to separate out only visible language for such a circuitous route? We won't know for *sure* until neurological research can tell us more than it has about the critical interaction of language and its expression.

(2) Man's initial development of language expression. This important area of language development is fascinating because so little is actually known and so much can be surmised! It would seem highly unlikely that there was not a *parallel* development of visible and audible human communication. We do not know when each of these early notation systems became prototype language systems. Over the past few years, however, there have been some interesting developments that may throw more light on prehistoric notation:

(a) A study of ice-age artifacts and cave drawings has enabled Alexander Marshack in his new book, *The Roots of Civilization*, to validate the fact that extremely complex systems of notation and symbol usage existed in Europe thirty to forty thousand years ago. "Scientists are now beginning to imply a higher intelligence and more complex culture for proto-human and near-human 'Stone Age' men than previous researchers had dared allow."[7]

(b) Anatomy professor Edmund Crelin, Jr., reports that he has found evidence in the upper-throat bone structure of Neanderthal Man (who was roaming Marshack's ice-age Europe) which would indicate "the creature couldn't talk any more than an infant or a chimpanzee." (He does, however, acknowledge that "other early strains of man" had begun developing the physical ability to speak.)[8]

(c) After numerous attempts by scientists to teach apes to speak

(with very limited results), several research teams—e.g., the Gardners in Nevada and the Yerkes Center in Georgia—have succeeded in teaching apes to use human language—through *visual* symbols. The results are controversial, but Washoe (the Gardners' prize pupil) does more than put names to objects; she uses verbs and extends the meaning of words from particular to general applications.

In other words, early man in Europe had complex visual notation systems, but at least one species was incapable of sophisticated speech. And in an interesting parallel, apes ("our nearest relatives"), while incapable of speech, are developing complex visible language notation systems.

Linguists also point out in relation to man's initial development of language that primitive societies, even today, continue to develop sophisticated speech systems but have no visible language system. However, anthropologists have found that primitive societies also lack a system of mathematics beyond simple arithmetic. As far as language is concerned, do they lack the driving necessity to develop a higher form of language representation? We don't seem to use the term "uncivilized" societies anymore; what we could substitute is "non-writing."

(3) Language study is based on investigation of speech. Linguist/phoneticist Abercrombie reports that this is not the case at all. "We are constantly told that the main business of linguistics (and some would say its only business) is the investigation of spoken language; this is a point which has been especially strongly insisted upon during the last 75 or so years. But what in fact linguistics has concerned itself with, up to now, has almost exclusively been—spoken prose [previously defined as 'essentially language organized for *visual* (Abercrombie's italics) presentation']. This is true of phonetics as well as the rest of linguistics. Yet attention has seldom been drawn to this curious fact."[9] You will remember Abercrombie earlier asked how far is speech worth describing?*

*It would be unfair to Abercrombie's general position on language research to leave the reader with only the passages we have quoted from a single essay. Perhaps the following will help put his overall view in better focus: "Speech is primary. Men spoke before they wrote, and, indeed, the majority of the population of the world still possess only the oral form of communication with their fellow creatures. However much independence any written form of language may have won for itself, it is in the end only a secondary production, and must ultimately depend for its validity on the spoken word."[10]

Perhaps the linguists have unconsciously answered this question in concentrating their attention not on the "disorder" of spoken language but on "language organized for visual presentation."

But to answer Abercrombie: the reason attention has seldom been drawn to "this curious fact" is that the linguists' theory of the primacy of speech has hardened into a dominating myth. Earlier we agreed to go along—for the sake of argument—in the assumption that in making this interpretation the linguists were right. But what if the linguists are wrong?

What if a more fruitful interpretation of "primacy" in this case is being preparatory to something higher, as in "primary school"? Isn't it just possible that speech in early childhood, speech by primitive man, and speech in conversation provide the purchase for man's development and utilization of a more distinct and, perhaps in some ways, a more sophisticated visible language system? We don't know yet. But let's leave the door ajar. No, let's do more than that:

Let's recycle pertinent research and theory from the disciplines that impinge on language—setting aside foregone conclusions—and try to sort out the underlying relationship among language, per se, and its two media of visible and audible expression.

Let's acknowledge at least the possibility that writing is not just speech written down, and design some crucial experiments that will concentrate on phoneme/grapheme *differences*.

Let's acknowledge the lack of fit between our written forms and our spoken forms, and examine ways to make our visible verbal expression a more efficient notation system for *language*.

Let's ease the pendulum back, and make the study of visible language as a distinct phenomenon respectable linguistic research again.

Merald E. Wrolstad, Editor

1. See, for example, the periodical *Kroklok*, edited by Dom Silvester Houedard and published by Writers Forum (262 Randolph Avenue, London W9).
2. London: Oxford University Press, 1965, pp. 6–7.
3. *Ibid.*, p. 5. 4. *Ibid.*, p. 4. 5. *Ibid.*, p. 9.
6. San Francisco, *et al.*: Chandler Publishing, 1972, pp. 7 and 180.
7. New York: McGraw-Hill Book Company, 1972.
8. "Neanderthal Man Gets Downgrading," *The New York Times*, April 7, 1972.
9. Abercrombie, p. 4. 10. *Ibid.*, p. 98.

Typography and the Visual Concrete Poem

Mary Ellen Solt

The visual concrete poet is concerned with the relationship of typography to meaning. Constructive concrete poetry uses the lower-case, sans-serif letter almost exclusively. Increasingly poets are finding this practice too restrictive and are following the example of Mallarmé, who used typography expressively. The early manifestoes of concrete poetry emphasized Mallarmé's influence in the direction of spatial syntax and ideogrammic construction. It needs to be recognized that visual concrete poetry relates to *all* the stages of ideogrammic development and that the kind of ideogram the poet is presenting will influence his typographical choices. If concrete poetry is to remain a viable new genre, its visual potential must be liberated rather than restricted.

It is not a matter of indifference how any poem looks on the page. When we see a traditional poem printed in neat, metrically-regulated stanzas or a free-verse poem of many words and a variety of line lengths, certain expectations relating to the nature of what we will be experiencing as formal expression are aroused in us before we have read a word. In other words, we grasp part of the abstract formal content of any poem as we perceive the image made by the words printed on the page. If the traditional poem happens to have been printed on fine paper and set in beautiful type by a master typographer who was able to realize the full visual potential of the text, we will perceive it as an image of higher aesthetic quality than if it had been given an ordinary printing; but this dimension of typographical beauty will be less related to content than in the visual concrete poem in which the aesthetic qualities of letter forms are consciously employed by the poet to intensify the meanings of words.

A new visual poetry began to appear in the early 1950s in the "constellations" of Eugen Gomringer of Switzerland and in the *verbivocovisual* "ideograms" of the Noigandres Group of Brazil (Augusto De Campos, Haroldo De Campos, and Décio Pignatari). In

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with the lyric purity of his voice.[9] Gomringer's typographical stance should be understood also as an act of integrity; for he sees as a central problem that when concrete poets try to be graphic artists and graphic artists try to be poets, the results are frequently inferior poetry, inferior design, or both.[10]

The Pilot Plan of the Noigandres Group also emphasizes the spatial-ideographic aspects of the debt to Mallarmé; however his use of "typographical devices" is mentioned along with the "physiognomical typography" of e. e. cummings as important in the evolution of concrete poetry. These points represent distillations of views of the Noigandres Group expressed by Augusto De Campos in an earlier essay "Points-Periphery-Concrete Poetry" (1956). In that essay De Campos stresses the importance of *Un Coup de dés*: "that 'great typographic and cosmogonic poem,' worth more by itself than all the vanguardist shoutings of some years later." He goes on to say: "the first corollary of the Mallarméan process is the necessity for a functional typography, reflecting with true efficiency the metamorphoses, or the ebb and flow of thought . . . the use of different typefaces." De Campos mentions also Marinetti's declaration against the "so-called typographic harmony of the page." And he notes that "without falling into *lettrisme*, or the forming of sonorous groups of letters without meaning, Cummings frees the word from its grapheme, and puts its formal, visual, and phonetic elements into focus."[11]

What needs to be emphasized, as concrete poetry becomes increasingly visual and typographical, is that *Un Coup de dés* contains the leaven for a revolution in poetry that makes it possible for the concrete poem to ally itself legitimately with either of the mainstreams of contemporary art: constructivist *or* expressionist. The early critical-typographical stance which questions the "concreteness" of the expressive poem is in need of revision. Mike Weaver, for example, in his important article "Concrete Poetry" (1966) identifies "cool" with concrete and "warm" with expressive in "psychological terms." This leads him into such inconsistencies as admitting that Max Bill "concedes that concrete art may find expression in various ways" and that "constructive art is just one of them" and at the same time questioning the concreteness of expressive visual poetry. Seiichi Niikuni's use of characters expressively in space leads him to the conclusion

that "the Japanese medium seems, on the whole, more suited to expression rather than concretion." He seems here to forget that the members of the Noigandres Group based their ideogrammic method on the Chinese written character as its influence was felt in the work of Ezra Pound. To insist that the term "concrete" is ultimately legitimate only in relation to early constructive models, is to render it meaningless in relation to subsequent developments and to retard the acceptance of concrete poetry as a new literary genre which came into being as an important twentieth-century manifestation of a long tradition of visual forms which have appeared from time to time throughout the history of literature. When Weaver objects that "the desire for a comprehensive view of concrete antecedents has regrettably blurred the fact that typographic exactitude—machine precision—is the Western medium for printed poetry and not calligraphy,"[12] he overlooks the fact that the Chinese written character, upon which the Noigandres method of composition is ultimately based, is calligraphic in origin and that the calligraphic impulse underlies all spatial-ideographic manipulations of words. It is especially present where expressive uses of typography are concerned.

Recent studies of *Un Coup de dés* by David W. Seaman and Gerald L. Bruns have brought to our attention Mallarmé's concern with typography as a "rite."[13] Both give us insights into the relationship between typography, structure, and meaning which do much to clarify the problem of typography in the concrete poem. Bruns states that Mallarmé's ultimate purpose was to "liberate poetic language" from the "mediating function" of "ordinary speech," which must bridge the gap between "the world of things and the universe of meaning." This liberation was to be accomplished through substitution of "the syntax of music for the syntax of speech." The syntax of music was "to be realized typographically . . . within the spatial field." Bruns goes on to say that the organization of the poem presents a "concurrence of themes that are distinguished chiefly by different points of type." Typography—"the technology of the written and finally printed word"—becomes "a principle of composition."[14] Seaman's sample page based on the NRF edition of *Un Coup de dés* contains seven type styles and point sizes. He concludes that Mallarmé used different type sizes and faces expressionistically as well as structurally to "underscore different moods in the text."[15]

Both Seaman and Bruns present evidence which indicates that Mallarmé was to some extent preoccupied with letters as hieroglyphic signs: "In *Les Mots anglais*," according to Seaman, "Mallarmé lists as one of his aims a demonstration of 'le rapport qui existe entre le sens des mots . . . et leur configuration extérieure'." Certain letters are seen by Mallarmé as "initials" for the words in which they are used. The second letter of the alphabet, for example, appears to him to be "the initial of words for production, birth, and fecundity (among others)" such as: "build," "board," "bed," "breast," etc.[16] Bruns' conclusion is, though, that while Mallarmé is interested in the hieroglyphic properties of letters, he "seems finally less concerned with the content of these hieroglyphs than with their function."[17]

We now have a large corpus of visual poetry which is generally referred to as "concrete." The legitimacy of that label can be defended if we are willing to accept *Un Coup de dés* as the crucial poem in the evolution of concrete poetry in terms of its full typographic dimension: structural *and* expressive. Mallarmé teaches us that type style can be organic with form and content, which in the fully-achieved concrete poem are "isomorphic": form = content/content = form.[18] In the constructive concrete poem, which invites the reader to participate in its spatial-ideographic relationships, the neutral, unobtrusive typeface plays a functional role: it *facilitates expression.* This does not minimize the importance of its pleasing aesthetic quality nor the over-all sign quality of the poem. In the expressive concrete poem, type style *is expression.* The expressive concrete poet's use of the lines, curves, and sometimes colors of letterforms would seem to parallel Kandinsky's expressive use of color, line, and shape. Kandinsky has for so long been labelled an "abstract" painter that it is generally forgotten that he referred to his compositions which "had to wait for the dictates of the 'mysterious voice'" as "concrete," the "key" to whose "value" lay in "the force of expression."[19] And it should be mentioned that the same calligraphic impulse that underlies the expressive use of typography is also evident in expressionist painting.

It is the representational poem that makes it most difficult to use the term "concrete" in its orthodox, constructive definition. Weaver quotes Vincent Huidobro to the effect that "man has never been nearer Nature than now when he no longer seeks to imitate her

appearances, but to do as she does by imitating her profoundly constructive laws."[20] The fact that so many words refer specifically to objects makes for particular problems where poetry is concerned. Also man's calligraphic impulse originates with the desire to represent in a form of writing what man sees. Visual concrete poetry can be viewed as an advanced, highly-sophisticated stage of writing, just as typography can be viewed as an advanced form of writing with machines. Critics have been reluctant to include calligraphic poems in the concrete canon. In his "Introduction" to the purest of all anthologies of concrete poetry, Stephen Bann objects that "Concrete Poetry is too often confused with the 'Calligrammes' of Apollinaire, and their modern equivalents, in which lines of text are ingeniously manipulated in order to imitate natural appearances."[21] The Noigandres Pilot Plan, however, through its recognition that *there are degrees of concreteness*, makes it possible to see Apollinaire's *Calligrammes* and similar works as a primitive form of concrete poetry. The Pilot Plan speaks of a "first moment of concrete poetry pragmatics" when "isomorphism . . . the conflict form-subject looking for identification . . . tends to physiognomy, that is a movement imitating natural appearance."[22] Elsewhere in the Pilot Plan Apollinaire is credited with having realized that it is now necessary that we learn to think ideographically rather than analytically and discursively: "Il faut que notre intelligence s' habitue à comprendre synthético-idéographiquement au lieu de analytico-discursivement."[23] Noigandres criticism of Apollinaire centers upon his failure to develop the "poetic ideogram" beyond the stage of "mere figurative representation of theme" with the result that "the structure is obviously imposed on the poem."[24] Apollinaire himself used the term "idéogramme" to define the form of his *Calligrammes.*[25]

Sergei Eisenstein's discussion of "The Cinematic Principle and the Ideogram" is most clarifying when related to concrete poetry. Tracing the development of hieroglyphic writing from the early "naturalistic image of an object" to the later combinatory or "copulative" stage in which hieroglyphs (which correspond to objects) are fused into ideograms (which correspond to concepts),[26] Eisenstein provides a basis for our seeing the various kinds of visual concrete poetry as related to a process of concretion that begins with attempts to depict reality by means of the calligraphic or typographic word

image and ends with complex structural combinations of words into ideograms.

When the concrete poem is thought of relative to different stages of ideogrammic development, much of the difficulty experienced in admitting expressive and representational poems to the concrete genre disappears. The fact that Seaman uses the term "concrete" in his historical survey of visual and other non-conventional forms from the third century B.C. to the present without apparent difficulty is significant. For we can see by this that poets, typographers, and critics involved in the international concrete poetry movement have tended to overstress the relationship to constructive art, forgetting that poetry is first and foremost a form of literature.

The possibility for the appearance of visual poetry on the literary scene is always present as witnessed by many examples from past centuries. The fact that the visual concrete poem made its appearance following World War II simultaneously in so many languages and cultures cannot be unrelated to the needs of contemporary man where language and communication are concerned. When the constructive and expressive visual poem are seen as two sides of the same coin, a satisfactory definition derived from the Noigandres Pilot Plan can be formulated: CONCRETE POETRY means VERBIVOCOVISUAL POSSIBILITIES.[27] And these possibilities will be realized to an important degree by the poet's typographical choices.

1. Mary Ellen Solt, ed., *Concrete Poetry: A World View* (Bloomington, Ind.: Indiana University Press, 1968), "A World Look at Concrete Poetry," pp. 8–16, 12; Eugen Gomringer, "From Line to Constellation," tr. Mike Weaver, p. 67; Augusto De Campos, Décio Pignatari, Haroldo De Campos, "Pilot Plan for Concrete Poetry," tr. by the authors, pp. 71–72. Hereafter referred to as *Solt*.
2. See "4 variationen zmu thema '4 = vier'"; MONUMENTS DORÉS (3); "roads 68" in Eugen Gomringer, *Worte sind Schatten, Die Konstellationen* 1951–1968 (Reinbek bei Hamburg: Rowalt, 1969), pp. 45–50, 98–100, 129–130. Hereafter referred to as *Worte*.
3. Eugen Gomringer, "vom vers zur konstellationen," *Ibid.*, p. 277. Quoted phrases are from an unpublished tranlation by Mark Cory. (Long version of "From Line to Constellation.")
4. See Augusto De Campos "eis os amantes," LUXO, "Ôlho por Ôlho"; Haroldo De Campos, "ALEA I, Semantic Variations"; Décio Pignatari, LIFE, Semiotic Poem; Luiz Ãngelo Pinto, Semiotic Poem; Ronaldo Azeredo, VELOCIDADE in *Solt*, inside cover poem and pp. 96, 98; 105–106; 109, 110, 111; 117.

5. Hansjörg Mayer, statement in *Between Poetry and Painting*, ed. Jasia Reichardt (London: Institute of Contemporary Arts, 1966), p. 67 (exhibition catalogue).
6. "Pilot Plan," *Solt*, p. 71.
7. Eugen Gomringer, "The First Years of Concrete," tr. Stephen Bann, *Form*, 4 (1967), 18; "silencio," *Solt*, p. 91; "From Line to Constellation," *Solt*, p. 67.
8. Lazlo Moholy-Nagy, "Modern Typography. Aims, Practice, Criticism"; "Bauhaus and Typography" in Hans M. Wingler, *The Bauhaus*, tr. Wolfgang Jabs and Basil Gilbert, ed. Joseph Stein (Cambridge, Mass. and London: MIT Press, 1969), pp. 80–81; 114–115.
9. Eugen Gomringer, *Die Konstellationenen 1953–1962* (Frauenfeld, Switzerland: Eugen Gomringer Press, [1962]).
10. Eugen Gomringer, "Poesie als Mittel der Umweltgestaltung" ["Poetry as a Medium for the Structuring of a Social Environment"], Lecture delivered Youth Culture Week, Innsbruck, April 30, 1969. Published: Itzehoe, Hansen & Hansen, 1969. Unpublished translation by Mark Cory from carbon sent to author May 5, 1969.
11. "Pilot Plan," *Solt*, pp. 71–72; Augusto De Campos, "Points-Periphery=Concrete Poetry" from "Theory of Concrete Poetry: Introduction," tr. Jon M. Tolman from Augusto De Campos, Haroldo De Campos, Décio Pignatari, *Teoria de Poesia Concreta: Textos Críticos E Manifestos 1950–1960* (São Paulo: Edições Invenção, 1965) in *Studies in the Twentieth Century*, VII (1971), 39–40, 43, 47. Hereafter referred to as *Studies*.
12. Mike Weaver, "Concrete Poetry," *The Journal of Typographic Research*, I, 3 (1967), 302–303, 306. Reprinted from *The Lugano Review*, I, 5–6 (1966). Hereafter referred to as *Weaver*.
13. Gerald L. Bruns, "Mallarmé: The Transcendence of Language and the Aesthetics of the Book," *The Journal of Typographic Research*, III, 3 (1969), 228. Hereafter referred to as *Bruns*.
14. *Ibid.*, 219, 233, 291.
15. David William Seaman, *French Concrete Poetry: The Development of a Poetic Form, From Its Origins to the Present Day*, Stanford University, Ph.D., 1970 (Ann Arbor: University Microfilms), 208, 209. Hereafter referred to as *Seaman*. See also Seaman's "The Development of Visual Poetry in France," *Visible Language*, VI (Winter 1972), 19–44.
16. *Ibid.*, p. 244.
17. *Bruns*, p. 228.
18. "Pilot Plan," *Solt*, p. 72.
19. Wassily Kandinsky, "The Value of a Concrete Work," *XX^e Siècle*, II, 1 (1939), unpaged.
20. Weaver, p. 302. Quote from: Vincent Huidobro, "La Création Pure," *L.Esprit Nouveau*, VII (1920), 773.
21. Stephen Bann, ed., "Introduction," *Concrete Poetry, An International Anthology* (London: London Magazine Editions, 1967), p. 11.
22. "Pilot Plan," *Solt*, p. 72.
23. *Ibid.*, p. 71.
24. Augusto De Campos, *Studies*, p. 45.
25. *Seaman*, p. 291.
26. Sergei, Eisenstein, *Film Form, Essays in Film Theory*, ed. and tr. Jay Leyda (New York: Harcourt Brace and World, 1949), pp. 28–30.
27. "Pilot Plan," *Solt*, p. 72.

EDITOR'S NOTE: The poet's suggestions for typographic treatment normally do not accompany the printed poems, but are included here as an addendum to the preceding article.

leaf Mary Ellen Solt

"leaf" requires a graceful serif face so that the hieroglyphic "f" in subtly bolder type can be seen to fall through the poem. An italic face would overdo it, I feel. The poem should be placed upper-right on the page to suggest the poems written on Japanese scrolls. [Typeface: Garamond]

s Mary Ellen Solt

The words constellate around the letter "s" which serves as a kind of hieroglyphic rhyme. Perhaps a light gothic face with its sinuous "s" would be the best typographical solution. The "s" should not stand out too much from the rest of the text. An italic face would be too obviously expressive. [Typeface: Grotesque 215]

daughters Mary Ellen Solt

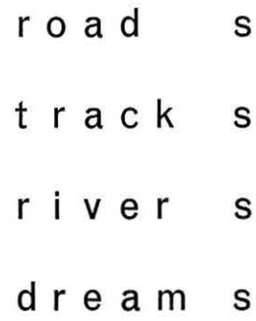
"daughters" plays upon sound contrasts: the hollow sound of "daughters" and "poppies" is modified by the introduction of "i" sounds: "night" "in." The tight visual pattern of the first two word groups is allowed to relax after "night," which has a softening effect on "daughters" and "poppies." The lyrical italic "night" should contrast typographically with the rest of the words. A sans-serif or simple serif face with round "o's" would best suit the sound textures. [Typeface: Bembo]

ZIGZAG Mary Ellen Solt, printed by Algar Dole

The original ZIGZAG was printed by the author on Japanese rice paper using wood type from the collection of the Fine Arts Department, Indiana University. The form of the poem is "orthodox" concrete, but the use of wood-type capitals departs from the customary machine printing and lower-case letter. I am willing to say that the poem had to be wrtiten in order to provide an excuse to use this "Z"—an initial for the word, as Mallarmé might say.

The original printing did not achieve the full optical effect I wanted. The letters were placed somewhat at an angle on the block making it extremely difficult to print a straight line (even with a ruler to push against). I had to start over several times. Also it was not possible to make the space between the letters precise enough. And I needed more space than the width of the rice paper to get the fullness of design needed. Another printing solution had to be found.

The ZIGZAG presented here was pasted up from photographed letters and printed by photo silkscreen process by Algar Dole. I would like to see the poem made into a rug.



daughters and
poppies and

poppies and
daughters and

night

in daughters and
poppies and

l e a **f**

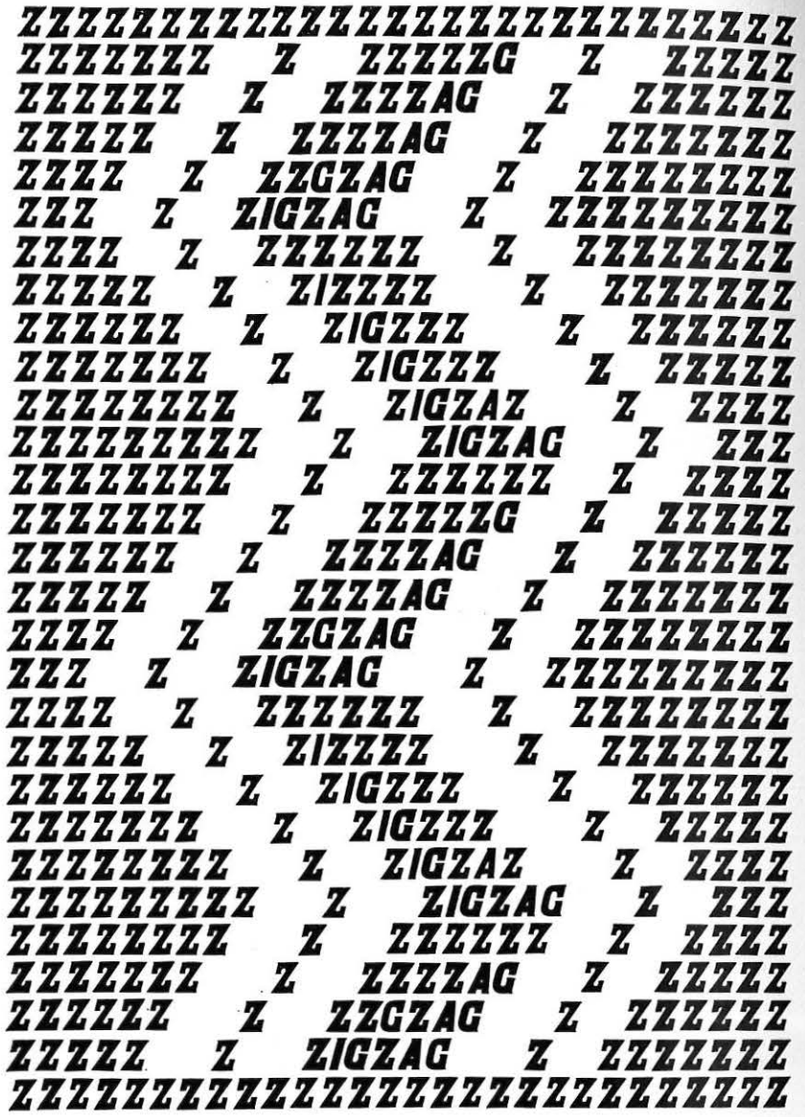
f a l l

f a l l

l e a **f**

f a l l

i n g



Proposal for a Diagrammatic Language for Design

Robert E. David

Environmental design as a process is a communication activity wherein the designer continuously formulates, records, and presents developing ideas using his vernacular, sketches, working drawings, and models. The success of the design solution depends to a certain extent on the sophistication of the communication tools used; there is a significant lack of sophistication in the tools used in the transition of ideas between the initial verbal phases and the final visual phases. This paper proposes a notational language of diagrammatic elements to provide the designer with a communication tool that permits him to visualize basic design ideas at a high level of abstraction. The primitive elements of this language represent a set of ideas that, in various combinations, recurrently make up the basic entities of various problems in environmental design.

The general activity of applied methodology in the environmental design professions has been traditionally termed simply "the design process." It consists of two major phases: the analytic phase and the synthetic phase. The analytic phase begins with a definition of the problem and expands into a search of pertinent literature and existing solutions to similar problems. The intent of this research effort is to produce what the architectural profession calls the "program," a delineation of the objectives or requirements of the final solution. The medium of expression in the analytic phase is, for the most part, the designer's vernacular and thus is essentially *verbal*. The synthetic phase of the design process hopefully will produce a working drawing and/or scale-model description of an optimal solution to the design problem. These working drawings are commonly preceded by several stages of "preliminary" drawings of varying degrees of completion which are, in turn, preceded by many stages of "sketches." The medium of expression in the synthetic phase is, for the most part, scale drawings of varying degrees of crudeness and thus is essentially *visual*.

Visible Language, VI (Spring 1972), 123–137.

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This brings us to that stage of the design process which can be considered the middle zone of the process, where the verbal information of the analytic phase is evolved into the visual information of the synthetic phase. This transformation from verbal to visual information is characterized by series after series of sketchy expressions best described as "doodles." If we consider design as a communication activity, these doodles—their verbal predecessors and their visual successors—are tools of communication which the designer uses to continuously record developing ideas. In the case of the single designer working on a particular design problem, these records are maintained so that ideas may be communicated accurately back to the designer who originally recorded them. In the case of a team of designers working on a common problem, the records serve as conversational aids (visual and verbal) among the designers involved.

Conceivably, the sophistication of the design solution depends on the sophistication of the communication tools used. The tools in current use in the initial verbal and the final visual stages of the design process are reasonably well developed, i.e., the relevant vernacular and the working-drawing systems. However, the efficient handling of ideas generated as doodles is often difficult for a single designer because of his lack of recall, and proves to be impossible for a team of designers since each member of the team will have a different doodle "style." Actually, collaboration at this stage of the design process is most likely not even considered. It follows, then, that there exists a need for a common language or notation system which would allow design ideas to be expressed and recorded in a consistent way. My interest in a diagrammatic language for design stems from involvement with decomposition computer programs for the analysis of design-problem structure and the use of constructive diagrams as part of this design methodology.[1] It is the contention of my thesis that there exists a set of diagrammatic elements which designers subconsciously use as part of their thought patterns which can be identified and formalized into a grammatical structure as a diagrammatic language for design. Research to date has been concerned with the following five stages:

1. Design methods and the design process in general.
2. Diagram systems in current use in other disciplines.
3. Artificial languages and their compilers.

4. Identification of the elements of the design language and the subsequent grammatical structure.
5. Delineation of possible visual forms of the notation elements.

The next stage of the project will be:

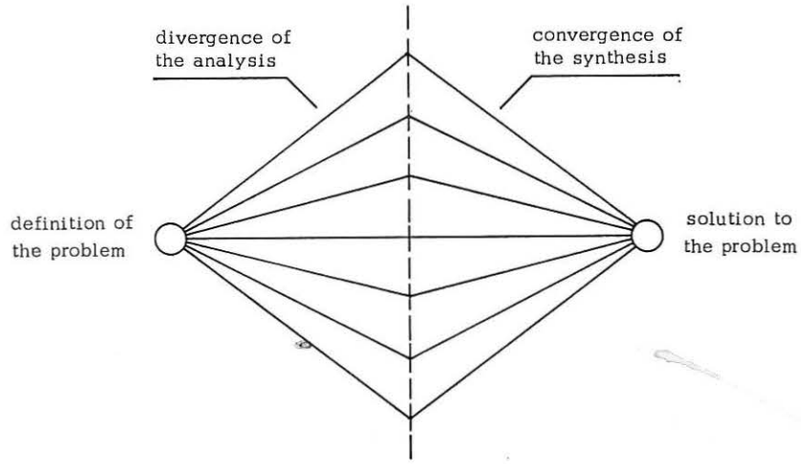
6. Experiments in the use of the design language.

Full development of the language will be an evolutionary process resulting from its use. This paper, therefore, constitutes a preliminary report on a continuing project and is presented at this time to draw comments and criticism from designers and educators.

The Design Process

It may be helpful at this point to look at some conceptual models of the design process in order to see where this diagrammatic language could be used. Figure 1 shows a very simplistic and familiar conception of the design process. The starting point is the definition of the problem; the endpoint, its solution. With respect to the discussion above, the area of divergence is essentially verbal and the area of convergence is essentially visual. The area of overlap is the realm of the diagrams which supports the transition from verbal to visual.

Figure 1. Fan model of the design process.



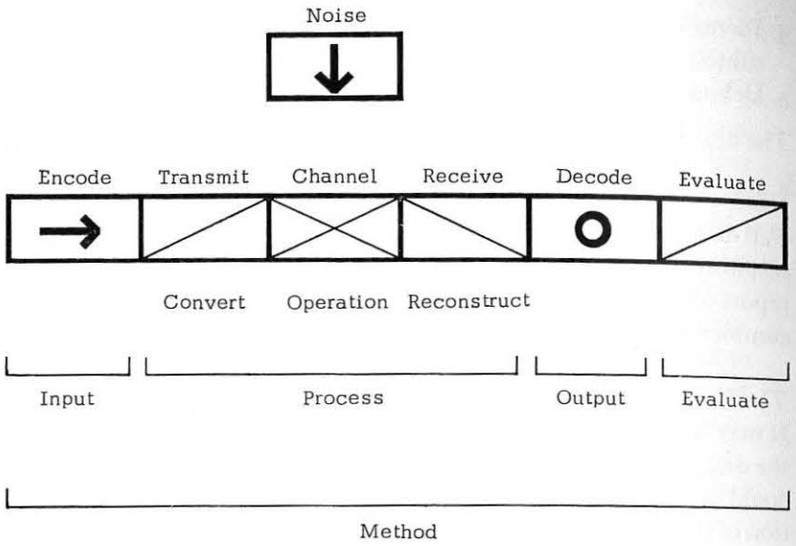


Figure 2. Shannon and Weaver model of communication.

Figure 2 is a more complex model adapted from Shanon and Weaver's model of communication.[2] It can be considered in two ways: first, as an overall model of the design process in the sense of a problem definition (input), designer activity (process), and solution (output); second, as a model to be duplicated end-to-end as many times as there are identifiable stages of communication activities in the design process. For instance, the designer may "encode" thought and transmit via a "channel" of a sketch on paper to be "received" by a design partner or consultant or himself at a later time. "Noise" could be anything that would in any way deteriorate the quality of the intended message, from wrinkling the paper to the designer's lack of talent as a draftsman. Relative to diagrams as a communication activity we must consider such questions as: What is the encoding and transmitting process? What kind of channel is used? What is the receiving and decoding process? What kind of "noise" will be present during the process? How is the result evaluated? For the sake of simplicity the discussion will be limited to a handwritten notational system using suitable two-dimensional surfaces as media.

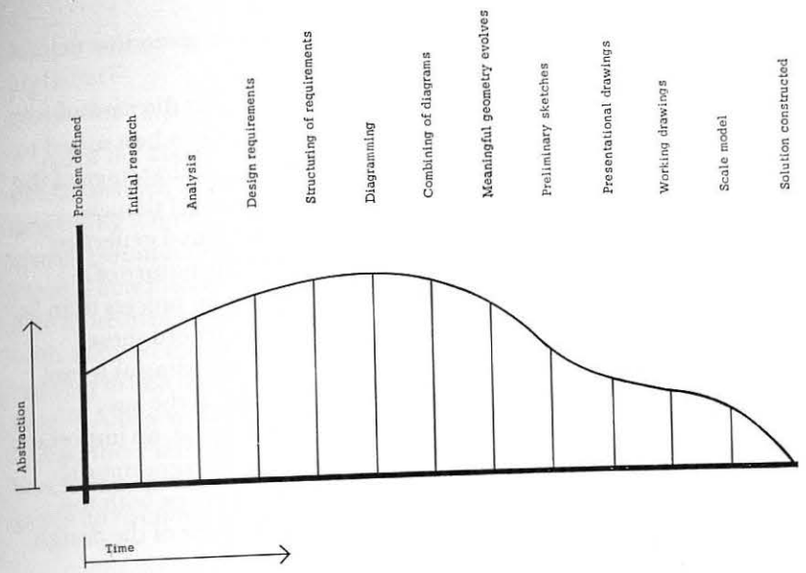


Figure 3. The design process: abstraction vs. time.

Figure 3 shows a still more complex model: a graph of the overall elapsed time of the design process divided into the sequence of the various phases or modes of expression associated with the design process. The vertical dimension indicates degrees of abstraction (units unspecified). For example, preliminary sketches are more abstract than a scale model. Zero abstraction is, of course, the final solution fully constructed and ready for use. With reference to the discussion above, we can say that the area of the curve to the left of the peak is the analytic phase of the process and the area to the right is the synthetic phase. The important point is that the higher the degree of abstraction of a mode of expression, the more manipulatable it is in terms of human time and energy expended relative to the form of the final solution. For example, a single line as an element of a diagram may represent the basic configuration of an entire architectural space, whereas a single line as an element of a working drawing may only represent the surface of a single wall. Thus, in terms of designer time and energy, the removal of this single line in a diagram might remove the entire wing of, say, a school building, whereas this same amount

of line removed from a working drawing might only mean the removal of a single partition.

The reason for the different modes of expression for the various stages of the design process is that each of these modes is best suited to record the type of human thought being generated at that stage of the design process.[3] Herbert Simon refers to the elements of thought (parameters of memory) as "chunks." The human mind generates these chunks at reasonably constant intervals.[4] If the nature of a chunk of thought is different at one stage of the design process than at another, the mode of expression (notation) used to record these chunks as they are generated must be capable of recording at a rate commensurate with interarrival time of the chunks. If the lag between chunk speed and notation speed becomes great, an important chunk may be forgotten before it can be notated. A diagrammatic language must provide the notation system that can cope with the relational type of thought produced at this middle zone of the design process.[5]

Diagrams and Language Systems

If we are to devise a diagrammatic language and notation system for design, it would seem appropriate to survey similar diagrammatic systems in other disciplines. Unfortunately, space does not permit a discussion of any of these here.

music notation[6]
Labanotation—dance notation[7]
Motation—language of motion[8]
sequence experience notation[9]
symbolic logic
electronic schematics
flowcharting of computer programs
Therbligs—industrial process notation[10]
architectural working drawings
proofreading notation[11]
PERT charts—scheduling networks[12]
Blissymbolics—visual language[13]
aUi—language of space[14]
Proxemics—human interaction behavior notation[15]

Kinesics—human movement notation[16]
alphabet[17]
graph theory[18]

All of the above are visual systems containing a limited number of symbols which in various combinations and formats are capable of describing a limitless number of situations.[19] In addition to the field of visual communication, traditionally associated with graphic design,[20] there is new interest in the use of visual languages as design tools.[21] The more firmly established world of non-visual linguistics[22] functions with a few elements saying everything there is to say. Basic English reduces to 800 the number of English words necessary for conversation.[23] Along with new inter-disciplinary research in environmental design there is interest in formulating a set of environmental descriptors for an agreement on terms in speaking about natural and man-made environment.[24]

Diagrams as a Language System in Design

The design process is an evolutionary progression; an idea is refined continuously until the resulting form satisfies the initial objectives. It is a process that proceeds from the general to the specific and from the abstract to the real. It is a process of leveling and sharpening.[25] Once the analytic phase of the process is complete and the design objectives defined, the diagrammatic language will be employed to set down in a presentational visual way (as opposed to the sequential verbal methods of the analytic phase) the desirable relationships between the conceptual components. These relationships will evolve into ever more specific relationships that are defined by type and degree. The diagrammatic language must be both visual to show relationships, and mathematical to show degree of relationship.[26]

Primitives and Grammar of a Design Language

Since the initial diagrams in the design process would express the desirable relationships specified in the design requirements, it seemed logical that the place to begin a search for the basic elements, or primitives, of the design language would be among available collections of design requirements by various designers for particular problems. Consider the following three design requirements which are relevant to three different design problems:

1. Urban mass transportation system: any pollution created by the transporation system must be contained and not be allowed to enter the environment external to the transit system.

2. Elementary educational facility: distraction factors external to an academic setting (such as a classroom) must be controlled so as to not disturb the students' concentration.

3. Residence: children in their play activities should not be subject to contact with vehicular traffic.

The notion to be abstracted from these three requirements is a common one: "protection." Protection is the desirable relationship that should exist between the pairs of parties named in each of the three requirements.

On a similar basis, the accumulated design requirements of seven different documented environmental design problems were searched. The average number of requirements per problem was approximately 100; approximately 200 notions were abstracted from these 700 requirements. Some notions occurred only once or twice, whereas notions such as "protection," "proximity," "access," and "control" occurred 10 to 30 times each. The distribution was not tabulated in this initial search. Redundant notions (such as "control" and "supervision") were eliminated until approximately 100 notions remained. A positive or negative relationship was identified between every possible pair, and a decomposition computer program[27] was used to identify subsets of highly interrelated notions. Analysis of the subsets revealed further synonymous ideas which were eliminated to produce a list of 50 notions (opposite), which may be considered as an attempt to see what the primitives of the design language might be.

These 50 primitives were, in turn, processed through the decomposition program and simplified further by observation and experiment to produce the structure shown in Figure 4. An initial attempt at defining the visual elements of the language is shown in Figure 5, where symbols and mnemonics have been substituted for the words in the structure of Figure 4.

The structure of this "grammar" proceeds downward from the general to the more specific. This is analogous to the leveling and sharpening nature of the design process. This structure is in need of

1. adjacency
2. barrier-access
3. behavior setting
4. boundary
5. communication channel
6. comparison
7. compliance
8. conceptual
9. content
10. context
11. control
12. dependency
13. disipation
14. dynamic
15. enclosure
16. enter-leave
17. explicit
18. facility
19. feedback
20. format
21. gate
22. generate-terminate
23. guidance
24. implicit
25. information
26. input-output
27. media
28. mobile-stabile
29. motion (speed)
30. negative-positive
31. parts
32. people
33. physical
34. point of contact
35. position
36. privacy
37. process
38. property
39. protection
40. proximity
41. queue
42. relation
43. replace
44. seize-release
45. sequence
46. similarity
47. static
48. tool
49. supervision
50. vehicle

further refinement, but it will provide a reasonable vehicle for illustrating the manner in which it might be used.

Application

As an illustration, let us consider the design of the architectural students' academic work station—the studio. For the sake of simplicity let us consider two of the many design requirements which might be produced by the analytic phase of the design process:

1. Security from theft. The typical design school layout must permit continuous student access to the student studio areas. This open situation also permits access by strangers whose intention might be theft of the students' work tools.

2. Studio teaching routine. Instructors typically come to the student studios for individual consultation with each student. However, there is often need of group discussion between faculty and students in the studio intermittent with individual consultation.

Consider the structure in Figure 5 and keep in mind that it will be used in top-to-bottom process. Beginning with Requirement 1, we have a group of four student work stations. These are entities which

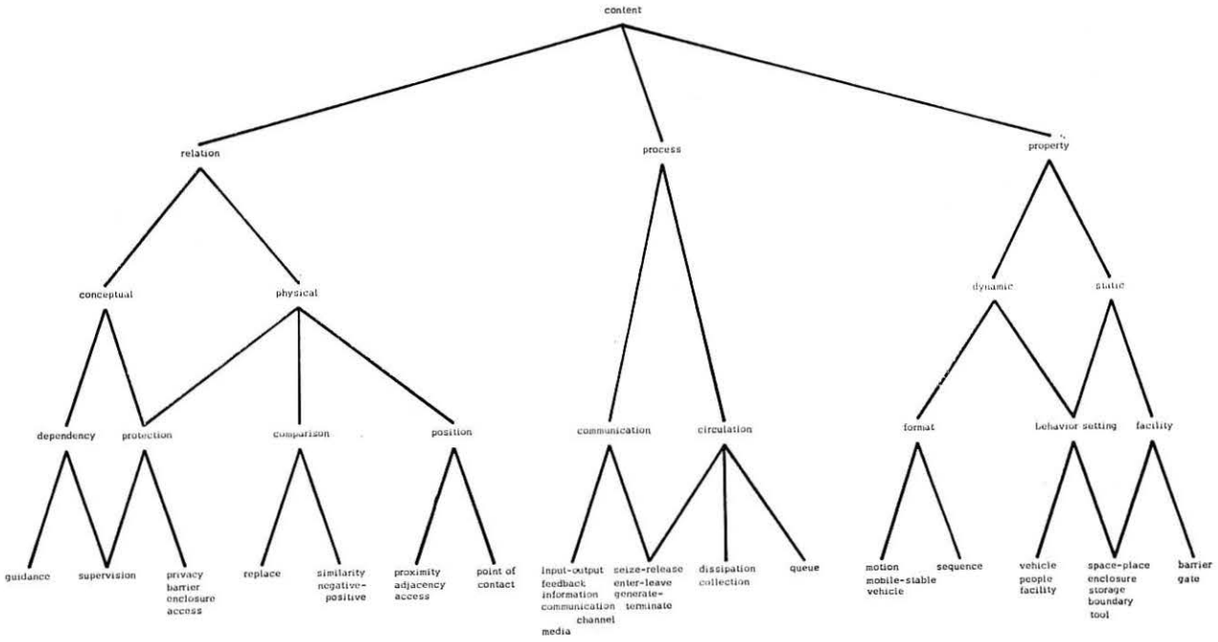


Figure 4. Grammar semi-lattice.

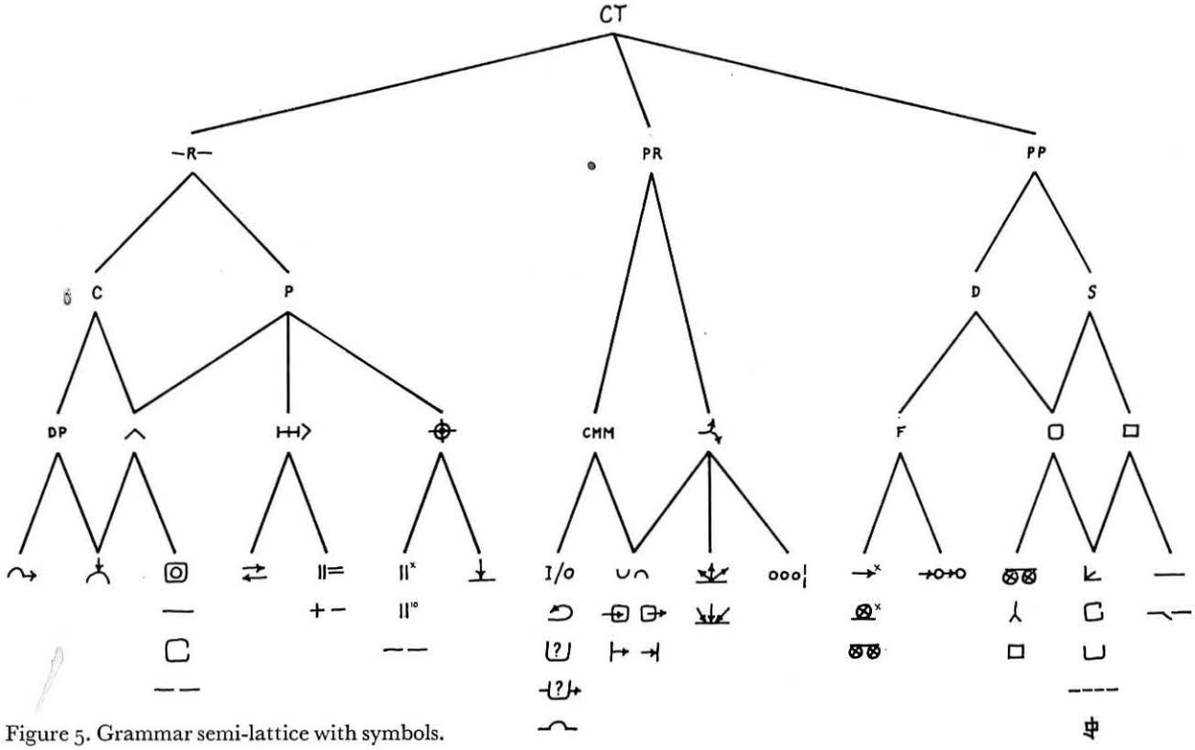
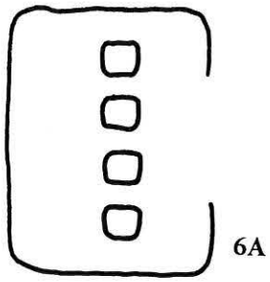
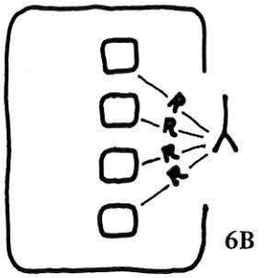


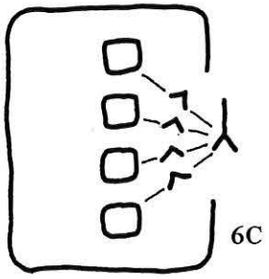
Figure 5. Grammar semi-lattice with symbols.



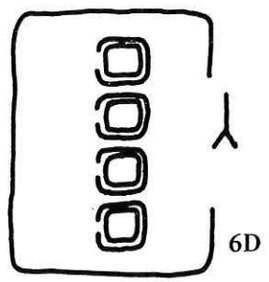
6A



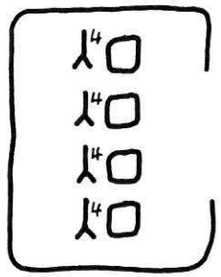
6B



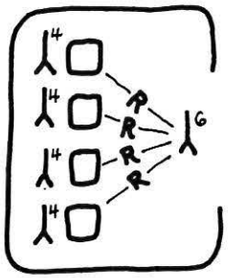
6C



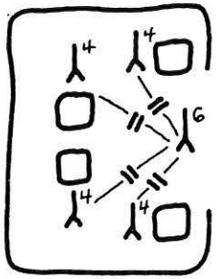
6D



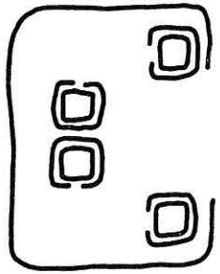
7A



7B



7C



8

are identifiable by their *property* which is both *dynamic* and *static* as a *behavior setting*. Let us place these in a *behavior setting* drawn as an *enclosure* (Figure 6A). In Figure 6B we add another entity whose *property* is *dynamic* as a *person* and is considered to be a thief. This person has a certain *relation* "R" with each *behavior setting*, and the desirable *relation* is *protection* (Figure 6C) which can be accomplished by the addition of an additional enclosure (Figure 6D) about each *behavior setting*.

Continuing with Requirement 2, we have the same four *behavior settings* in their studio *enclosure* (Figure 7A). In Figure 7B a new entity is added as a *person* who is the instructor, and this *person* assumes a *relationship* with each *behavior setting* and the *person* at each of these *behavior settings*. The problem presented is that of group discussion, which might be solved by the instructor being able to assume a position of equal *proximity* to each of the *persons* in the individual *behavior settings*. This might require a rearrangement of the *behavior settings* as in Figure 7C.

The superior figures ("4" and "6") used with the person symbols in the diagrams of Figure 7 refer to the relative roles each of the persons depicted in the diagram play in the behavior setting. The "role" in question is that of relative centrality or "level of penetration" on a scale of 1 to 6 as devised by Barker in his theory of behavior settings.[28] Thus, the person with the "6" has a more central role in the behavior setting than those with the "4."

The combination of Figure 6C and 7C is shown in Figure 8. The physical form which will ultimately satisfy the diagram of Figure 8 might be individual work stations arranged in a circular configuration to satisfy the discussion requirement. The theft problem might be

Figure 6 (A) Four student-work stations in a studio. (B) The relationship "R" of the intruder to the work stations. (C) The desirable relationship is protection. (D) Protection is accomplished with an additional symbolic enclosure about each work station.

Figure 7 (A) Four students and work stations. (B) The relationship "R" of the faculty member to the work stations. (C) The desirable relationship is proximity which is accomplished by rearranging the work stations.

Figure 8. Combination of Figure 6D and 7C.

solved by the use of a roll-top structure which could cover the entire work surface in one easy operation.

Conclusion

The example above was, of course, overly simplified; many more design requirements would have come into play in the normal design situation and the diagram would have become quite complex. However, the elements for a basic theory of diagrammatic language are present. The grammatical structure as presented here needs to be tested; the visual elements have to be refined, and numerical notational elements will have to be employed as exponents of the basic visual primitives. The design requirements themselves will, no doubt, have to be written in a special format to make their translation into diagrams as efficient as possible. The next stage of this research effort will be experiments in the use of the language, carried out both in academic and professional environments. The form of the language will undoubtedly change in response to these experiments. Its ultimate efficient use will require, as with any language system, that the language be learned.

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Albert Camus and the Men of the Stone

As far as I'm concerned, the image I've retained of Albert Camus is that of a perfect comrade. We accepted him right from the start, something quite rare. We had many problems in Lyons. The Lyonnais, who hadn't been very cooperative in the beginning, gave the Parisians the cold shoulder. When Camus set foot in the composing room, however, right away there was a ray of sunlight. He was a real live wire, wasn't stuck-up, and fit in right from the start. We really liked that. We had the impression we'd known him for years. Always ready for a joke, he was a comedian among us. When we sang merry songs, no one had to wait for him to join in on the chorus. He had a repertory of barrack songs—not the kind you could sing around your family, of course, but very entertaining.

He really impressed us on his wedding day. I was touched by the way he got married—so simple, with three or four typographers as the wedding procession. What proof of his friendship that was for us! His wife was so unpretentious, so nice. When we left the City Hall, we all went to a café, like buddies getting together.

We knew that he loved the atmosphere of the printing plant. He liked to have the pages and galleys of type in front of him. He was literally hooked on the printer's craft. It's true that there's a kind of intoxication in it: the odor of printer's ink and damp paper—you love to smell it, the way a leather worker loves to smell the odor of leather. Camus spent more time at the composing room than in the editorial offices. . . .

A tape-recorded remembrance by Lamaître, a Linotype operator who worked with Camus in the composing room of *Combat*, the clandestine news sheet published by French Resistance elements. Camus joined the editorial staff in 1944. Excerpted with kind permission from *Albert Camus and the Men of the Stone*, English translation

The Orthographic Practices of Elias Molee

Henry R. Stern

In proposing an artificial language for international consideration, one must first have devised an efficient orthographic system. After a brief introduction to the concept of international languages and to Molee's background and motivation, this paper describes the orthographic techniques he employed in a series of works over a period of 25 years. Upon examination, these works show an unmistakable trend. The initial efforts are characterized by innovation and experimentation. In attempting to create an acceptable phonetic alphabet, he first employed phonetic symbols, variations of standard letters, and even letters he designed himself. Later efforts, however, remain within the framework of conventional symbols. This can be explained by the necessity of gaining the favor and support of printers. That Molee's efforts were in the long run unsuccessful is due not to any inherent weakness in his orthographic system but rather to the general failure of artificial languages themselves.

if t our thought-hiding n time-wasting greek n latin vocabulary, we add our unphonetic, expensive, misleading n time-wasting heterogeneous orthography, then we can truely exclaim: "e english language is a national misfortune."

(Elias Molee, *Nu Teutonish*, 1906)

Over the past century the idea of one language having international currency has enjoyed considerable popularity and has prompted students of language to work toward that goal. Proponents of an international language have been motivated by the desire to facilitate travel, diplomacy, scientific cooperation, or simply to contribute to better understanding among nations. Although the assumption that language is perfectable—that it can be subjected to the laws of reason and molded by external forces—seems common to most of these attempts, the actual methods used in designing languages such as Volapük, Esperanto, and Pasilingua often differ widely.[1] In some cases a national language, or a modified form thereof, is advanced as the most satisfactory solution, whereas others find *a priori* languages

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more suitable. Still others blend what they consider the best features from a group of related languages. It is this last method which Elias Molee employed. This paper will describe the orthographic techniques he developed in his work.

Molee was born in Racine, Wisconsin, in 1845. The polylingual environment in which he grew up provided background and impetus for his proposed language reforms. His native language was Norwegian; as a youth he learned English in school and German from his neighbors. In *Tutonish* (Chicago, 1902) he recalls his initial fascination with the prospect of uniting all the Germanic languages into one union tongue.[2] "How fine!" he writes, "how grand would it not be, if the good points only in English, German, Dutch, Swedish, and my Danish-Norwegian mother tongue could be united into one grand good language with a regular grammar!" (p. 36). With admirable zeal, and at considerable personal expense, he spent a half century in perfecting this Germanic union tongue designed to supplement at first and eventually to supplant the individual Germanic languages. He hoped that other language families would follow suit and thereby give the world five or six major means of communication.

One can discern three basic principles underlying Molee's efforts. First of all, the grammar of the union tongue should be simple and avoid, for example, the bewildering system of inflections which characterizes German. Secondly, the vocabulary should be "expressive" and self-explaining, its words formed from native roots rather than borrowed from Latin or Greek. Why, Molee asks, do we not say *fishlore* and *birdlore* instead of *ichthyology* and *ornithology*? Heterogeneous languages are viewed as "essentially inferior, patched up, spotted jargons" which needlessly impede intellectual growth. Molee's third principle is that spelling should be phonetic. He cites the orthographic vagaries of English, a language in which, he argues, only 60 words are spelled as they are pronounced.[3] He agrees with those friends of spelling reform who estimate that the English system of spelling costs the American public $150 million a year in additional school taxes and absorbs from three to five years of a pupil's total school time.[4] By blending the Germanic languages into one union tongue Molee hoped to eliminate what he considered to be shortcomings in these areas of grammar, vocabulary, and spelling.

In his *Plea for an American Language* (Chicago, 1888) Molee writes

that "the only true mode of spelling words and the system easiest to learn by children of all nationalities and stations is to have '*one letter for one sound, and only one sound for one letter*' " (p. 33). In designing the union tongue, however, he recognizes the impracticality of a purely phonetic alphabet which would represent every shade of sound with its own symbol. In such a system individual idiosyncrasies could lead to widely divergent spellings of even the most common words. Thus instead of a complete phonetic alphabet Molee proposes a rather broad and simple system in which a given sound, and any phonetic variations thereof, can be represented by only one symbol. Such a system accepts pecularities in pronunciation and does not attempt to regulate them, while at the same time insuring uniformity in spelling.

This is not to say, however, that allowances are made for the natural process of change in language. Molee is quite clearly a child of eighteenth-century linguistic thought—he particularly admires the work of the French Academy—and, in addition, is dealing here with a controlled and artificial means of communication. Accordingly, change in the union tongue could not be spontaneous nor could it result from the whims of language, but would have to come about through the efforts of external forces—commissions, scholarly study groups and the like.

The purpose of Molee's spelling system is to combat the unfortunate tendency in English to represent one sound by any of a number of symbols and, conversely, to let one symbol assume several discrete phonetic values.[5] As an example of the former, one could cite words such as "aims," "day," "they," and "break" in which one sound, namely [ei], is represented in four different ways; an example of the latter is the a-vowel in "ale," "at," and "all." In the Germanic union tongue each symbol is assigned only one phonetic value and so it would be more difficult to misspell a word than to spell it correctly.

In his early works Molee shows a preference for experimentation with new letters or modifications of standard letters. He limits himself to approximately forty sounds, all of course drawn from the various Germanic languages. The following table compares the vowel systems in *Plea for an American Language* (*PAL*) and *Germanik English* (*GE*). The reader will note that words in the column "Key Word" obtain for both works; where the symbols used in both *PAL* and *GE* coincide, a dash is placed in the *GE* column.

Vowel Systems Compared

PAL (1888)	*Key Word*	*GE* (1889)
[2]*	arm	q
a	at	—
e	let	—
i	it	—
ɪ	eel	—
o	or	—
[10]	old	ɔ (inverted c)
[14]	look	u
u	but	u or v
[9]	rule	ɯ (inverted m)
ü	für (Ger.)	ü or ɥ (inverted h)
ö	earn	ö or ə (inverted e)
[1]	nay	ai
[6]	oil	oi
[7]	ice	ei
[8]	owl	au

* Numerals in brackets refer to numbered vowels and consonants shown in Figure 1 (opposite) from *PAL*, pp. 224–225.

Two of the vowel symbols employed in *PAL*, i.e. [10 & 8],* are found exclusively in phonetic writing, although the values Molee assigns to them differ from their values in the International Phonetic Alphabet (IPA).[6] Use of the [2]-symbol conforms to IPA practice. Both ü and ö are borrowed from German, but Molee mistakenly equates the German ö-vowel with the sound in English "earn"—the latter sound is unrounded and more central than the former. [9, 6, & 7] are modifications of u, o, and i. ɪ is the only vowel symbol which he claims as his own invention, although the practice of inverting already existing symbols was and is quite common as a device for expanding the phonetic range of an alphabet without adding new symbols. Origin of [14 & 1] is uncertain, but it is probable that they were borrowed from some unnamed source.

The chief characteristic of *GE* is that, in contrast to *PAL*, it makes fuller use of available types. The traditional spelling of diphthongs is

PART SECOND.

ʃɪ* amerikaʃ[1] sprɑklœr[2]
mit[3] rɪdl[4] and wördaʃɑts.[5]

stɑblist.[6]

§ þ. dɪ[7] selflɤsta.[8]

zɑl.[9]	stɑb.	kɪwördɑ.
1	ɑ	ale, nay—ɑl, nɑ.
2	ɑ	arm, far—ɑrm, fɑr.
3	a	at, man, and.
4	o	or, on, ball—bol.
5	ö	earn, word—örn, wörd.
6	œ	oil, boy—œl, bœ.
7	ị	ice, high—ịs, hị.
8	ɤ	owl, cow—ɤl, kɤ.
9	ü	rule, moon—rül, mün.
10	ɔ	old, know—ɔld, nɔ.
11	ɪ	eel, seal—ɪl, sɪl.
12	ü	für (see jörman and skandinavian.)
13	u	but, hut.
14	ʉ	look, full—lʉk, fʉl.
15	i	it, hit, mit.
16	e	let; before "r" "e" is like "a."

* rɪd ch. þk on "Gram. of the Am. Lang."

§ ƀ. dɪ mɪtlɤsta.[10]

zɑl.	stɑb.	nɑm.	kɪwördɑ.
1	p	pɪ	pail, push—pɑl, puʃ.
2	b	bɪ	be, bought—bɪ, bot.
3	t	tɪ	tree, tight—trɪ, tịt.
4	d	dɪ	dough, down—dɔ, dɤn.
5	k	kɪ	kite, care—kịt, kɑr.
6	g	gɪ	go, group—gɔ, grüp.
7	f	fɪ	full, fear—fʉl, fɪr.
8	v	vɪ	vine, verse—vịn, vörs.
9	r	rɪ	right, wring—rịt, riŋ.
10	l	lɪ	line, learn—lịn, lörn.
11	m	mɪ	moon, much—mün, muʃ.
12	n	nɪ	next, nigh—nekst, nị.
13	s	sɪ	soap, soup—sœp, süp.
14	ʃ	shɪ	ship, should—ʃip, ʃud.
15	z	tsɪ	zɑl,[11] (hard as in jörm. tsɑl.)
16	j	jɪ	john, george—jon, jorj.
17	ʃ	chɪ	church, cheap—ʃörʃ, ʃɪp.
18	ʃ	thɪ	ʃɪ (sɪ iŋliʃspɪkɑnda.[12])
19	ɦ	whɪ	ɦer (lörn from dɪm iŋliʃa).
20	h	hɪ	hymn, who—him, hü.
21	w	wɪ	wound, wound—wünd, wɤnd.
22	y	yɪ	yard, year—yɑrd, yɪr.
23	ɥ	yoo	you, your—ɥ, ɥr.
24	ŋ	ang	sing, wing—siŋ, wiŋ.

restored and inversions are increased from one to five.[7] q, a letter omitted from *PAL*, replaces a phonetic symbol for the a-vowel. o and ɔ, in contrast to common usage, designate the open and closed o-vowel, respectively. Molee suggests that, for the time being, v could be used for the vowel sound in "but" and "hut," but expresses the hope that later authority will eliminate what he describes as an unmusical sound.

In both *PAL* and *GE* the following consonants are retained and pronounced as in English: p, t, k, b, d, g, f, v, r, l, m, n, s, j, h, w, and y. As in German the symbol z functions as an affricate in order to distinguish it from the spirant s. Symbol [23] is introduced in *PAL* with phonetic value [ju:], but it does not appear in any other work. q, x and c do not occur as consonants in either work.[8] Whereas the consonant system in *PAL* includes two phonetic symbols [14c & 24] and three new symbols [17, 18, & 19], all five are supplanted in

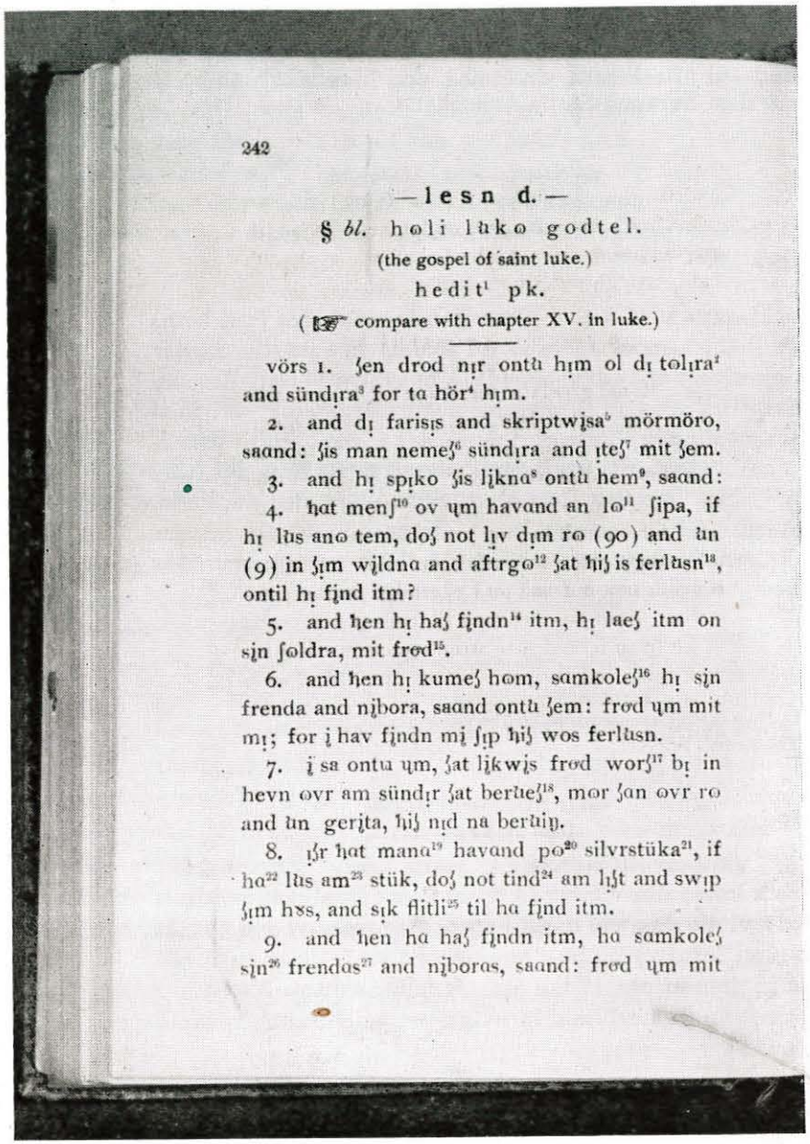
GE by traditional consonant combinations—sh, ng, ch, th, and wh.[9] This trend has already become evident in the case of the diphthongal sounds for which separate symbols were designed in *PAL* but which subsequently were expressed in traditional vowel combinations in *GE*.

It is apparent that the dramatic orthographic innovations introduced in *PAL* yield to a considerably more conservative approach in *GE*. In fact, only the use of q and v as vowels and the five inverted letters in the latter work strike the reader's eye. The explanation for this abrupt return to accepted practices is offered in *Pure Saxon English* (Chicago, 1890) where Molee writes: "One thing has done more to retard spelling reform than anything else, and that is *new types*! I know this from experience in a printing-office. The newspapers must spread and popularize spelling reform. Millions of dollars are invested in cases and a hundred different fonts of type. New letters come into the printing-office as very expensive disturbers. The thousands of cases must be rearranged; and to be obliged to obtain new letters to adjust with the heading-type, the advertising types, the job types, etc., will cause the new arrangement to be looked upon as the printer's enemy, and without his good-will the reform can hardly be carried" (p. 33).

Practical considerations led Molee to simplify his methods. To gain popular approval was, after all, the goal of his efforts and, without the support of printers and typesetters, he saw little chance of success. In reading through his first two works one is struck by the exceptionally poor quality of the printing, a factor which made him willing to strike compromises. And so, beginning with *Pure Saxon English*, Molee directs his further efforts toward achieving a phonetic system of spelling by assigning fixed values to already existing letters. In doing so he makes broad use of vowel combinations to indicate diphthongal sounds and double vowels to show length. And so, within the framework of traditional orthographic symbols, the various versions of the union tongue establish a one-to-one ratio between sound and symbol. Such an approach would afford the possibility of spelling reform without jeopardizing the sympathy and support of printers and others interested in such reforms.

The following specimen passages illustrate the various stages in the development of Molee's orthographic technique. They are presented in chronological order.

A. Specimen passage from *Plea for an American Language* (1888), p. 242. Gospel of St. Luke.



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— l e s n d. —

§ *bl.* h ɷ l i l ŭ k ɷ g o d t e l.

(the gospel of saint luke.)

h e d i t[1] p k.

(☞ compare with chapter XV. in luke.)

vörs 1. ʃen drod nɪr ontŭ hɪm ol dɪ tolɪra[2] and sündɪra[3] for tɑ hör[4] hɪm.

2. and dɪ farisɪs and skriptwɪsa[5] mörmöro, saand: ʃis man neme ʃ[6] sündɪra and ɪte ʃ[7] mit ʃem.

3. and hɪ spɪko ʃis lɪkna[8] ontŭ hem[9], saand:

4. ħat menʃ[10] ov ɥm havand an lɷ[11] ʃipa, if hɪ lŭs anɷ tem, doʃ not lɪv dɪm rɷ (90) and ŭn (9) in ʃɪm wɪldna and aftrgɷ[12] ʃat ħiʃ is ferlŭsn[13], ontil hɪ fɪnd itm?

5. and ħen hɪ haʃ fɪndn[14] itm, hɪ laeʃ itm on sɪn ʃɷldra, mit frɷd[15].

6. and ħen hɪ kumeʃ hɷm, samkoleʃ[16] hɪ sɪn frenda and nɪbora, saand ontŭ ʃem: frɷd ɥm mit mɪ; for ɪ hav fɪndn mɪ ʃɪp ħiʃ wos ferlŭsn.

7. ɪ sa ontŭ ɥm, ʃat lɪkwɪs frɷd worʃ[17] bɪ in hevn ɷvr am sündɪr ʃat berŭeʃ[18], mɷr ʃan ɷvr rɷ and ŭn gerɪta, ħiʃ nɪd na berŭɪŋ.

8. ɪʃr ħat manɑ[19] havand pɷ[20] silvrstüka[21], if hɑ[22] lŭs am[23] stük, doʃ not tind[24] am lɪʃt and swɪp ʃɪm hɷs, and sɪk flitli[25] til hɑ fɪnd itm.

9. and ħen hɑ haʃ fɪndn itm, hɑ samkoleʃ sɪn[26] frendɑs[27] and nɪborɑs, saand: frɷd ɥm mit

B. Specimen passage from *Germanik English* (1889), p. 55.
Preamble to the United States Constitution.

Wɪ the Folk dəno Feranen Staita, in order to form am məɾ fulkomen Feraning, aufrikt reitferdikeit insicher inlqndik rǫikeit forsɪ for thim gemein ferteiding, beforder thim qlgemein welfar, anƶ tusicher dəm blesinga frthudə tu usselfa and aur afterkomra, du quord and aufrikt this Graundlo for dəm Feranen Staita Amerikano.

C. Specimen passage from *Pure Saxon English* (1890), p. 42.
Gospel of St. Matthew.

MATTHEW II.—1. "Nau when Jesus birthos (was born) in Bethlehemem Judeano (of Judea) in dqsa (the neuter objective plural) daisema (days, objective plural) Herodo, dai (the, masculine singular nominative) king, beholdai (imperative or optative), ther komono (come, third person plural, past tense) weisa (weis, plural) mana from dqs (the, objective singular neuter) ɪstem tu Jerusalemem," etc. Agen: "Nau when Jesus birthos in Bethlehemem Judeano in dqsa daisema Herodo, dai king, beholdai, ther komono weisa mana from dqs ɪstem tu Jerusalemem."

D. Specimen passage from *Nu Teutonish* (1906), p. 61.
The Lord's Prayer.

du heer'on beed.
(the lord's prayer).

vio fadr hu is in himl; heilig vorde din nam; din reik kom; din vil vorde dun an erd, als et is in himl; giv vi dis dag vio dagli broed; en fergiv vi vio shuld, als vi fergiv vio shuldos; en leed vi nit into fersoeking, men erloes vi fan evl; fyr din is du reik, en du kraft en du herliheid in evigu — amen. [matheus 6. 9–13].

E. Specimen passage from *Nu Teutonish*, p. 100. Molee writes that he is hesitant to discuss his own life and work.

m (mi) is beina bang, vn m begin t shriv om min eign vandrings. dar is mr (meer) gefar af saging smtng (somting) toorish, vn mn (man) shriv om sg selv, dan vn mn shriv om andr persons. men m ms dok vaag et, vegn een ursaak; namli, dar is meni tngs in min vandrings, vlk h hd een grt influs an ds fereensprak. min selvlivbeshrivl (autobiografie) vl; darfyr, ferklar meni dunkl punkts, n ok openbar een gevis heimli hop.

The last two specimen passages, both taken from *Nu Teutonish*, illustrate the final stage of Molee's efforts. The concepts and techniques underlying his early works are no longer in evidence, but in their place two new aspects command one's attention. Most striking is the absence of capital letters, a practice first introduced to the reader in *Tutonish* and still found in Molee's last publication, *Alteutonish* (Tacoma, 1912).[10] This followed after Molee had carried on his private correspondence for several years without the benefit of capital letters. In announcing his intention subsequently to dispense with them, he advances several reasons for this decision. Capitals, he maintains, tend to obscure the close association between symbol and idea, a requisite for rapid learning. In addition, 13 rules of grammar must be mastered in order to capitalize correctly. Capitals, he claims, take longer to write, are more difficult to read (with their many configurations small letters are supposedly set off more clearly), and inconvenience typesetters. Molee rejects the assertion that capital letters improve the page aesthetically.

More significant than the rejection of capital letters is the introduction of numerous abbreviations. In the Introduction to *Tutonish* one finds the following:

e(the) b(be) hd(had) o(of) bn(been)

n(and) h(have) t(to, too) nsf.(etc.)

In *Nu Teutonish*, z(as) and hs(has) are added and v(of) replaces o. Molee reasons that as long as arbitrary letters—and not one of the alphabets he had earlier devised—must be used, then it would be advisable to employ as few of them as possible. Such a system would supposedly offer several advantages, among them smaller and therefore less expensive books, a spelling system easier to master, and a printed page easier on the eyes.

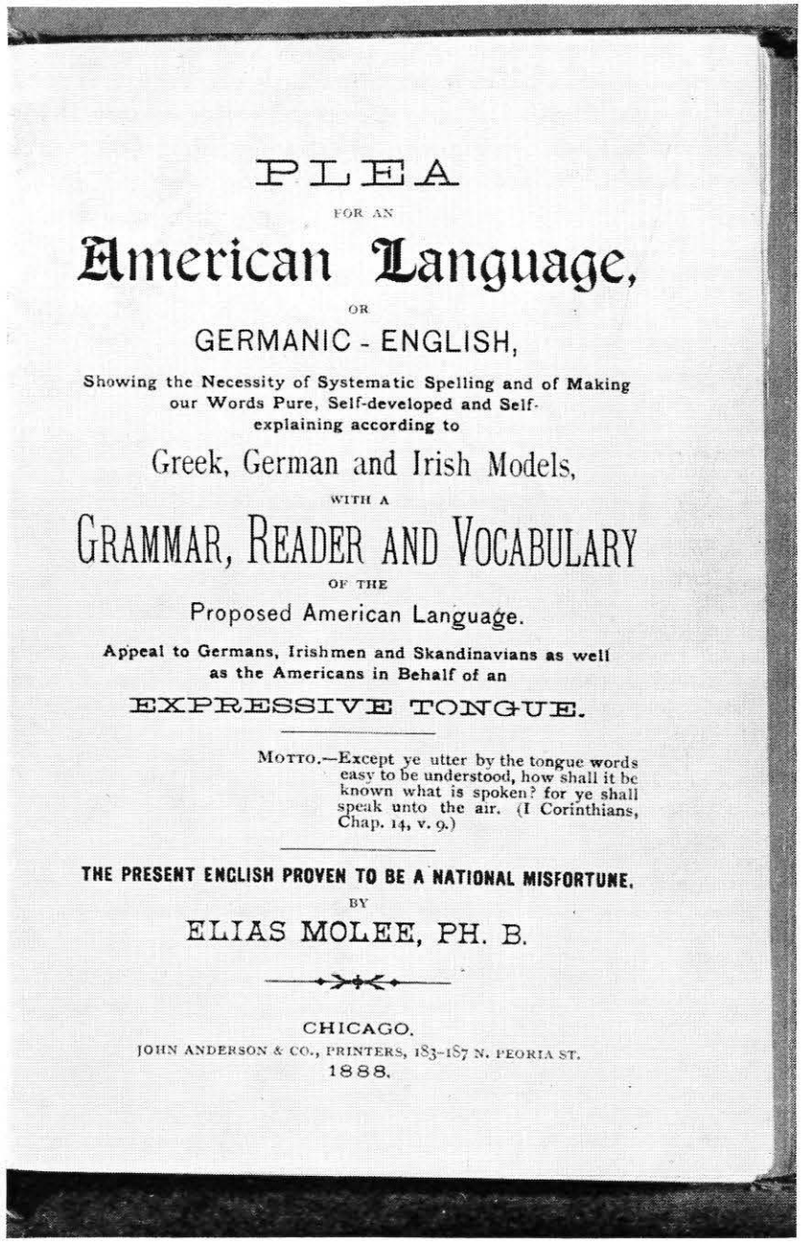
The proposed union tongue expands considerably the modest number of abbreviations contained in the introductory portions. *Nu Teutonish*, for example, has approximately 60 abbreviations, called "ferkortels." They are for the most part auxiliary verbs, pronouns, and adverbs of frequent occurrence, although it seems doubtful that they were chosen on the basis of statistical evidence. Abbreviations are generally formed by dropping one or more vowels from a word, particularly in the vicinity of a liquid or nasal. Some examples in the specimen passage are mn(man), m(mi), mr(meer), and smtng(somting). Molee hoped ultimately to incorporate 1,000 abbreviations into the union tongue and have every school child memorize them, a task he estimated would require three to six months. Initially, the abbreviations could be appended to every book printed in the union tongue. In addition to the advantages of abbreviations already cited, Molee believed, rather naively, that the memorization and drilling of these abbreviations "would cause a uniformity o pronunciation over e world, which could probably not b secured so well in any other way."[11]

Since Molee's proposals were never realized on a large scale, the orthographic techniques described in this paper are of interest principally from a historical viewpoint as well as from that of methodology and inner development within successive works. Within the context of an artificial language—that is, if one accepts the questionable thesis that languages can be formed and regulated externally—Molee's methods can be assessed positively. They are, to be sure, frequently impressionistic, vague, and based upon highly romantic and subjective considerations, but that is not to say that they would be unable to perform the functions required of them. On the contrary, it is clear that the various elements of Molee's union tongue could perform quite well within the framework of an artificial language. With few exceptions, however—one thinks of the durable

Esperanto—artificial languages have not gained long-term acceptance. For this reason one can most profitably focus attention upon the workings of the individual elements within such a system rather than upon the system as a whole. It is to be hoped that further research in this area will yield noteworthy comparisons between the orthographic systems of various artificial languages.

1. For a discussion of international languages see Mario Pei, *One Language for the World* (New York, 1958).
2. The term "union tongue," as used by Molee, designates the artificial language based on elements derived from the various Germanic languages.
3. Examples: so, go, old, bold, mind, and kind.
4. Extimates, which varied from $100 to $150 million annually, were drawn on the basis of a projected excess expense of $10/pupil/year.
5. The following sentence, spelled by analogy, demonstrates the unsystematic nature of English spelling: Igh cee a phat chat awn thea chere. *PAL*, p. 32.
6. It is uncertain whether Molee was familiar with the work of the International Phonetic Association, which had been founded in 1886. He does make frequent mention of such scholars as Grimm and Rask as well as his prominent contemporaries, Whitney and Lounsbury. Furthermore, it is unlikely that his choice of symbols is entirely fortuitous. In general, one might best describe Molee as a learned dilettante.
7. Capitals for the inverted letters could not be inverted due to the shoulder of the type. For this reason Molee devised a combination of regular capitals plus inverted small letters. Thus, the capitals for ɔ, ɪ, and ɯ would appear as O·ɔ, I·ɪ and U·ɯ respectively.
8. q, of course, functions as an a-vowel, x and c appear sporadically in Molee's works as consonants. They are, however, more the remnants of an accepted alphabet than symbols which Molee felt could be usefully incorporated into the union tongue.
9. Key words: ship, sing, church, thee, and whir. The wh is to be pronounced with aspiration, as it is in some parts of the United States.
10. *Alteutonish* appeared in 1912 when Molee was 67 years old. To my knowledge this was his last effort.
11. *Tutonish*, p. 80.

OVERLEAF: The title page from Elias Molee's *Plea for an American Language*, 1888.



PLEA

FOR AN

American Language,

OR

GERMANIC - ENGLISH,

Showing the Necessity of Systematic Spelling and of Making our Words Pure, Self-developed and Self-explaining according to

Greek, German and Irish Models,

WITH A

GRAMMAR, READER AND VOCABULARY

OF THE

Proposed American Language.

Appeal to Germans, Irishmen and Skandinavians as well as the Americans in Behalf of an

EXPRESSIVE TONGUE.

MOTTO.—Except ye utter by the tongue words easy to be understood, how shall it be known what is spoken? for ye shall speak unto the air. (I Corinthians, Chap. 14, v. 9.)

THE PRESENT ENGLISH PROVEN TO BE A NATIONAL MISFORTUNE.

BY

ELIAS MOLEE, PH. B.

CHICAGO.

JOHN ANDERSON & CO., PRINTERS, 183-187 N. PEORIA ST.

1888.

Grapheme-Phoneme Correspondence in Beginning Reading of Disadvantaged Five-year-olds

Myrtle Scott

This study was designed to investigate the effect of grapheme-phoneme correspondence on word acquisition in beginning readers. Two groups of disadvantaged children were taught word acquisition skills, one group using a non-controlled grapheme-phoneme correspondence orthography, standard English, while the other group used a controlled grapheme-phoneme correspondence orthography, the Initial Teaching Alphabet. No differences were found between groups as a function of orthography used. Significant differences did appear as a function of level of word familiarity with familiar words being identified more easily than unfamiliar ones. Irregular words were identified significantly more easily than regular ones, which was contrary to the prediction, and was explained in terms of a model of stages of development of word recognition skills.

One of the basic assumptions upon which several approaches to beginning reading have been predicated is that children have difficulty which is attributable to the lack of correspondence between the spoken phoneme and the written grapheme in the traditional English orthography. In the case of the culturally disadvantaged whose language patterns and speech sounds are so different from those typically used in the classroom, this poor match between sound and symbol may be a key to the high incidence of reading failure among these groups. The high incidence of reading failure among the culturally disadvantaged often leads to early school drop-out, a crucial social problem.

Research and theory from five areas contribute to the background literature upon which the present study was based: (1) studies of basic perceptual processes underlying reading, (2) studies of grapheme-phoneme correspondence per se, (3) methods designed to control grapheme-phoneme correspondence, (4) the relationship of reading to chronological age, and (5) the process of reading as it occurs in culturally disadvantaged or different groups. Several excellent

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reviews of the reading research literature are available elsewhere (Harris, 1963; Harris, 1965; Robinson, *et al.*, 1966; Chall, 1967).

In the area of basic perceptual processes underlying reading, perhaps the most notable work is that of Gibson (1962, 1964, 1966) who believes that children perceive neither individual letters nor whole words but, rather, groups or clusters of letters based on grapheme-phoneme correspondences. Gibson calls these clusters "higher order invariants." In one experiment Gibson (1962) generated two lists of words, one according to rules of pronounceability and the second of unpronounceable words. The results of this experiment demonstrated that a letter-group with a high spelling-to-sound correlation is produced more accurately than an equivalent letter-group with a low spelling-to-sound correlation. Gibson pointed out that this result could not be caused by a difference in the familiarity of the letters taken alone, or even in the vowel and consonant clusters taken alone, for the same clusters were used in both lists. She concluded that the higher accuracy of production of the high pronounceable list must be due to the existence of higher-order graphic units or letter combinations of English writing that function as relatively stable units in grapheme-phoneme correspondences. Anisfeld (1964) criticized Gibson on the basis that she did not control for summed bi-gram and tri-gram frequency and said that high pronounceability, or high grapheme-phoneme correspondence, alone could not account for a high accuracy of production. Gibson later showed, however, that summed bi-gram and tri-gram frequency *was* controlled in that each item had its match and that the same letters were used in the matched item as well as the same length. Bishop (1964) further demonstrated that transfer of word recognition skills is higher with a group trained using single letters than a group trained using whole words and considerably higher than a control group. The subjects in this experiment were asked afterward to explain how they tried to learn the transfer words. Most of the letter-trained group reported using knowledge of component correspondences but so did 12 of 20 of the word-trained group. Bishop concluded that, although it is possible to learn words without learning the component letter-sound correspondences, transfer to new words depends on use of them, whatever the method of original training.

Richardson (1966) found no significant differences between three

methods of teaching word recognition skills which involved continued concentrated emphasis on (1) letter similarities between words, (2) letter dissimilarities between words, and (3) a combination of similarities and dissimilarities. These findings elaborate those of Bishop somewhat and indicate that, although there is a differential learning rate between whole-word trained groups and letter-trained groups, there is none between specific letter-trained groups.

Concurrently with the work in the Gibson laboratory, research in psycholinguistics has been aimed at analyzing the nature of grapheme-phoneme correspondence. Based on previous work (Moore, 1951; Venezky, 1966, 1967) Hanna, *et al.*, (1966) analyzed 17,000 words for grapheme-phoneme correspondence using an algorithm or set of rules for translating the spoken English phoneme to the written grapheme. A list of words was generated which were classified according to their degree of regularity or irregularity based on the number of spelling errors which occurred in their production.

The Hanna, *et al.*, work and that of Gibson, *et al.*, have represented two of the major efforts to delineate the nature of some of the variables involved in the process of reading itself before attempting to specify teaching methodology. Others, however, have felt that research on methodology should proceed concurrently with that of basic processes. Of the great number of methodological studies attempting to control grapheme-phoneme correspondence in beginning reading probably the best known are those of Downing (1962, 1966, 1967a, 1967b). He advocates the use of the Initial Teaching Alphabet (ITA) as a means of controlling the sound-to-symbol match. Although Downing has presented some very enthusiastic arguments supporting ITA, his conclusions have been sharply criticized on some rather basic points, such as experimental design and data analysis. The best statement at the present time seems to be that the efficacy of ITA has still not yet been fully determined. Research using ITA, as well as other orthographies attempting to control grapheme-phoneme correspondence, has frequently shown rather serious deficits such as confounding of variables, use of inefficient designs, inappropriate statistical analysis, and other research problems so that these results are at best confusing and at worst worthless or contradictory.

Another problem in the methodology of teaching reading concerns the optimal age for beginning reading. Many standard reading pro-

grams are based on the premise that a child must have attained a mental age of six and one-half years before he can be successful at reading, but no adequate research findings support this premise. A growing body of literature in this area (Moore, in press; Williams, 1965; Durkin, 1961, 1963; Muehl, 1962; Hendrickson & Muehl, 1962) suggests that a child might more profitably begin his reading experiences as early as two years of age. Furthermore, age interacts with the basic perceptual processes underlying reading, so that age alone does not constitute an adequate predictor of reading success. Certainly the literature on cultural and perceptual deprivation confirm the deliterious effects of prolonged lack of stimulation and training in these areas.

Chall (1967) summarized the literature concerning reading programs for culturally deprived children and concluded that the evidence did argue for a different approach with these children. She espoused a code approach, which presents reading as a problem-solving situation in translating the spoken language into written form and emphasizes early independence in recognizing words, as opposed to a meaning approach which stresses content rather than process. These conclusions were supported by numerous studies cited in her excellent review.

In summary, a review of the literature seemed to suggest the following cogent points:

1. There is a clear-cut need to study the basic processes underlying reading as a pre-requisite to attempting conclusions about effective reading methodologies.

2. It becomes increasingly clear that training in the basic perceptual processes associated with reading should begin as soon as possible. Early training in these areas becomes crucial with the culturally disadvantaged.

3. The relationship of the spoken phoneme to the written grapheme is thought to play a significant role in these basic processes.

4. Because of their very different language and sound pattern backgrounds, the reading of culturally disadvantaged pupils is particularly affected by grapheme-phoneme correspondence.

Purpose

The purpose of this investigation was to study the effect of two different levels of grapheme-phoneme correspondence on word acquisition in beginning readers as related to the degree of regularity of the word. In order to assess the effect of grapheme-phoneme correspondence on beginning reading, groups of disadvantaged readers were taught by two methods: one using standard English orthography, where the grapheme-phoneme problem occurs, and one designed to create a better match between sound and symbol. Following instruction, word recognition was related to level of word regularity in such a way as to permit assessment of the effect of instruction where the degree of grapheme-phoneme correspondence was varied systematically. Children's ability to generalize word acquisition skills to unfamiliar words as a function of degree of grapheme-phoneme correspondence was also measured.

Hypotheses Tested

Hypothesis I. Mean number of words acquired by subjects taught using a controlled grapheme-phoneme correspondence orthography will be greater than that of subjects taught using a non-controlled grapheme-phoneme correspondence orthography.

Hypothesis II. A. Word acquisition will decrease as level of irregularity increases. B. For a controlled grapheme-phoneme correspondence orthography the decrease in word acquisition as level of irregularity increases will be less than for a non-controlled grapheme-phoneme correspondence orthography.

Hypothesis III. A. A controlled grapheme-phoneme correspondence orthography will result in a significantly greater acquisition of unfamiliar words than a non-controlled grapheme-phoneme correspondence orthography. B. The acquisition of unfamiliar words will be significantly greater at higher levels of irregularity for a controlled than a non-controlled grapheme-phoneme correspondence orthography.

Subjects

The subjects for this study were 20 children enrolled in a pre-school project for culturally disadvantaged children at Peabody College at the Demonstration and Research Center for Early Education

(DARCEE). Of these children (who had been in the project for approximately nine months) half were Negro and half white, half were male and half female. All of the children in the Center participated in the experiment. The average age of the subjects was 73.25 months with a range of 70 months to 80 months, while the mean IQ for the group was 106.05, with individual scores ranging from 78 to 134 as measured by a Stanford Binet, Form L-M, given in July 1968.

These subjects had been presented with an extensive reading-readiness program throughout their pre-school experiences but had not as yet been introduced to formal reading activities.

Two groups of 10 subjects each were constituted from the alphabetical list of pre-school children using the table of random numbers.

Experimental Materials

Textbooks. The three pre-primers of the standard basal reading series published by the Scott Foresman Company (Robinson, *et al.*, 1965a, 1965b, 1965c, 1965e, 1965f) were used as textbooks for the experiment. The texts were presented in the standard order, beginning with *Now We Read* and followed by *Fun With the Family* and *Fun Wherever We Are*. Both the regular standard edition, printed in traditional orthography (TO), and the experimental edition, printed in the Initial Teaching Alphabet (ITA), of each pre-primer were used. The books were exactly alike for both sets in typeface and size, illustrations, and pagination except for the actual orthography used.

Word Cards. A set of word cards was made by an artist for each orthography used containing one card for each new word presented in the textbooks. The cards containing the unfamiliar words to be used in the criterion test were also made by this same procedure.

Criterion Measure

Examiner. The examiner was a white female graduate student in psychology who was not associated with the study and who was deliberately kept uninformed concerning the study. She was unaware of the subjects' assignment to treatment groups.

Pre-test. In order to check on the equality of the two groups following random assignment, each subject in both groups was individually tested to determine the extent of his sight vocabulary relative to the

words to be used in the instructional phase of the experiment. Only one word was recognized by one child and that was the single-letter word, I.

Criterion test. On the two days immediately following the termination of the instructional phase of the experimental procedure, a criterion test consisting of 40 words was individually administered to each subject. Half of these words were familiar words randomly selected from those introduced during the experimental period. Ten of these represented no error or high grapheme-phoneme correspondence words while 10 were categorized as one-error words according to the Hanna (1966) data. The other half of the criterion list was made up of unfamiliar words matched to the familiar words on the basis of frequency of occurrence in the English language and level of regularity. Frequency was based on two factors: (1) occurrence in the pre-primers of at least one other basal reading series, and (2) Lorge-Thorndike norms (1963). Level of regularity was again taken as the error listing according to Hanna. In both familiar and unfamiliar sets of words the child was first asked to identify each of the words. He was then given an opportunity to simply recognize the correct word in a small group of word cards. Each word the child correctly identified or correctly recognized was then recorded by the examiner on a record form. Only the identification data are presented in the analysis section. The recognition data were not dissimilar from those obtained on identification and are not presented.

Experimental Procedure

Adaptation period. In order to establish rapport between the experimenter and the subjects in a large group situation and to elicit attention to the instructional procedure and materials, two adaptation sessions were held.

Instructional procedures. The experimental procedure consisted of one lesson each day for 16 days for each group. On days 1 through 8 and days 10 through 14, the format of the session took the following form:

Part A. Word Acquisition Phase. During the initial period of each lesson a number of individual words were presented to the group using a modification of the Mills Learning Methods Test, Combined Method (1964). Two modifications were made in this combined method: (1) the kinesthetic procedures were deleted and only the

combined auditory and visual techniques were used and (2) only word cards were used, not pictures. All the words were presented each day which would be introduced as new words in the portion of the text to be read that day during Part B, Practice Phase. Each word was presented for approximately one and one-half minutes.

Part B. Practice Phase. During the second period of the reading lesson for the day the group read from the three pre-primers which were presented successively. The "guiding interpretation" portion of the teacher's manual for each text was used in a programmatic fashion to present the material to the subjects. The groups were counterbalanced as to time of presentation of lesson each day in order to control for practice effects, fatigue, and error on the part of the experimenter. The order of the groups was randomly assigned.

Days 9 and 15 were used as review days for all new words learned in the preceding section. On day 16 each group was given a total review of all the words which had been presented during the experimental period.

Results

The criterion test raw scores were analyzed in a Winer (1962) Three-Factor Experiment with Repeated Measures (Case I) design as illustrated in Figure 1. The A dimension represented the experimental treatment groups with one group being taught using a non-controlled grapheme-phoneme correspondence orthography (standard English), and the other group taught using a controlled grapheme-phoneme correspondence orthography (ITA). This dimension yielded a between-subjects comparison. The B dimension, degree of word regularity, and the C dimension, level of word familiarity, were the two factors in which repetitions of subjects were used and these were within subjects comparisons as were all the interactions with these factors. The results of this analysis are shown in Table I.

The predicted differences between groups based on the orthography used in instruction were not obtained. Interactions between orthography used and the other two factors—degree of regularity of word and level of familiarity of word—also failed to reach acceptable levels of significance.

A significant difference was found in subjects' ability to identify words based on their degree of regularity as demonstrated by the

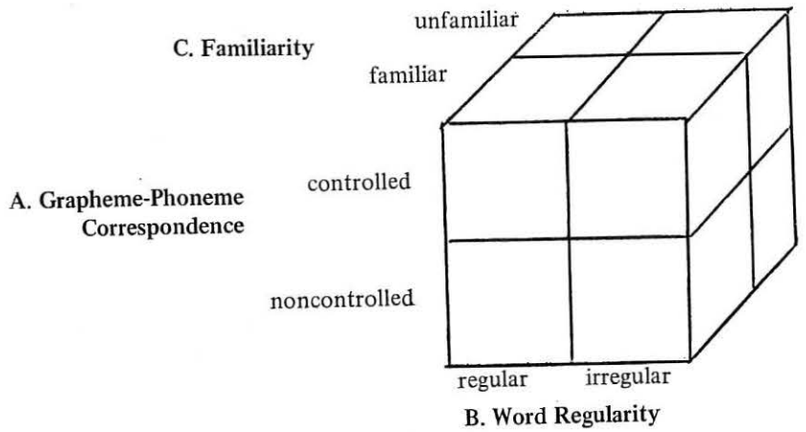

Figure 1. Experimental design.

TABLE I. *Results of Analysis of Variance of Winer Case F Design*

Source of Variation	df	x^2	s^2	F	F.95
Between *Ss*	19	18·74			
Orthography (A)	1	·61	·61	·60	4·41
SwG	18	18·13	1·01		
Within *Ss*	60	29·25			
Regularity (B)	1	1·01	1·01	5·32*	4·41
AB	1	·32	·32	1·68	4·41
BxSwG	18	3·42	·19		
Familiarity (C)	1	9·11	9·11	14·24*	4·41
AC	1	·02	·02	·03	4·41
CxSwG	18	11·62	·64		
BC	1	·12	·12	·60	4·41
ABC	1	·10	·10	·50	4·41
BCxSwG	18	3·53	·20		
Total	79	47·99			

* *Significant at the ·05 level.*

significant B main effect, but it was in the opposite direction from that predicted. Inspection of the raw data indicated that the subjects were able to identify more irregular words than regular ones. The hypothesized interaction between degree of word regularity and orthography used in instruction moved toward significance but the prediction was not confirmed.

Analysis of the C dimension showed that the subjects were able to identify significantly more familiar words than unfamiliar ones. The predicted interaction between orthography used and level of words familiarity was not confirmed.

The second order interaction which had been predicted also failed to be confirmed. No reliable interrelationships were obtained between or among the three variables.

Discussion

The general concern of this study was the effect of grapheme-phoneme correspondence on beginning reading as measured by word acquisition. One of the major questions being asked was whether or not orthography used in instruction has a significant effect on a child's ability to identify words. No differences were found between groups instructed in standard English orthography, where the grapheme-phoneme problem occurs, and in ITA, where some attempt is made to create a better match between sound and symbol. On the basis of these data it can only be concluded that the degree of match between sound and symbol does not affect a child's acquisition of word identification skills.

Several plausible explanations could be proposed for this finding of no differences between experimental treatment groups on several dimensions. One obvious interpretation of this finding may be that there are no differences in word acquisition as a function of orthography used in instruction. This would suggest that grapheme-phoneme correspondence does not have the significant effect which it is thought to have upon the learning of words. Two other findings occurred which seem to lend support to this interpretation.

The data showing a difference in subjects' ability to identify words based on their degree of irregularity are a very interesting, if somewhat surprising, finding. Not only did children recognize more irregular words than regular ones but this effect was the same across

both groups. These data indicate that type of orthography used in instruction did not have a differential effect on degree of regularity of words recognized. If orthography is of major import, a differential group effect should have been obtained. No such effect having been obtained, further support accrues to the argument that the correspondence between grapheme and phoneme may not be as crucial in beginning reading as generally presumed. These data may also initially seem to stand somewhat in contradiction to Chall's notion that the child's first task is to break the alphabetic code. If such is the case, regular words would presumably be learned before more irregular ones. It may be, however (as will be argued later) that the subjects were measured during what is actually a prior stage in the development of beginning reading skills.

Secondly, although there was a significant difference in word recognition as a function of level of familiarity—confirming the seemingly self-evident fact that children who are just beginning their reading experiences are able to correctly identify more familiar words than unfamiliar ones—there was no interaction between type of orthography used in instruction and level of familiarity. Furthermore, there was no interaction between degree of regularity and level of familiarity in the presence of significant main effects of both these dimensions. This indicates that these main effects are the same across both groups and suggests, again, no differences as a function of type of orthography used.

When these findings are taken together, the evidence becomes more convincing that there are no differences in word recognition as a function of type of orthography used in instruction. This lack of difference occurs not only between the groups themselves but also between groups in interaction with other variables, even when these variables themselves are significant. These findings might be interpreted as indicating that there was an equal amount of generalization in the two groups. There were other factors, however, which may militate against such an interpretation.

A second interpretation which must be considered in the finding of no differences between groups as a function of the orthography used in instruction is that the ITA does not represent an actual one-to-one match between sound and symbol. These criticisms have been pointed out elsewhere (Griffin, 1967). While ITA does regularize the spelling

of all irregular words in an attempt to control the correspondence between the spoken phoneme and the written grapheme, the correlation between the two in this orthography is not perfect. From this standpoint, then, the standard ITA as it was used in this study could not be said to represent complete control of the grapheme-phoneme correspondence variable. Further research using some completely controlled orthography would be necessary in order to fully explore this possibility.

Methodological considerations must also be examined in attempting to interpret the finding of no differences between experimental groups. It became apparent as the study progressed that two factors were operating which had not been anticipated. One of these concerned the program itself. As has been previously mentioned, it is believed that the level of difficulty of the program was above that which could be handled successfully by many of the children. The number of new words on some days and the number of pages covered per day in the texts seemed to be beyond the scope of assimilating or accommodating ability of some children in both groups. Although an adequate ceiling was sought for the program in order to help promote reliability and validity of measurement, it is felt that an adequate floor was not developed. In addition, the total treatment time may have further minimized any differences which might have appeared as a function of difference in groups.

A second methodological factor which may have had an effect upon the experimental results is instructional variability. Although every effort was made to make the experimental procedure exactly the same across both groups, it is recognized that some differences did occur. The quantification of these differences is, at the present state of psychological knowledge and measurement, impossible. It is, therefore, not known to what extent level of difficulty of the program and instructional variability affected the results.

In view of instructional variability, inadequate program floor and lack of complete control of the grapheme-phoneme correspondence variable, the study hypotheses may not have received an adequate test. Further research is needed in order to establish whether the finding of no differences is a reliable one.

The data showing a difference in subjects' ability to identify words based on their degree of irregularity were very interesting and deserve

a closer look as they may shed some light on interpretation of the present findings as well as a possible model underlying beginning reading. Gibson (1962) suggests that children learn words not as words or as groups of single letters but in intermediate units or clusters of letters. This implies, as a first step, perceptual discrimination in terms of distinctiveness of cues. Gibson goes on to propose that the child learns to associate the written grapheme with the spoken phoneme according to some higher-order invariant rules. It may be that the subjects in the present study at the time of the criterion testing had reached the stage of perceiving differences in the words in terms of distinct cues but had not as yet begun to associate symbol with sound. If a model of developmental stages of word recognition skills is appropriate and if the subjects were measured during this stage, the current results would obtain.

It is also interesting to note in scanning the raw data, that many of the children who showed higher irregular-word identification scores than regular consistently identified correctly the word *to*. Although it was not in the criterion test, the word *two* was also in the list of words which the subjects learned. Of course, in ITA both words are written the same way so that the ITA subjects had additional practice in this word and the data may represent an artifact of the word list.

In summary, no differences were found in beginning reading as measured by the acquisition of word identification skills as a function of orthography used in instruction. On the basis of these data it can only be concluded that the degree of match between sound and symbol does not significantly affect a child's beginning reading skill. A consistent lack of differential effect between groups across all other dimensions also lends support to this interpretation.

Assuming the validity of the findings, the results were explained in terms of stages of development of word recognition skills. It was proposed that a stage of discrimination on the basis of distinctiveness of cues occurs prior to the actual association of the written grapheme to the spoken phoneme. If this model is appropriate the fact that differences were obtained in the acquisition of regular and irregular words would lend some support to the notion that the subjects may have been measured during this initial perceptual learning stage rather than at the later association stage.

Lack of complete control of the grapheme-phoneme correspon-

dence variable and methodological considerations such as instructional variability and level of program difficulty may have militated against an adequate test of the hypotheses, however. The possibility that some of the current results may have been obtained as a function of an artifact of the word list used was also pointed out and discussed. Further research is needed in order to elaborate the nature of the effect of grapheme-phoneme correspondence upon beginning reading.

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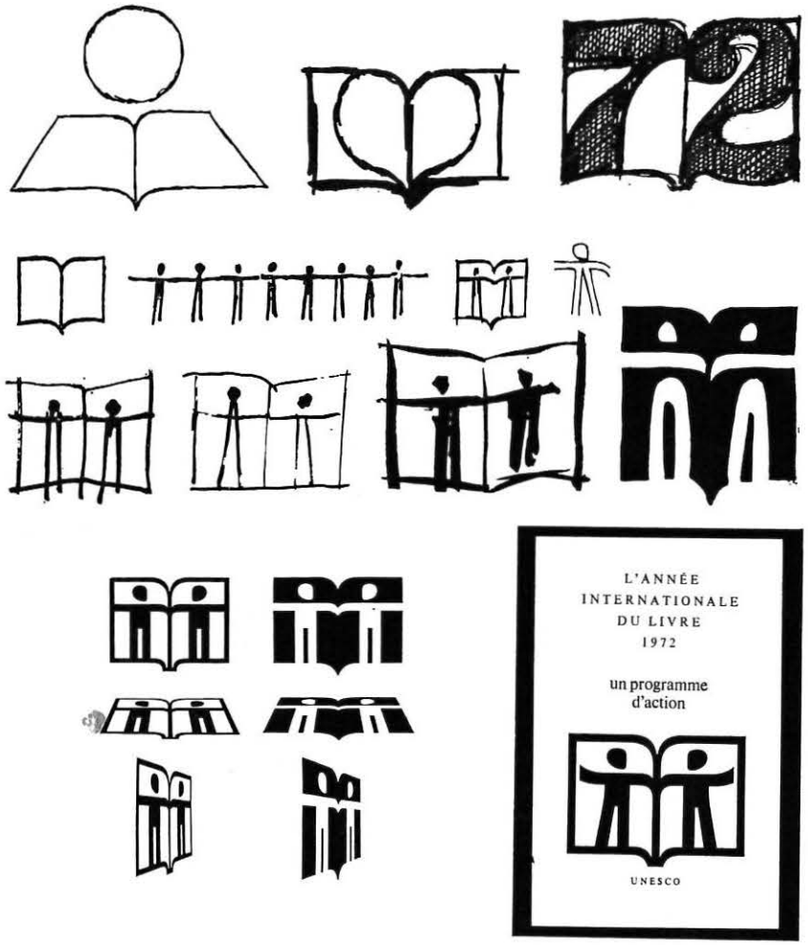

After having designated 1972 as International Year of the Book, Unesco appealed to the International Council of Graphic Design Associations (Icograda) to design a symbol; Michel Olyff, a Belgian graphic designer, was selected. The illustrations above are from an article by Olyff in *Communication et Languages* (114, Champs-Élysées, Paris 8e), reprinted here with kind permission. "I know how to draw a book; I don't know how to draw a year!" Olyff lamented. Abandoned ideas are shown (top): the globe is a cliché; "72" is not meaningful around the world. He decided to show an open book and people holding hands (middle) in a simple form so that "the child of the delta could trace it in the mud and the child of the city could write it on walls." He tested optical deformities (below left) and arrived at the final form seen here in typographic context.

On Effects of Indentation and Underlining in Reference Work

Dirk Wendt and Hans Weckerle

An experimental study with 252 10- to 12-year-old pupils as subjects investigated the effects of indentation and underlining of keywords in reference work. It was assumed that indentation and underlining would make it easier to recognize word shapes, and that this effect would be stronger with the familiar shapes of meaningful words than with nonsense words. Results showed that only indentation made recognition faster, but not underlining; and that this effect was equally strong with meaningful and nonsense words. In total, nonsense words were recognized 17% slower than meaningful material.

This experiment was designed to explore the influence of indentation and underlining on ease of search in reference work. The theory behind it is that both indentation and underlining help to isolate key words, and thus tend to make their characteristic shapes easier to recognize. This effect was assumed to be stronger for the familiar shapes of well-known words than for nonsense words of equal length.

Subjects

Subjects in this experiment were 252 boys and girls in a "Gesamtschule" in Nordrhein-Westphalen, between 10 and 12 years old. Studies on legibility have shown that reading habits are rather stabilized at this age (Buswell, 1937; Ballantine, 1951); i.e., normal readers of this age perceive word shapes the same way adults do. Thus, we can consider them representative of adult readers with respect to the word recognition habits in question.

Method

The subjects were given 8 × 12-inch sheets of paper containing two columns of 40 numerated five-letter words. The second column contained the same words as the first one, but in a different order. The subjects' task was to go down the left column, word by word, and to

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find as fast as possible the same word in the right column, and write down its number. Dependent variable was the number of words correctly identified within a given time of $5\frac{1}{2}$ minutes. In a pilot study, this was found to be an optimal amount of time for this task to get enough variation between subjects and groups to analyze the data appropriately in the context of a time-limit study rather than a work-limit study, which is more economical without losing precision (Tinker & Paterson, 1930).

Six different stimulus sheets were designed and printed, corresponding to six different experimental conditions. Three of them contained ordinary familar German five-letter words of about equal relative frequency in the language; three of them contained nonsense five-letter words (which actually were truncated Finnish words, a language unknown to German children). One of each of these two sets of three Forms contained straight columns of words, flush left, ragged right, without indentation and underlining (Form A). On two other Forms (again one with meaningful, one with nonsense words) every other word was indented about three letter spaces (Form B), and the last two Forms showed separating horizontal lines between the words (Form C). See Figure 1.

Thus we end up, finally, with six different forms:

Form A_m: regular columns of meaningful words
Form A_n: regular columns of nonsense words
Form B_m: indented columns of meaningful words
Form B_n: indented columns of nonsense words
Form C_m: regular columns with underlined meaningful words
Form C_n: regular columns with underlined nonsense words

Each of these Forms was presented to a total of 42 subjects. Actually, the experiment was run in small groups in the classrooms. These actual groups were mixed of subjects using different Forms such that eventual experimental errors in the administration of the tests were evenly distributed over the experimental conditions.

Figure 1. Examples from the six different stimulus sheets.

TABLE I. *Average numbers of correct identifications (and percentages of standard regular meaningful) during the given time limit with the 6 different forms.*

Material / *Display layout*	*Meaningful words* (m)	*Meaningless words* (n)	*Both*
Regular (Form A)	23·56 (: = 100%)	20·11 (85%)	21·84
Indented (Form B)	25·39 (108%)	20·89 (89%)	23·15
Underlined (Form C)	23·16 (98%)	19·30 (82%)	21·23
All layouts	24·06	20·12	

TABLE II: *Analysis of variance between the means given in Table I:*

Source of variation	*SSQ*	*df*	*MS*	*F ratio*
Total	4·184·5	251		
Meaningful vs. meaningless	968·34	1	968·34	78·28 p<0·01
Between layouts (displays)	153·3	2	76·65	6·196 p<0·01
Between cells	1.141·2	5		
Interaction	19·56	2	9·78	<1 n.s.
Within cells (error)	3·043·3	246	12·37	

Results

Table I shows the average number of correct identifications of the 42 subjects in each group. The result of a two-way analysis of variance on these data is reproduced in Table II. The data show significant differences between meaningful and nonsense words, and also between typographic arrangements. On the average, 24·06 meaningful words were identified correctly, and only 20·12 nonsense words. In Form A (straight columns), 21·84 words; in Form B (indented), 23·15 words; and in Form C (underlined), 21·23 words were identified correctly, on the average. Orthogonal comparisons of Form B against Forms A and C showed a significant difference between these groups of Forms (F = 11·78, df —, 1; 242, p 0·01) but no significant difference between Forms A and C (F = 1·26, df = 1; 242). The assumed interaction did not show up.

To summarize the results: indentation of key words makes reference work about 8% faster than the usual arrangement. This effect of identation is about the same with familiar word shapes as with unfamiliar ones. Isolating the word shapes by underlining does not help. Unfamiliar word shapes (i.e., nonsense words) are recognized, on the average, about 17% slower than familiar words.

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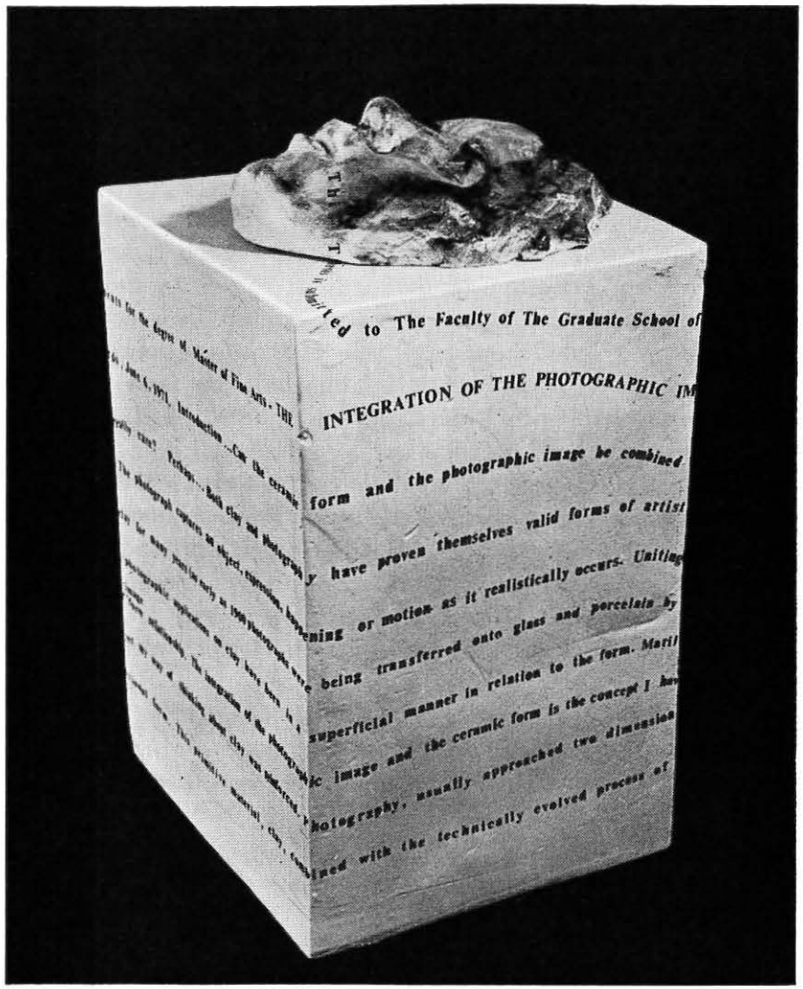

"Bonnie Baldwin Collier's delightful *Thesis Box*," wrote *The New York Times* reviewer A. D. Coleman, "uses words to create a spatial involvement with a sculptural work." The ceramic (17 × 10 × 10 inches) was part of the Photo Media Exhibition at the Museum of Contemporary Crafts, New York, September 1971–January 1972. Photograph courtesy of the Museum of Contemporary Crafts of the American Crafts Council.

Book Reviews

Albert Kapr. *Schriftkunst. Geschichte, Anatomie und Schönheit der lateinischen Buchstaben*. Dresden: VEB Verlag der Kunst, 1971. $11\frac{3}{4} \times 8\frac{1}{2}$ inches, 468 pages, 465 illustrations, 321 type specimens. Price 70 MDN (approx. $18.00).

Obviously the German language lacks certain words whenever it has to be used for writing on typography, so that authors have to resort to other words which in some respects hardly serve the purpose. As my own Dutch mother tongue suffers from similar defects, I am fully aware of how serious a handicap this may be. As a result, eminently sound German books often have rather turbid titles that may render them slightly suspicious to the more sober reader. To give a few examples: one of the finest and soundest treatises on book design known to me, easily the equal of Stanley Morison's *First Principles* (though about ten times as extensive) and far superior to Oliver Simon's *Introduction to Typography*, carries the title *The Art of Typography* (Paul Renner, *Die Kunst der Typographie*, Berlin, 1940). This most valuable book is virtually unknown in the English-speaking world—possibly as a result of its rather unfortunate date of appearance. František Muzika's admirable two-volume book on the history of the alphabet and the development of printing types was published in accessible form (in German, that is) as *Die schöne Schrift* (The Beautiful Letter, which happens to be a straight translation of the Czech title, *Krasné písmo*). Both thus suggest a kind of mysticism that does not go too well with the subject. I may remind the reader of Holbrook Jackson's proposition: "Whether printing is an art or not is a secondary affair as long as it is good printing." The same goes for beauty; according to Morison it is "rarely the reader's chief aim"—neither should it be the designer's. And whether a type should be considered beautiful (or artistic, for that matter), we rather want to decide for ourselves—not forgetting, at the same time, that legibility rather than beauty is the ideal to be aimed at.

These few speculations on art and beauty in connection with type and book design merely serve as a reassurance that behind the title Professor

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Albert Kapr gave his latest book hides a sound and admirable piece of work, even though its title may be considered worse than some others, combining both *art* and *beauty*: *Schriftkunst. Geschichte, Anatomie und Schönheit der lateinischen Buchstaben* (The Art of the Letter. History, Anatomy, and Beauty of the Latin Alphabet).

As behooves a conscientious Marxist, the author (who moved from West to East Germany a few years after the War, and who is now Rektor of the Hochschule für Buchkunst und Grafik at Leipzig) approaches the aspects of the historical development of letter forms and printing types and their use from a historic-materialistic viewpoint, though the quotations from Marx and Engels are few and, if given, very much to the point. In general, political references—whose numbers tended to be slightly obtrusive in some of the author's earlier works—here only occur when he wants to substantiate a specific point.

After an introduction of basically sociologic character, the author devotes one chapter to the origins and the development of the roman capital, laying no claims on original research and duly acknowledging his sources, and another chapter to the emergence of lower-case. With this subject he is obviously on firmer ground: his argumentation is more certain and his reasoning more cogent. A wealth of illustrations, intelligently chosen and superbly reproduced, accompany these chapters. Captions to these seem rather scanty at first sight, really supplying less than a minimum of information, but the diligent reader will find more extensive and on the whole sufficient references on pages 450–457.

In the next chapter, on gothic letter forms, the author feels obviously even more at home—as would most of his countrymen, whether from the West or from the East. German scholars and bookmen, whose ancestors have lived with "broken" letter forms up to within living memory, probably feel a far greater affinity to them than any non-German ever could. The latter generally experiences these forms as a tradition completely foreign to himself, and of poor legibility at that—even as a kind of dead end that took several centuries to be recognized as such. Moreover, over the centuries many German thinkers have been filling this "true German letter form" with rather mystic thoughts on the "German spirit," declaring this form the basic vehicle of that spirit. Even Albert Kapr, sober craftsman though he basically is, does not fully escape this way of thinking, but then he is a Believer (in Socialism, that is), and any belief usually tends to some traits of mysticism. But he hardly suffers from an inclination to over estimate the importance of the phenomenon, so often encountered in German scholars—as non-Germans, as a rule, probably tend to underestimate it.

On the development of printing types in the Renaissance, Baroque, and Classicist periods, a wealth of information is supplied, basically correct as far as I can judge. As Kapr evidently leans less heavily on D. B. Updike (as has been customary for nearly half a century), he happily avoids a number of the more glaring misrepresentations the American author did not shrink away from. Particularly, Kapr's treatment of the late eighteenth century, discussed by Updike in a way that mainly shows how completely out of tune he was with this period, shows a far better insight and hence a considerably greater sympathy from the side of the German author. The way, for instance, in which Updike disposes of J. M. Fleischman ("that tasteless German punch-cutter . . ."), really lacks fairness. If any doubts exist in this context about taste—at best an elusive thing anyway—the taste under discussion is rather Johannes II Enschedé's who preferred Fleischman's work to both Christoffel van Dijck's and J. F. Rosart's. The Enschedés of the period may be rightly blamed for having destroyed most of Van Dijck's punches, but it should not be forgotten that they were *in business*; Van Dijck had been dead for about half a century, his work was then considered old-fashioned, and there was no longer much demand for it. And though we may feel—as I do—that Rosart's designs are more attractive than Fleischman's, there can be little doubt as to who was the better *craftsman*, who was consequently preferred by Enschedé. Kapr thus avoids the rather disapproving tone in which Updike deals with the eighteenth century. Kapr also gives due attention to the origins of the "so-called Janson types" which were designed (according to the findings of György Haiman from Budapest) by Miklos Kis, a Hungarian theologian who turned printer and punchcutter. (Professor Haiman's study will be published in Hungarian in May 1972; an edition in English is under consideration.)

Little attention is given to the late-nineteenth century. The author seems insensible to the now-fashionable appreciation of Victorian designs that may have their occasional charms but seem more often than not just poor design. Kapr's treatment thus shows some slight distortion. He gives the chapter in question the significant title "Klassizistische Schriftkunst und Bürgertum" (Classicist Letter Forms and the Ascent of the Middle Classes) —where his historic-materialistic approach proves itself highly valid—but his subject proper suffers. After having discussed the emergence of sans serif and egyptian types, he at once embarks on the present century, shortly but fully dealing with arts & crafts and the private presses, to continue with a world-wide Grand Tour of twentieth-century type design. His treatment of this subject is very complete and fair. With commending impartiality, he does full justice to present trends and developments in West Germany (in both German nations there is a tendency to consider

the others as "the enemy brothers") and shows more than necessary modesty about East Germany. In the latter context, he just mentions his most important colleagues—the late Herbert Thannhaeuser and Hellmuth Tschörtner—keeping complete silence on his own achievements. More than the usual perfunctory attention is given to Czechoslovak type design; the sometimes highly original and often excellent achievements from that country have suffered, probably more than those of any other in Europe, from isolation caused by early occupation, war, and its aftermath.

At this point the author embarks on some of the more theoretical aspects of expressing language in symbols. After a short section on legibility research, slightly superficial but otherwise full of sound and intelligent considerations, a longish chapter is devoted to the metamorphosis through the centuries of the twenty-six letters, illustrated with plates drawn by the author not unlike F. W. Goudy's for *The Alphabet*. Whether Kapr's representations are correct in all respects seems a matter of some speculation; on the other hand, it is a recognized privilege of any author in this field to make his points—and Kapr's points are generally valid in themselves—by means of examples from his own hand and pen. An admirable summary of the anatomy of the Latin alphabet, set up as a comparative analysis of ten different typefaces (Garamond, Palatino, Caslon, Janson, Times, Bodoni, Walbaum, Neutra (Kapr's own Egyptian), Akzidenz-Grotesk, and Futura) concludes this part of the book. Some cursory attention is occasionally devoted to the use of certain Latin letter forms in the Cyrillic alphabet, a seemingly unnecessary addition as long as the analysis is not continued on either Greek or other Cyrillic forms. This is admittedly beyond the province of a book on the *Latin* alphabet, but as the author shows himself fully conscious of the existence of Cyrillic forms—not surprisingly so!—and seems better placed than many to go into this subject, it seems a pity that he did not do so. (A similar half-heartedness of approach could be observed at the "Scientific Symposium on Book Design and Typography" at Leipzig in June 1971 with Albert Kapr in the chair: the few lectures on Cyrillic stopped at the point where things became really interesting.) It is equally to be regretted that the author does not go further into the development of Arabic numerals in connection with the Latin alphabet. The whole of page 105 (in the chapter on Renaissance letter forms) is devoted to this sadly neglected subject, with a number of well-chosen examples. It is resumed on page 311 where some sound observations are made without arriving at the obvious conclusions. The author rightly prefers speaking of *capital* and *lower-case* numerals, rather than of ranging and non-ranging. He goes on to say that a type without figures cast on en-width would be highly limited in its usefulness, though figures on various widths are decidedly

more beautiful. "The type designer having to design figures on en-width will encounter similar difficulties with his capital and his lower-case numerals; the rather large ranging 0 tends to overflow the en-space assigned to it, whereas the non-ranging 1 is unable to fill it properly." The conclusion he fails to draw is that in solid matter not only should non-ranging figures be used throughout in the text (Kapr rightly recommends this practice that may seem self-evident to anybody grown up in the British design tradition, but which is far less common in Continental Europe; in German usage, ranging figures are even called "normal figures"), but that they might be cast on such widths as they will nicely fill (cf., Spectrum!). Certainly on Monotype this should not be too difficult to realize, provided there are sufficient unused spaces in the matrix case.

The chapter on the present "Renaissance of Calligraphy" strikes the reader as being added as an afterthought, though of course a valuable connection exists between the standards of book design (and its appreciation by the general public) and the level of everyday handwriting. The author supplies an interesting piece of information about the experiences obtained in his own country after the introduction of a reformed method of teaching basic handwiting. Since 1968 writing is taught in East Germany basically according to the ideas of Alfred Fairbank and Tom Gourdy. Four different, though mutually related, hands were designed by Renate Tost and Elisabeth Kästner and introduced at all schools as the compulsory method to be used. The results are said to be surprisingly good; not only is the children's handwriting more legible and better to look at than before, they also learn it more quickly and, as the movements of writing become automatisms at an earlier age, errors in orthography are seen to become fewer after as little as one year of learning.

The final eighty pages of the book are made up of a conspectus of what the author describes as "the most beautiful present-day printing types," broken down into Renaissance, Baroque, Classicistic, Miscellaneous, Sans Serif, Egyptian, Scripts, and Broken Types. Here we encounter, hardly surprisingly so, a great many—the majority, I daresay—of old acquaintances but also a number of strange, at least uncommon, birds—not to be found, for instance, in Turner Berry, Johnson & Jaspert's *Encyclopaedia of Type Faces*. Moreover, Kapr's specimens on the whole are better reproduced —no mean achievement as everybody who has some experience in this tricky field will recognize.

To mention only a few: a "Chinesische Antiqua" designed at the Leipzig Hochschule by Yü Bing-nan; a Garamond version, quite good, by Herbert Thannhaeuser; designs by a number of Czechs (Josef Týfa and Jindřich Posekaný; the latter's Praha Roman shows an extremely clever

solution for one of the "impossible" Czech accents); Tschörtner Roman & Italic named after its designer; and two "integrated" old-style designs from Russia, in which Latin and Cyrillic are treated in one conception. Among the transitional types we find Kapr's own recently launched "Leipziger Antiqua" (as all East German designs, executed by Typoart, Dresden; incorporating the former houses of Gebrüder Butter, Dresden, and Ludwig Wagner, Leipzig), a highly creditable design in the smaller sizes; further Totfalusi Roman & Italic of Hungarian origin (by Antal Thalwieser and Wenzel Wendler; I particularly like their slightly dubiously-conceived shadow caps), and a well-designed Cyrillic without a Latin counterpart, Kusanyana, from Russia. Among the moderns the only curiosity (apart from Empiriana from Prague, that seems to be an ATF pseudo-Bodoni) is the Obiknowennaya Cyrillic, a Russian of Falstaffian obesity, in the Bodoni vein.

As to the inclusion of what in Dutch are called "fancy types," the author shows a wise limitation. I did not feel lacking anything when looking at those I did not know.

A considerable number of sans serifs is shown. Among the designers unknown to me, Stanislav Maršo from Czechoslovakia appears to be a prolific one. As many as seven designs from his hand are shown that seem neither more useful nor more superfluous than others. Further: an extremely wide and heavy one from Hungary by Zoltán Nagy, and an anonymous Russian design, Gasetnaya rublnaya, containing both Cyrillic and Latin characters. Feeling hardly able to judge on Egyptians, Scripts, and "German" types, I refrain from commenting on these. Among the latter, one post-war design only is included, more a fancy script in the spirit of F. H. E. Schneidler than a genuine "broken" type (Rhapsodie by Ilse Schüle, 1951); none other is more recent than the 1930s. If anyone remains in doubt whether this class of type is virtually dead, he may find the answer here.

An impressive list of literature ("main sources," the author calls them) is given—the majority of it German, both West and East, and ranging over the better part of a century. A number of English and American titles is mentioned, as well as some "curiosities." Among the latter we find an anonymous Russian work, *Iskusstwo shrifta*, a book, in Bulgarian by Wassil Yontshev, Oldřich Menhart's "classic" *Nauka o písmu* (Theory of Lettering), Tibor Szántó's *A betü*. A number of fairly important publications seems to have escaped the author, possibly for no other reason than not being available to him: both Hellinga and Vervliet are lacking, so is Morison's *Fell Types*, and anything by Harry Carter, A. F. Johnson, or Victor Scholderer, to name but a few. Beatrice Warde's study on Fournier is

mentioned, but not her pioneering one on Garamond and Jannon. The entries in this bibliography, and to a greater extent the footnotes containing similar information, unfortunately show a number of surprising misprints. These occur particularly in English names and words, but even German does not altogether escape; the most amazing instance being F. H. E. Schneidler who appears to have been renamed Schneider.

But these are very minor objections. In general I find little fault with this admirable book. The two indexes proved adequate and reliable. Technically speaking, the book is almost impeccable, with excellent reproductions, both letterpress and offset, the originals of which may not have been always as satisfactory as might have been hoped. Composition (in Monotype Ehrhardt) and presswork of the text, by the Offizin Andersen Nexö, Leipzig, and offset printing by Paul Trabert, Leipzig, are first-class, in the best Leipzig tradition of high quality. The (author's own) design is—apart from the title-page that strikes me as not quite successful—sober, workmanlike, and most effective. Albert Kapr has supplied a valuable addition to the basic literature on typography.

Huib van Krimpen

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Huib van Krimpen (Churchill-laan 35A, Amsterdam 1010, The Netherlands) is a free-lance deviser, designer, and editor of books, particularly on typography and allied subjects, and until recently was head of publishing at Van Gendt & Co, Amsterdam. He is a regular contributor to professional journals in the Netherlands, and the author of a manual in Dutch, *Boek; over het maken van boeken* (Book; on the Making of Books), 1966.

W. P. Jaspert, W. T. Berry, A. F. Johnson, *The Encyclopaedia of Typefaces*, 4th ed. (London: Blandford Press, 1970).

This publisher's blurb is an honest piece of information: his *Encylopaedia* is indeed the major international reference for all those in any way concerned with typefaces. Even if it were, in any sense, true to say that this is also the only one, this would only add to the merit of the publisher and editors; they have substantially enlarged and revised every successive edition: 1953, 708 entries listed in the index to typefaces; 1958, 940; 1962, 1140; 1970, 1300. This latter edition is even entirely restyled [I miss the ruler!] "with more than four hundred and fifty faces reset to provide better presentation." [By the way, there is more in the book than appears in the index.]

This is clearly a success story extending over a period of nearly twenty years. Considering the very specialized subject matter, success in this case is not a matter of good or bad luck. It was won by dint of persevering effort; real experts have been consulted, and in the future, as well as today, the title page and acknowledgements will also provide useful information. The main object and major problem right from the start, was to *classify* representative specimens of every main type family. And to be as complete as possible meant to include faces no longer available but of lasting historical or artistic interest. But typographic expertise is not enough to overcome the various obstacles to such an enterprise: founders suspend production; are nationalized; change names, etc.

The publication of this encyclopaedia runs parallel with what may some day be called the final stage in the history of "type" classification (for "Gutenberg" type is dying fast). The first edition, 1953, apparently did not try very hard to improve on current practice. True to the image of English empiricism, all the available typefaces were shuffled under seventeen epithets still in use to *describe* rather than to classify. At the same moment, Maximilian Vox and the very first Compagnons de Lure were wrestling with the same taxonomic problem (as distinct from typographic). Here again, true to the image of French excellence in abstract categorizing, the Vox classification was announced in 1954. And for years classification became a "must" in nearly every graphic journal in Europe. In 1958 the *Encyclopaedia* went unchanged—as far as classification was concerned—through a second edition and first revision. Then in 1962 the third edition gave evidence of real efforts to improve on the main object: classification. Epithets were displaced or replaced, but no principle was introduced in order to systematize. Therefore, it may be considered as significant and even important, first, that in 1959 the German Standard, and in 1967 the British Standards, should have adopted the Vox classification and adapted it to the concepts of German- and of English-speaking countries; second, that the *Encyclopaedia* should have followed suit and added a new chapter to its introduction to comment on the subject of classification.

We need not comment on this excellent comment. Except to commend the note which gives a hint at the proper use of the Vox classification, suggesting that compound terms be used. Indeed, to quote Vox, most typefaces are born from two parents and, as any Christian, should therefore be named after their two parents. This, by the way, is evidence that his classification is "biological" rather than "abstract." Further, he never suggested that epithets such as shaded, outline, fat, decorated, etc., should be discarded. I shall deliberately abstain from criticising Helen Wodzicka here; though I am sure I should disagree in several instances with her. (But

that is part of the fun and not necessarily some shortcoming in her, less so, in the system.) I choose rather to congratulate her. For the r point is that on the whole she proved here that the system does work within limits, even when used rigidly—which is admittedly not the I way to use it.

Fernand Baudin

Fernand Baudin (64 rue du Village, Bonlez 5983, Belgium) is a free lance consultant in Brussels, and is a lecturer at L'Ecole de Lure, France. M. Baudin is *Visible Language* book review editor for Europe.

ICOGRAPHIC: A New International Design Quarterly

ICOGRAPHIC, a quarterly review of international visual communication design, has begun publication under the sponsorship of Icograda, the International Council of Graphic Design Associations.

The current number, issue three, presents articles on the general theme, Design for Print. Contributions include: a discussion of the problems of creating a new Japanese typeface and a new Hebrew sans-serif for bilingual printing, a proposal for a standard specification system for print production, the problems involved in designing textbooks for the Nuffield Foundation science teaching projects and a consumer's association magazine, and detailed developments in the metrification of type and the possible demise of the point system. The issue is guest-edited by Ernst Hoch.

Design Education is the theme of issue four and will be devoted to the role of the designer in education. It will include an article on the design and development of the Philips TELL (Teacher-aiding Electronic Learning Links) Project. Issue four will be edited by Patrick Wallis Burke. Issue five will be concerned with the book as a communication tool, and is being produced in honor of Unesco's International Year of the Book.

Subscription rates for four issues are $3.50 for countries within Europe and $6.50 for countries outside Europe. Address inquiries to: Icographic Circulation Manager, 18 South Row, London SE 3, Great Britain.

Correspondence

The editors welcome comments on articles, reviews, and letters that have appeared in past numbers. Communications should be addressed to the Editor, c/o The Cleveland Museum of Art, Cleveland, Ohio, USA 44106.

EDITOR'S NOTE

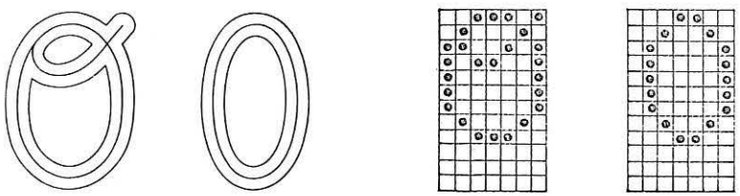
To bring our readers up-to-date on the suggestions which have appeared in this journal for solving the Oh/zero differentiation problem, the following review may be helpful:

In an article in the July 1969 number, Dirk Wendt proposed making "the numerals somewhat lower, and/or the letters somewhat higher, just to give them a small but notable difference in height. . . . The somewhat larger (mistyped) letter Oh would easily show up in a sequence of numerals [e.g., top line below], and so would the smaller somewhat mistyped zero in a top line below], and so would the somewhat smaller mistyped zero in a string of letters":

26.13,28.40,27.04

10 FORMAT(F9.3,F6.2,14)

In an article in the same number, Allen Vartabedian proposed "a loop at the top of the Oh [left] and an oval form for the zero":

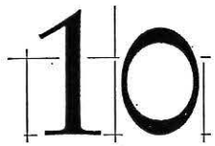


In a letter in the Spring 1970 number, Hermann Zapf responded suggesting that "the traditional form of capital Oh be left unembellished" and that "a short horizontal line [be added] to the right on the upper part of the zero";

▸ 4567890ABCDEFGHIJ
KLMNOPQRSTUVWXYZ

In a letter in the Winter 1971 number, John Schappler tended to agree with Hermann Zapf, but suggested "starting with a short horizontal stroke rather than finishing with it" [left] and that "another way a difference can be made in a thick-and-thin design is what Jan Tschichold did with Sabon: the thick-thin relationship of the old style zero is turned 90°":

HIJKLMNO
34567890



We now pick up our story in Paris. . . .

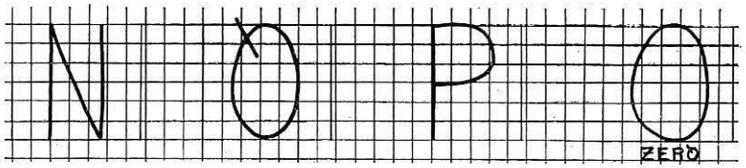
To the Editor:

I read with interest the letter of John Schappler (Winter 1971). It happens that a commission of the ANSI (American National Standards Institute) has been working now for several years on a project for standardization of handprinted alphanumeric symbols for use in communication among humans in the computer sciences, and for communication between man and computer via optical character recognition devices ("optical scanners").

The "oh-zero" problem caused us great difficulties, as you can imagine. However, the proposed standard, now in its final draft before *international* approval, is based on the following considerations: (1) the least violence should be done to existing writing habits; (2) since the numeral zero will be written much more often in the applications envisaged than the letter

oh, any distinguishing marks should be used on the letter, not the numeral; (3) in any case, the numerals are generally written without adornment, the letters may have them.

After considering a letter oh of the form in Figure 1 of Schappler's contribution for the zero, we settled for the shape shown here, as clearest for optical scanning, and not "too stylized."



It was the hope of the committee that worked on this standard that it would lay a solid foundation for future evolution. If typographical designers adopt the opposite convention, as proposed by John Schappler, this will only perpetuate the confusions that our committee is trying to eliminate. But of course, if we do not publish and publicize our work, the blame is on us.

Morton Nadler
Honeywell Bull, 94 Avenue Gambetta, Paris 20e, France

Editor's note: The draft for the ANSI proposal for a Standard Character Set for Handprinting contains the following.

The character set was developed by a group of highly qualified and experienced specialists representing both users and manufacturers of optical character recognition equipment. Important contributions relating to handprinting and reading were made by experts in human factors. This standard is in part an outgrowth of earlier work which was done on man to man communications by ANSI Committee X3.6.3 and the cooperative, parallel work of ECMA TC4 TG Handprinting.

Suggestions for improvement gained in the use of this standard will be welcome. They should be sent to the American National Standards Institute, Incorporated, 10 East 40th Street, New York, N.Y. 10016.

The membership of the X3A111 Subcommittee which had technical responsibility for development of this standard was as follows: G. Berkin, M. Butterfield, J. Cornog, A. Frank, D. Grice, A. Hamburgen, *Chairman*, A. Knoll, R. Maihofer, W. Morgan, M. Nadler, C. Nelson, J. Rabinow, R. Schoch, I. Sheinberg, and H. Silsby.

To the Editor:

Re: Morton Nadler's letter on the ANSI handprinted characters.

Nadler and his commission of the ANSI are concerned with standards for *handprinted* characters; my problem in "O or O?" (J. Typogr. Res., III [1969], 241–148) was their differentiation in computer printouts. For the latter problem, the best solution would still be (1) to make the zeros a little bit narrower and more oval shaped than the ohs; and maybe in addition to it, (2) to reduce the heights of numerals in general (about $\frac{1}{8}$ of the letter height) so that mistyped numerals among strings of letters, or mistyped letters among numerals, show up by their size.

However, problems of computer printouts and handprinted characters are not completely unrelated to each other. The symbols used in both should be compatible in the human engineering sense; they should match to a certain degree. Of course, "make your zeros a little bit narrower, more oval shaped, and $\frac{1}{8}$ smaller than your ohs" is bad advice for handwriting where we usually don't draw that precisely.

I agree with Nadler's point 1: least violence should be done to existing writing habits. I partly agree with his point 2: in data processing environments, the numeral zero may be more often used than the letter oh. But this does not justify that oh should be changed rather than zero. In other environments, oh will occur more often than zero. Therefore, I disagree with Nadler's point 3: there is no reason to give adornments to letters rather than numerals; on the contrary, since letters are usually more frequent than numerals, in accordance with Nadler's point 1, the numerals should have the "adornments." As my own survey has shown (p. 242), more users do expect the zero to be adorned rather than the oh.

There is still another reason to disagree with the proposed symbol, be it for oh or zero: it has its differentiating cue at its left side rather than its right side. Investigations of the scanning habits of human readers have shown that we are looking for differentiating marks at the *right* side of symbols, not left (see Paul A. Kolers, "Clues to a Letter's Recognition: Implications for the Design of Characters," J. Typogr. Res. III [April 1969], 145–168; and follow-up article by Jeremy Foster, "Directional Consistency in Form Identification," IV [Spring 1970], 139–145). The new symbol should meet this habit. Under this point of view, I strongly support Hermann Zapf's proposal to add a dash to the top *right* side of the oval zero (J. Typogr. Res., IV [1970], p. 180).

In addition to the above mentioned advantages, Zapf's proposal also conforms to the existing habit of many people to join zeros like this:

Moreover, the necessity of adding a dash to the top will lead the writing hand to shape the symbol a little bit narrower or more oval, almost automatically, by anticipating the dash while shaping the loop. Thus, the oval zero with the dash right to the top will also conform better to the suggested shape for print. (To test the last argument, just try to draw a couple of ohs with and without the dash—you will find that, even without intending so, those with a dash will tend to be slimmer than those without a dash, which will come out more circular.)

Dirk Wendt
Psychologisches Institut, Von-Melle-Park 6, 2 Hamburg 13, Germany

To the Editor:
I would like to reply to Peter Burnhill's letter to you in the Autumn 1971 number of *Visible Language*.

There is critical tendency by some in the Western countries to champion apparently stainless rational and scientific ways of analyzing, systemizing, and synthesizing everything around us. In their world of technology they view with suspicion anything irrational, anything illogical. Well, good luck to them as long as they do not try to impose an umbrella of "one and only way" over all of us. I have great suspicion for authorities of this kind.

I believe that seekers and searchers of any truth should have the humility to appreciate and understand that other people may have different ways of looking at life and that our ever-changing knowledge at any state is dynamic enough to avoid dogmas of absolutism.

In the latter half of the twentieth century, within the mania of branching and fragmenting the knowledge in the name of specialization, I congratulate you for taking a very necessary and psychologically courageous "*retrograde step*". The words *visible* and *language* increase the scope of discussion and make room for typography and for other important subjects—such as articles by Michael D. Coe and Hella Basu in the same issue in which Mr. Burnhill's letter appears. On the other hand, the word typography is not as magnanimous (as the quotation from Froshaug clearly shows).

I wish we could shake the chip off our shoulder about this quasi-serious love affair with technology and science. It was valid a decade or two ago. But we should learn to live with them as necessary and integral parts of our everyday life. And we need not shout about them. Instead, we could

indulge in curiosities and interests in how other people used, use, and will use language. And this interest must come from a more fundamental feeling towards our fellow man.

I also think that it is possible to bring in joy, beauty, and breathing space within the arena of serious studies without being frivolous. (Rembrandt lost nothing by bringing in the little girl in *The Nightwatch*.)

The technical side of his letter needs more space for discussion. The question of coordination, though important, varies from language to language. And within a language, too, the form of coordination can vary; e.g., the visible language of Mallarmé and Apollinaire can reveal a lot to the first glance. A technical report, a balance sheet, a page from a mathematics book, a poem, a love letter, neon sign, cast-iron letters, writings on the wall, etc., are different in physical structure and at times can be different in coordination and expression. Even in a narrower scale, the availability of variations in a point-size in Univers would make the scope of communication different from the Monotype seven-alphabet system in the same size, and it will still depend more on human psychology than technology.

Trilokesh Mukherjee
Design Department, London College of Printing
Elephant and Castle, London SE1, England

Résumé des Articles

Traduction: Fernand Baudin

Typographie et poésie concrète *par Mary Ellen Solt*

En poésie visuelle concrète il s'agit d'établir une relation entre la forme typographique et le sens. La poésie concrète s'exprime presque exclusivement en linéales bas-de-casse. Cet usage paraît de plus en plus gênant et les poètes s'inspirent de plus en plus de Mallarmé qui faisait une typographie expressive. Les premiers manifestes de poésie concrète faisaient état de l'influence de Mallarmé dans le sens d'une syntaxe spatiale et d'une structure idéogrammatique. Il importe de prendre conscience du fait que la poésie concrète visuelle se réfère à *tous* les stades du développement idéogrammatique et que le genre d'idéogramme voulu par le poète influera sur son choix typographique. Si la poésie concrète doit survivre en tant que genre, ses moyens visuels doivent être libérés et non limités.

Essai de langage diagrammatique à l'usage des maquettistes *par Robert E. David*

La conception d'un environnement est en fait un genre de communication dans lequel le dessinateur doit constamment formuler, fixer et représenter des idées en voie de développement, à l'aide de la parole, de croquis, d'épures, de maquettes. Dans une certaine mesure le succès dépend du degré de souplesse du langage utilisé. Il y a un manque de souplesse réelle dans les moyens couramment utilisés pour traduire ces conceptions d'environnement, depuis le stade verbal initial jusqu'au stade visuel final. L'article propose un système de notation par diagrammes qui mettrait à la disposition des dessinateurs le moyen de représenter leurs idées à un degré élevé d'abstraction. Dans ce système, les éléments de base correspondent à une série d'idées qui, diversément combinées, reviennent constamment dans les divers problèmes de conception d'environnement.

L'orthographe d'Elias Molee *par Henry R. Stern*

Lorsqu'on songe à un langage artificiel destiné à l'usage international, il s'agit d'abord d'élaborer une orthographe. Après une brève introduction consacrée à la notion de langage international, à Molee et à ses buts, l'article décrit l'orthographe qu'il appliqua pendant 25 ans dans ses travaux. A l'examen, ces travaux font preuve d'une incontestable rigueur. Les débuts sont marqués par des innovations et des expérimentations. Dans ses tentatives en vue d'élaborer un alphabet phonétique valable, il s'est d'abord servi de symboles phonétiques, de variantes sur des caractères existants, et même de lettres nouvelles. Plus tard, il s'en est tenu aux lettres existantes. Ce qui s'explique par la nécessité de se faire accepter par les imprimeurs. Si les tentatives de Moles ont échoué, ce n'est pas dû à des failles dans son système orthographique mais plutôt à la faillite inhérente à toute tentative de langage artificiel.

La relation graphème-phonème chez des retardés âgés de cinq ans *par Myrtle Scott*

Il s'agissait d'étudier la relation graphème-phonème dans l'enrichissement du vocabulaire chez des lecteurs débutants. Il y avait deux groupes et deux méthodes d'enseignement. A l'un l'enseignement était donné au moyen de l'orthographe courante; à l'autre, il était donné au moyen d'une orthographe particulière. L'orthographe ne fut pas déterminante dans l'acquisition de mots nouveaux. Des différences significatives apparurent en fonction de la familiarité relative des mots. Contrairement aux prévisions les mots insolites furent nettement mieux assimilés que les mots familiers. La conclusion est que les progrès correspondent à des stades dans la capacité d'assimilation.

Les rentrées d'alinéas et les mots soulignés dans les ouvrages de référence *par Dirk Wendt et Hans Weckerle*

Une expérience fut menée avec 252 élèves de 10 à 12 ans. Il s'agissait de mesurer l'efficacité des rentrées d'alinéas et des mots soulignés dans les ouvrages de référence. La théorie était que les rentrées d'alinéas et les mises en vedette facilitaient l'identification des mots, et que ces moyens se révèleraient plus efficaces avec les mots familiers qu'avec des mots dépourvus de sens. Les résultats font apparaître que seules les rentrées d'alinéas sont efficaces et qu'elles le sont avec les mots dénués de sens aussi bien qu'avec les mots familiers. Au total, les mots dénués de sens sont identifiés à une vitesse de 17% inférieure à la moyenne atteinte par les mots familiers.

Kurzfassung der Beiträge

Übersetzung: Dirk Wendt

Typographie und das visuell-konkrete Gedicht *von Mary Ellen Solt*

Der visuell-konkrete Dichter beschäftigt sich mit der Beziehung zwischen Typographie und Bedeutung. Die konstruktive konkrete Dichtkunst verwendet fast ausschließlich serifenlose Kleinbuchstaben. In zunehmendem Maße empfinden die Dichter diese Praktik als zu eingeschränkt und folgen dem Beispiel von Mallarmé, der die Typographie als Ausdrucksmittel benutzte. Die frühen Manifeste betonten Mallarmé's Einfluß in Richtung auf räumliche Syntax und ideogrammatische Konstruktion. Es muß erkannt werden, daß die visuell-konkrete Dichtung Beziehungen zu allen Stufen der ideogrammatischen Entwicklung hat, und daß die Art des Ideogramms, das der Dichter darstellt, seine Wahl der typographischen Mittel beeinflussen wird. Wenn die konkrete Dichtung eine lebensfähige neue Richtung bleiben soll, müssen ihre visuellen Möglichkeiten erweitert und nicht beschränkt werden.

Vorschlag einer graphischen Sprache der Gestaltung *von Robert E. David*

Unweltgestaltung als Prozeß ist ein Kommunikationsvorgang, in dem der Gestalter kontinuierlich sich entwickelnde Ideen formuliert, aufzeichnet und vorführt, wobei er seine Fachsprache, Skizzen, Arbeitszeichnungen und Modelle benutzt. Der Erfolg der gestalterischen Lösung hängt in gewissem Maße von der Kultiviertheit der Kommunikations-Werkzeuge ab. Es besteht ein bedeutender Mangel an Kultiviertheit der benutzten Übermittlungs-Werkzeuge bei den anfänglichen verbalen Phasen gegenüber den endgültigen visuellen Phasen. Im Aufsatz wird eine Notation aus graphischen Elementen vorgeschlagen, um dem Gestalter ein Kommunikationswerkzeug in die Hand zu geben, das es ihm erlaubt, grundlegende Entwurfsideen auf einem hohen Abstraktionsniveau sichtbar zu machen. Die einfachsten Elemente dieser Sprache stellen eine Menge von Ideen dar, die in vielfältigen Kombinationen wiederholt die Grundgebilde in den verschiedensten Umweltgestaltungsproblemen aufbauen lassen.

Die orthographischen Praktiken des Elias Molee *von Henry R. Stern*

Wer eine künstliche Sprache vorschlägt, die international ernst genommen werden soll, muß zunächst ein wirksames orthographisches System haben. Nach einer kurzen Einführung in den Begriff internationaler Sprachen und in Molee's Hintergründe und Motivationen beschreibt der Aufsatz die orthographischen Techniken, die Molee in einer Reihe von Arbeiten aus einem Zeitraum von 25 Jahren benutzt hat. Bei näherer Betrachtung zeigen diese Arbeiten einen unmißverständlichen Trend. Die ersen Bemühungen sind durch Neuerungen und Experimente gekennzeichnet. Bei den Versuchen, ein annehmbares phonetisches Alphabet zu schaffen, wandte er zunächst phonetische Symbole an, Variationen der gebräuchlichen Buchstaben, und sogar selbst-entworfene Buchstaben. Spätere Bemühungen bleiben aber im Rahmen der konventionellen Symbole. Dies kann erklärt werden durch die Notwendigkeit, die Gunst und Unterstützung von Druckern zu gewinnen. Daß Molee's Bemühungen auf lange Sicht erfolglos waren, liegt nicht an irgendwelchen

eingebauten Schwächen seines orthographischen Systems, sondern an der allgemeinen Erfolglosigkeit der künstlichen Sprachen selbst.

Graphem-Phonem-Entsprechungen beim Lesenlernen von behinderten Fünfjährigen *von Myrtle Scott*

Diese Studie war geplant, um die Wirkung von Graphem-Phonem-Entsprechungen auf den Wort-Erwerb beim Lese-Anfang zu untersuchen. Zwei Gruppen von behinderten Kindern wurden Wort-Erwerbs-Techniken gelehrt, wobei die eine Gruppe die unmanipulierten üblichen englischen Graphem-Phonem-Entsprechungen lernte, während die andere Gruppe eine speziell kontrollierte Graphem-Phonem-Entsprechungs-Orthographie lernte, das Initial Teaching Alphabet (Lese-Anfänger-Alphabet). Es fanden sich keine Unterschiede zwischen den beiden Gruppen infolge der unterschiedlichen Orthographie. Signifikante Unterschiede erschienen in Abhängigkeit von der Wortbekanntheit, wobei bekannte Wörter leichter erkannt wurden als unbekannte. Unregelmäßige Wörter wurden bedeutend leichter erkannt als regelmäßige, was der Vorhersage widersprach und mit Hilfe eines Stufenmodells der Entwicklung der Worterkennungs-Erfahrung erklärt wurde.

Zur Wirkung von Einzügen und Unterstreichungen beim Nachschlagen *von Dirk Wendt und Hans Weckerle*

Eine experimentelle Studie mit 252 zehn- bis zwölfjährigen Schülern als Versuchspersonen untersuchte die Wirkungen von Einzügen und Unterstreichungen bei Stichwörtern beim Nachschlagen. Es wurde angenommen, daß Einzüge und Unterstreichungen es erleichtern würden, die Wortformen zu erkennen, und daß dieser Effekt bei sinnvollen Wörtern stärker sein würde als bei sinnlosen. Die Ergebnisse zeigten, daß nur die Einzüge das Erkennen beschleunigten, nicht aber die Unterstreichungen, und daß dieser Effekt bei sinnvollen und sinnlosen Wörtern gleich stark war. Insgesamt wurden sinnlose Wörter um 17% langsamer erkannt als sinnvolles Material.

Resumen de los Artículos

Traducción: Tony Évora

La tipografía y el poema visual concreto *por Mary Ellen Solt*

El poeta visual concreto se ocupa de las relaciones entre la tipografía y el significado. La poesía concreta constructivista usa casi exclusivamente las grotescas de la caja baja. Frecuentemente, los poetas encuentran esta práctica demasiado restringida y prefieren seguir el ejemplo de Mallarmé, quien hizo uso de la tipografía expresivamente. Los primeros manifiestos de la poesía concreta enfatizan la influencia de Mallarmé en cuanto a la sintaxis espacial y la construcción ideográmica. Es necesario aceptar que la poesía visual concreta se refiere a *todas* las fases del desarrollo ideográmico y que el tipo de ideograma que el poeta presenta, influenciará su selección tipográfica. Si la poesía concreta quiere mantenerse como un género nuevo, su potencial visual debe ser liberado y no limitado.

Propuesta para un lenguaje diagramático del diseño *por Robert E. David*

El diseño del mundo que nos rodea como proceso, es la actividad comunicativa mediante la cual el diseñador continuamente formula, graba y presenta ideas desarrolladoras, haciendo uso de sus dibujos domésticos, bocetos y modelos. El éxito de la solución del diseño depende en cierta forma de la sofisticación de los instrumentos de comunicación empleados; no hay dudas de que prevalece una importante falta de sofisticación entre los medios usados en la transición de las ideas, desde la inicial fase verbal hasta la fase visual final. Este artículo propone un lenguaje numerado de elementos diagramáticos, habilitando al diseñador de un mecanismo de comunicación que le permita visualizar ideas básicas de diseño con un alto nivel de abstracción. Los elementos primitivos de este lenguaje representan un grupo de ideas, las cuales, combinadas de distintas maneras, forman a menudo las entidades básicas de diversos problemas relacionados con el diseño de nuestro medio ambiente.

La práctica ortográfica de Elias Molee *por Henry R. Stern*

Al proponer un lenguaje artificial para ser considerado internacionalmente, debemos haber perfeccionado primero un sistema ortográfico eficiente. Después de una breve introducción al concepto de los lenguajes internacionales, así como una incursión al pasado de Molee y sus motivaciones, este artículo describe las técnicas ortográficas empleadas por Molee en una serie de trabajos que cubren un período de 25 años. Al examinar su obra, ésta muestra una tendencia inequívoca. Los esfuerzos iniciales están caracterizados por el deseo de innovación y experimentación. Al tratar de crear un alfabeto fonético aceptable, Molee primero empleó símbolos fonéticos, variaciones de las letras normales, así como caracteres diseñados por él mismo. Desgraciadamente, los esfuerzos posteriores se concentran en el marco de los símbolos convencionales. Ésto podría explicarse como la necesidad de ganarse el favor y el apoyo de los impresores. Que los esfuerzos de Molee fueran infructuosos a la larga, se debe, no a alguna debilidad inherente a su sistema ortográfico, sino más bien al fiasco general de los lenguajes artificiales.

La relación entre el grafo-fonema y el aprendizaje de la lectura entre niños atrasados de 5 años de edad *por Myrtle Scott*

Este estudio fue organizado con la intención de investigar los efectos de la relación grafo-fonema en la acumulación de palabras nuevas mientras se aprende a leer. A dos grupos de niños desventajados les fueron enseñadas las formas de acumular palabras; mientras que un grupo usaba la ortografía no controlada grafo-fonema del inglés básico, el otro empleaba una ortografía grafo-fonema controlada: el Alfabeto Inicial para la Enseñanza (ITA). No se encontraron diferencias entre los grupos en cuanto a la ortografía empleada se refiere. Importantes diferencias surgieron en la función del nivel de la familiaridad de palabras, siendo las palabras corrientes más facilmente identificadas que las poco usuales. Las palabras irregulares fueron identificadas con mayor facilidad que las regulares, en contradicción con lo previsto, y este hecho fue explicado en términos de modelos de períodos en el desarrollo de la habilidad para reconocer palabras.

Sobre los efectos de la sangría y el subrayado en obras de referencia *por Dirk Wendt y Hans Weckerle*

Un estudio experimental con 252 alumnos de 10 a 12 años de edad, exploró los efectos del sangrado y subrayado de palabras claves en textos de consulta. Se estimó que ambos ayudarían a reconocer las formas de las palabras y que este hecho sería más evidente entre las formas familiares de palabras con sentido, que entre aquellas sin sentido. Los resultados demostraron que sólo el sangrado contribuye a hacer la identificación más eficiente; así como que este efecto resultó igualmente fuerte con palabras llenas de sentido o con disparates. En total, los desatinos fueron identificados un 17 por ciento más despacio que las palabras con sentido.

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