VISIBLE LANGUAGE

The Journal for Research on the Visual Media of Language Expression
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Cover: *Aristotle Writing*. Royal Portal, twelfth century. Chartes Cathedral, France.

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A Manifesto for Visible Language

Merald E. Wrolstad

Mounting research evidence from the sciences, the humanities, and the visual arts prompts this call for a reassessment of some of the basic operating principles of language study. Linguistic research has not adequately clarified the relationship among three components: our inner organization of language (comlang) and its expression as visible language and as audible language. The visible and the audible language systems are discrete; one system cannot be interpreted in terms of the other, and it is not the fit between systems which is of first importance but how each operates independently. Language is of a piece with total human development. Research is reported which indicates that a closer affinity exists between man's internal information processing network and the *visible* language system—both for the way we handle language today and for the way in which our behavioral patterns were established during the origin and early development of language. An appeal is issued for additional research and theory to study the critical issues.

There is a doctrine within linguistics—and, indeed, in the consideration of language in any discipline—which holds that the relationship between speech and language is of a more fundamental nature than that between writing and language; that speech must be viewed as the basic medium for the expression of human language. I argue that the central premises of this doctrine conflict with recent evidence both within language study and in areas which impinge on language study. To put it more positively: I am suggesting that writing—not speech—has been the mainstream of the historic development of language and remains the key to understanding man's use of language for personal expression.

There are, of course, weak as well as strong interpretations of the primacy of speech position, and it is called into question by students of language from time to time. J. W. Firth, for example, has written: "It will be agreed that scientific priority cannot be given to spoken language as against written language, and I believe Bertrand Russell has somewhere said that we cannot even be sure in the dawn of humanity about

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the precedence of written marks and spoken signs."[1] But the fact remains that the primacy of speech position is not seriously challenged within contemporary linguistics, and its basic tenets continue to permeate most language-related research both within and without the linguistic discipline.

I am also aware that others before me have made claims for the critical importance of the visual expression of language. Among French writers especially there has been a strong continuing interest in the relationship between the process of writing and the processes of meaning. Jacques Derrida in particular has cogently argued the theoretical basis for a general science of writing (Grammatology).[2] His exposition—and refutation—of the primacy of speech position and his concept of writing as central not only to our understanding of language but also to the development of human thought have anticipated many of the ideas outlined here.

In the third century Chinese calligraphers discovered the value of putting a stiff center beneath a soft covering in making their brushes. What appears to be missing in our attempts to delineate the relationship among language and speech and writing is the stiff center of research confirmation—a commitment to hypotheses *and* verification as a cooperative scientific effort.

There are various reasons for this. There is, of course, much that we do not know. When we get down deep enough we are faced with two black boxes: the origin of language in history and the organization of language in our neurophysiological system. (It may well be that what we end up with is one black box approached from different directions.) But we are consoled with the belief that it is just a matter of years before the inner recesses of time and mind will be revealed to us.

More to the point, much that we do know has not been incorporated into the concept of language research. The visual system of language is considered peripheral and of secondary importance—a surrogate of speech. Too many critical issues are taken for granted or overly simplified—e.g., that what you are reading now is speech written down; that grammar has its basis in the oral/aural system; that early man spoke a proto-language before he wrote one. As a result, evidence on these issues accumulates without being accommodated into an evolving concept of the entire process, and we are left with a distorted image of language. There is a compromise of research; the critical experiments are not performed. The state of mind is not properly challenged.

An adequate challenge of present assumptions can hardly be mounted in these few pages. All I can possibly hope to instill is what Charles S. Peirce has referred to as "the irritation of doubt." Given the entrenchment of the primacy of speech position, this is in itself a formidable undertaking and can only be approached by getting down to the basic issues on how language works and to the organizing principles of its over-all design.

I believe the evidence is available, but we will have to look outside linguistics—to language-related research in the traditional disciplines of the sciences, the humanities, and the arts. I take it to be the task of an editor of an interdisciplinary journal such as *Visible Language* to gather this evidence. This manifesto is the distillation of the makings for a larger work that will more adequately treat the diverse and complex questions involved. Visible language has the advantage of being demonstrable in research literature, and many of these arguments would perhaps be better illustrated than stated. My emphasis on the words and ideas of others is for two reasons: they have already sharpened their own points, and they demonstrate again that the basic concerns of language research are too pervasive in humanistic research to be left to linguistics.

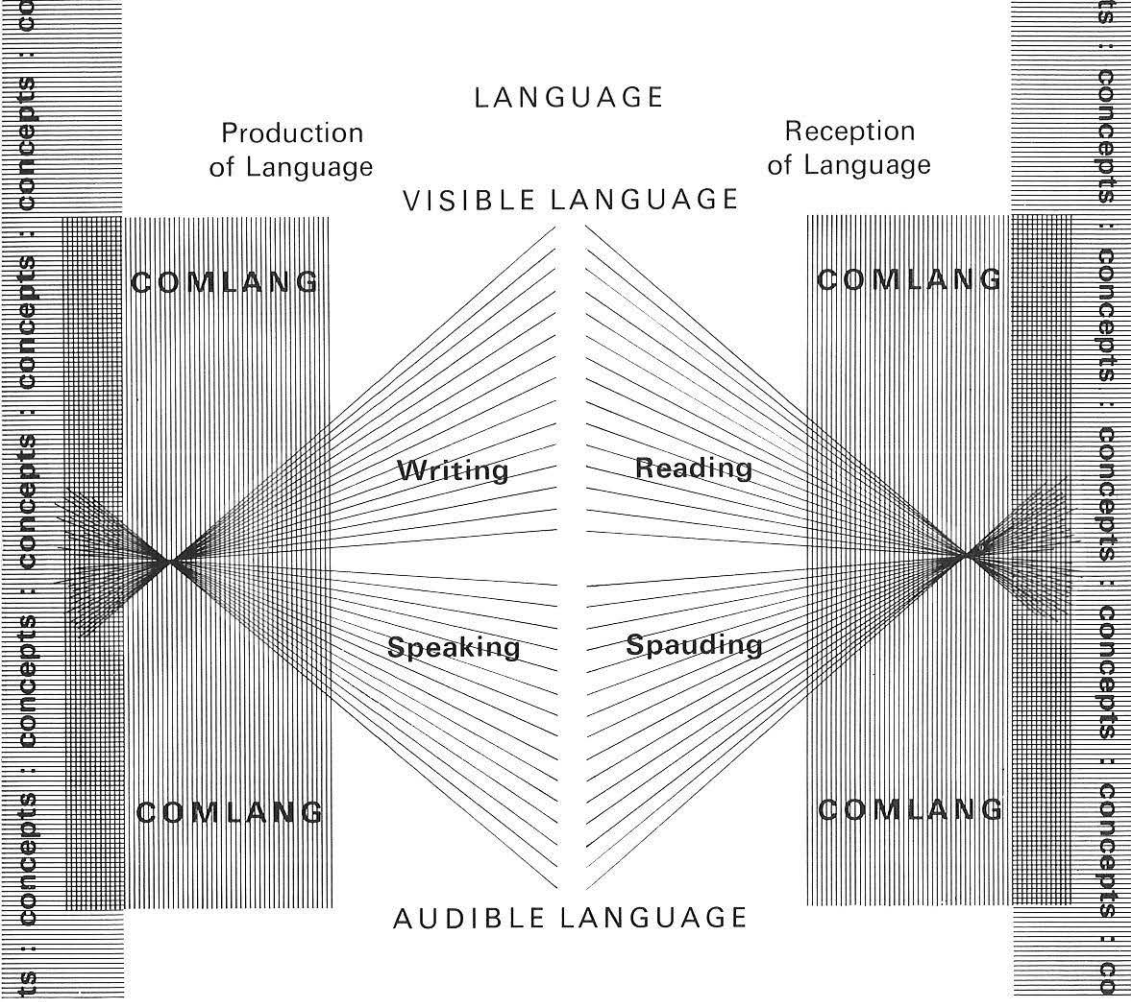
Some of the new relationships being proposed here are displayed in the accompanying chart. As a continual reminder, I have found it useful to incorporate several new terms. A few additional comments may be helpful.

"Verbal" should be interpreted as dealing with words, with no secondary special connection to audible language implied.

"System" of language is used to stress the basic neurophysical separateness of the two production/reception language processes. Basic to this manifesto is the uniqueness of the two language systems and their essentially parallel performance characteristics.

"Visible" and "audible" are used to differentiate these language systems because the interaction point between the production and reception of each is the visible or audible word. And we must think in terms of a unified system for each—from organization in production comlang to reorganization in reception comlang.

"Spauding" refers specifically to the reception of audible language, in order to satisfy the need for a more specific term than "listening"; it has a derivational link to sound and an alliterative link to speech—cf. reading and writing.



Language. The means developed by man to communicate meaning through verbal expression.

Comlang. The controlling processes involved in organizing the production and reception of verbal expression of meaning, including that part of language common to the language systems.

Visible Language. The system developed to utilize the visual/tactile neurophysical processes for the production and reception of language. Also the manifestation of language in visible form.

Audible Language. The system developed to utilize the vocal/auditory neurophysical processes for the production and reception of language. Also the manifestation of language in audible form.

I. Language and Meaning.

My primary concern is not with the language/concept interaction, but several points have relevance to the development of my thesis.

Language is only one of the processes developed by man to communicate meaning. We can assume that since his earliest beginnings man has used every means at his disposal to express himself. We have to understand the natural development of this complementary communication network both in our evolution and in our individual development. Each of these communication tools has its own strengths and its own weaknesses—its special function. We work out our strategies by recognizing our own capabilities in handling each of them. Language may reign supreme in many vital communication functions, but as Balzac noted, we are so constituted that we can withstand the most logical verbal argument but be swayed by a glance.

Each of our communication processes utilizes a complex mixture of mental, physical, and emotional factors. We can also assume that since our earliest beginnings we have used every resource within us to perfect our communication tools. One of the critical resources is creativity, not only that of the individual in his own social context, but also the sparks of genius that created language and moulded it into what Edward Stankiewicz has called "our most pervasive, versatile, and organizing instrument of communication."

Language is form, not content. Meaning is the thread that holds all of our communication effort together. The exact relation of language to meaning is an elusive, theoretical area. Somehow it seems that while meaning is *in* the language process it is not *of* the process. Meaning is not in the word—either written or spoken—meaning is a matter of convention, as Lev S. Vygotsky and others have pointed out. The direct relation between the arbitrary sounds of speech and meaning has not been substantiated. I will, however, consider possible implications of the early link between representation and visible language. While the meaning content has to be central, we are here concerned with the relative efficiency of our communication forms. In language study we are dealing with the window, not the out-of-doors.

Thinking is basically a non-verbal activity. It has been difficult for language theorists not to believe otherwise—including, for example, John B. Watson's assertion that "so-called thinking" is nothing more than minute, sub-vocal contractions of the muscles involved in the production of speech; the Whorfian theory that we think in a language and that

language shapes what we think and perceive; and the Chomskyian theory that there are separate mental faculties responsible for language. The visual artist would certainly question the priority of verbal over non-verbal access to our thinking processes; not being at home in the verbal arena, the argument of his work far outweighs those who attempt to verbalize for him. And this is no chicken/egg problem. That early man required a mind to develop language seems a self-evident truth. Albert Einstein has reported for modern man: "The words or the language, as they are written or spoken, do not seem to play any role in my mechanism of thought. The physical entities which seem to serve as elements in thought are signs and more or less clear images which can be 'voluntarily' reproduced and combined. . . . The elements are, in my case, of visual and some muscular type. Conventional words or other signs have to be sought for laboriously only in a secondary stage. . . ."[3]

Language can only approximate meaning. There is no unequivocal communication by language, or by any other of our meaning-transfer processes. "Whatever we know about reality has been mediated," Ulric Neisser writes, "not only by the organs of sense but by complex systems which interpret and reinterpret sensory information. The activity of the cognitive systems result in—and is integrated with—the activity of muscles and glands that we call 'behavior.' It is also partially—very partially—reflected in those private experiences of seeing, hearing, imagining, and thinking to which verbal descriptions never do full justice."[4] We despair of language, beset by the frustrations of not being understood—you know—and—you know—not understanding. The whole thrust of man's development of language and our competence to handle language is to create the best possible communication tool. As we shall see, there are compelling arguments to suggest that of the two language systems visible language is preeminently the better approximation tool to communicate meaning.

In sum: language must be seen in proper perspective. It is time we reconsidered the linguistic ptolemaic system which supposes speech to be the fixed center of our meaning-transfer universe, about which writing and language and all the other communication processes revolve. The verbal can only be fully understood in relation to the non-verbal. The audible can only be fully understood in relation to the visible. We need to ask the hard questions: How special is language? How basic is speech to the origin and development of the language process and our competence to handle it?

II. The Language Process

At both ends of this communication between us are concepts unformulated in language—the things I want to express right now and things you will be able to grasp (right now!) as a result of this verbal exchange. I first have to get my ideas formulated into the English language and then expressed into the appropriate language system. You have to be able to process this visible language expression, reformulate it into English and reconstruct the ideas—which can, at best, only be an approximation of what I have in mind. It is the layer upon layer of approximation that makes it all but impossible to overstate the complexity of language. We like to believe that somehow, somewhere within these complexities lies a simple, logical design.

For my purposes here I must keep the definition of "comlang" necessarily vague. Leonard Bloomfield referred to "the inner goings on"; perhaps we should leave it at that. In using language we seem to tap some controlling system which helps organize our thinking—what we want to express—as well as how we verbalize it. Although the language process is infinitely complex, it is rule governed. Comlang must include the rules of grammar and our grasp of those rules.

What universals there are in language must also be here. Although Frank Palmer points out that languages differ most in their grammatical structure, we assume that deep down there are similarities, that many characteristics of language are shared. The conventions of language are, however, interlocked with our boundless human creativity. The final reports are still out on whether these shared characteristics relate to some innate aptitude to acquire the rules of language—a potential language—or whether they might be, as George Miller has suggested, only what is easily learned.

My concern is with the interrelationship of parts of the language process and how these relationships developed. Rather than seeking to reinforce assumed connections between elements, I want to stress their autonomy.

Perhaps the clearest evidence to support a distinction between comlang and the language systems has developed in brain damage research. Herbert Pilch has summarized this: "Linguistically, the distinction between aphasis and dysarthria parallels the familiar dichotomies between langue and parole, form and substance, the -emic and the -etic levels. It provides, in a sense, empirical confirmation for these theoretical dichotomies."[5]

There are two points to emphasize here. First, comlang—our basic organization of language—handles language on an abstract level independent of its expression in either of the language systems. Second, each of the language systems approach this basic control directly—through clear channels.

Although we can hypothesize an independent comlang, there obviously has to be continuous interaction among the control center and the two performance systems. Edmund Leach points out: "The relation between the pattern of the shapes of the typewritten letters on this paper in front of me, and the shapes of the sound waves which I am imposing on my breath [as I make this lecture] is extremely complicated, but it is certainly a discoverable systematic relationship, otherwise it would be quite impossible for the sound and the written line to be recognized as having the same meaning."[6]

I am assuming that this complicated but discoverable relationship is part of the organizing of language in the comlang control center. The point here is that we may be better able to sort out this relationship once we recognize that we have two distinct threads to disentangle, and that we need to know a good deal more about how each of these operates independently.

Separation of the language systems and differentiation of their role in the language process will be the main concern of the balance of this paper. I will touch on two dimensions of their relationship: the synchronic, basically through the controlling factor of distinct neurophysical systems and different roles in society; and the diachronic, from language origin to the implications of new electronic devices. There are two points in the establishment of the separation of visible language and audible language that should be kept in mind throughout:

First: connections between the language systems—between reading and speaking or between speaking and writing, for example—are of secondary importance to the connection *within* each language system—between writing and reading and between speaking and spauding, the problems of literacy and oracy. While we should not discount the advantages that a closer fit between language systems has produced, these advantages are concerned almost entirely with language acquisition and language analysis—not with the efficiency of our accomplished performance in either system. The difference between accomplished performance in visible language—either writing or reading—and perform-

ance during literacy acquisition or arrested performance for experimental research is the difference between an airplane in flight and an airplane taxiing on the ground. There may be wheels to help the airplane get into the air, but it is the flight characteristics which should concern us. And, as any pilot will tell you, an important part of flight procedure is getting the wheels retracted as quickly as possible.

Second: we can neither adequately explain nor fully understand one language system in terms of the other. We must be careful to differentiate between research on the basic properties of language and research on the basic properties of either of the two language systems. For various reasons, research on the basic organization of language is more typically carried out in the visible language system; communication about basic language research is almost exclusively carried out through visible language channels. At the same time, an increasing amount of phonological research is being conducted to find out how language works in the audible language system. However, linguists often fail to differentiate between what is being discovered about audible language and what is directly applicable (1) to our understanding of comlang and basic language processing, and (2) to our understanding of how language works in the visible language system. Conversely, all that we know about language history is contained in visible language records. While these records contribute enormously to a better understanding of visible language and how our basic language organization evolved, our interpretation of them as audible language research is much less secure.

I have elsewhere referred to visible language research as an academic orphan. We have only ourselves to blame. A good deal of the problem is our acceptance of the control the primacy of speech position has managed to achieve in language study. Consider the effort spent in reading research alone on attempts to rationalize the forced fit between visible and audible language performance. Although we march to the same drummer, we deal with different dimensions, different equipment, different functions. And it is the differences which are critical to our understanding of the language process.

III. Our Neurophysiological Processing of Language

The basic workings of the human brain are still an enigma. The understanding of the language processes presents perhaps the biggest current challenge to neurophysiological research. The specific correlates of language and of the language systems are unknown, and language is tied up in debates which still rage about such basic questions as whether our higher intellectual powers are the function of the brain as a whole or of specific parts of the brain. My concerns are more modest: Can we identify any evidence in what is being discovered about language in the neurophysiological system to warrant closer examination of the role played by visible language?

Nobel Laureate Gunther Stent has pointed out that visual perception appears to be "a direct analogue to language." More specifically, "our visual perception of the outer world is filtered through a stage in which data are processed in terms of straight parallel lines, thanks to the way in which the input channels coming from the primary light-receptors of the retina are hooked up to the brain. This fact cannot fail to have profound psychological consequences; evidently a geometry based on straight parallel lines, and hence by extension on plane surfaces, is most immediately compatible with our mental equipment. It need not have been this way, since (at least from the neurophysiological point of view) the retinal ganglion cells could just as well have been connected to the higher cells in the visual cortex in a way that their concentric on-center and off-center receptive fields form arcs rather than straight lines. If evolution had given rise to that other circuitry, curved rather than plane surfaces would have been our primary spatial concept."[7]

Stent did not make the connection to the language system he was using. Consider the pages of rows of essentially straight parallel lines on a plane surface your sensory equipment is now processing. We have only to look at the development of writing systems—contemporary or historic—to see the emphasis put on straight parallel lines. And to repeat Stent, it need not have been this way.

That visual perception is a direct analogy to language lends support to the cognitive psychologists' contention that the linguistic and the perceptual channels share some higher cognitive level—a relation between language behavior and non-language perceptual behavior. Charles Osgood has suggested that if we are ever going to write anything productive about how people use language, "we must take into account two things: the prelinguistic development of both meanings and natural

cognitive structures, and the continuous interaction between perceiving and sentencing in ordinary language use."[8]

Cognitive psychology—and language research—is primarily interested in the inner, order-forming capacities of the human mind. It seems generally agreed that pattern recognition may be the key to understanding the brain's operation. As Rudolf Arnheim and others remind us, we owe a debt to gestalt psychology for emphasizing the importance of perception of relations rather than absolute features. Jagjit Singh has pointed out that "in most natural languages ideas emerge not out of language symbols or words per se but out of complex *patterns* formed by them."[9] This is essentially why, after initial enthusiasm over computer analysis, automatic translation of language has bogged down. A computer is still incapable of grasping the entire relevant concept of a language passage.

Audible language involves a temporal pattern or sequence of sounds. For example, certain types of discourse are enhanced—varying in importance in different languages—by a rhythmic temporal pattern. The audible language system is ideally equipped to handle time. Within a continuous sound, for example, the ear can detect a break only 2 to 4 milleseconds long. But the audible language system is not well equipped to handle space. We look to see where a sound is coming from. Roman Jakobson, among others, has pointed out that acoustic symbols deal preponderantly with time in contradistinction to visual symbols which deal mainly with space.

Actually, visible language involves a spatial-temporal pattern; visual perception operates dynamically as both a space- and time-governed system. Spatial perception is dependent on the rapid eye movements that constantly take place in normal vision—a sequential pattern of images—which provide continual perceptual feedback. The eye is the only sense organ that can be called part of the brain; as J. J. Gibson has pointed out, "the brain and the retina are in spatial and anatomical correspondence with each other."[10]

The processing of language, then, involves both temporal and spatial pattern recognition. A. R. Luria provides evidence to indicate that spatial organization may have the more direct tie to our basic organization of language. In an interview on his research in neuropsychology, Luria reports: "As a result of our work with patients with localized lesions, we know the components of such complex psychological functions as reading, writing, problem-solving, and understanding of grammatical

constructions. . . . Neuropsychological analysis has shown that disturbances of the lower parietal lobe (the cortical basis of spatial analysis and synthesis) lead to a loss of spatial orientation and the ability to count and to comprehend complex grammatical constructions. This means that these three different behaviors are all based on a single factor—simultaneous spatial analysis."[11]

Consider also a student learning to "diagram" a sentence, the linguists' display of complex grammatical constructions, and the terminology involved—left and right branching, etc. The point: grammar is spatial; visible language is spatial; audible language is temporal.

Recent second thoughts about the implications for language from split-brain research also throw light on the role of spatial analysis and language. Early split-brain research suggested significant differences in right and left hemisphere function: the left or "dominant" hemisphere being the seat of linguistic, sequential processes (among others) and the right hemisphere being involved in non-verbal, spatial concepts. This strict division now appears to be an over-simplification.

In general, the left hemisphere does appear to be dominant for speech expression, and the right hemisphere does appear to be dominant for spatial relations, for simultaneous patterning, and for some fundamental visual processes. The right hemisphere is by no means unconcerned with language, however. Richard M. Restak reports that "recent experimental data gathered by Eran Zaidel . . . has now convincingly demonstrated elaborate and complicated language performance by the adult right hemisphere. . . . The adult right hemisphere can read and follow instructions despite the inability of subjects to repeat them back, normally a left hemisphere function. . . . The discovery of language capacity in the adult right hemisphere calls for new consideration about hemisphere specialization."[12] Consider Restak's use of the words "elaborate and complicated language performance" (in visible language in the right spatial hemisphere), and Luria's use of "complex gramatical constructions" (in the spatial center).

Michael S. Gazzaniga had earlier pointed out that many right hemisphere functions can go on "independently and largely outside the awareness of the left hemisphere. It can read, learn, remember, emote, and act all by itself."[13]

Other general findings are emerging. A double-dominance model may more accurately reflect the nature of hemispheric organization. As a general rule following brain damage, visible language performance seems

to be more persistent. This is related to the fact that visible language neurophysical activity seems to be more widespread through the brain, whereas audible language activity is relatively isolated. Doreen Kimura suggests, "It may well be that the left hemisphere is particularly well adapted not for the symbolic function in itself but for the execution of some categories of motor activity that happen to lend themselves readily to communication."[14] And our basic concern *is* the symbolic function—the grammatical, spatial organization of the complex forms of language.

Perhaps as a side benefit from these recent discoveries future reporting of research will attempt to make a clearer distinction among language and the expression of language in the two language systems. One of the reasons for the delay in establishing language functions in the right hemisphere was undoubtedly the confusion caused by interchangeable use of "speech" and "language" in the literature as well as failure to recognize visible language as a distinct language system.

There is additional evidence from research on brain damage and dyslexia that visible language and audible language are handled differently by the sensory system. Norman Geschwind, for example, concluded that "the two processes have different neural mechanisms."[15] Susanne Langer had earlier pointed out, "The eye and the ear make their own abstractions and consequently dictate their own peculiar forms of conception."[16]

Man has developed language to organize and express his deepest thinking and his innermost feelings. Language is of a piece with total human development. Given the apparent closer affinity of visible language to our basic processing of language and given the general property of our neurophysiological system to generate efficiencies and economies, it becomes very difficult to imagine that the processing of visible language has to be filtered through or is governed by the audible language system. The facility, accuracy, precision, efficiency—name your language processing yardstick—of our speaking and spauding equipment are no match for their writing and reading counterparts. Both the hand (especially the thumb) and the eye have a disproportionately larger representation in the brain area. Vision is the dominant and most sophisticated of our senses; ninety percent of all information about the world comes through our eyes. If, indeed, language is the key to our human condition, would it have developed and would it be operated under the limitations of the audible language system and the constraints of its neurophysiological apparatus?

IV. The Performance of Language

Without question, the issues involved in our inner organization of language in comlang are central, but language is—first and foremost—a communications tool. To understand the performance characteristic of the two language systems is to help clarify the deeper issues of language research. And we should keep in mind that while cognitive psychologists stress the inner order-forming capacities of the mind, most agree that the capacities are developed only through involvement with the outer world.

We are confronted at once by a basic misunderstanding that persists in research and theory on language performance. I have indicated previously that the primacy of speech position implies that in one way or another, in one form or another, on one level or another the processing of our visible language performance requires the intercession of audible language organization. On the assumption that this is the case, the first priority for past visible language research and theory has been to establish the fit between what Eleanor Gibson and Harry Levin have referred to as "the written sequences and the spoken language." Noam Chomsky has suggested that "the most direct contribution that contemporary linguistics can make to the study of literacy is clarifying the relation of the conventional orthography to the structure of the spoken language."[17]

There are problems involved in maintaining this position. (1) The lack of fit between our performance of audible language and visible language is well documented in the literature. Frank Palmer, for example, has pointed out: "First it is important to realize that the spoken form and the written form of language are different. They are in some ways different languages and these differences can be brought out by careful linguistic investigation."[18] (2) The lack of fit between our performance of audible language and our inner organization of language is equally well documented. Chomsky and Morris Halle, for example, have pointed out: "The primary linguistic data [i.e., speech] are, in large measure, ill-formed, inappropriate, and *contrary to linguistic rule* [my italics]."[19] (3) Given the ineptness of most audible expression of language, on what basis can we then project the order-forming capacity and control of our inner organization of language? Our evidence of what full language "competence" might consist of it based on its manifestation in our visible expression of language. We may grasp from audible language performance the *need* for inner language resources, but we will never know what man is fully capable of from analyses of natural speech performance.

Consider then:

Audible language performance is a poor fit to visible language performance.
Audible language performance is a poor fit to inner language organization.
Visible language performance is an excellent fit to inner language organization.

But how can this be? If speech is primary, our innermost, basic language organization somehow must more closely represent the structure of audible language.

Voilá: Visible language performance must be an excellent fit not to inner language organization directly but to a theoretical inner structure of *audible* language—which, in essence, should be identical to the inner organization of language. Visible language, it then develops, is not language at all; it is a surrogate of speech. Visible language becomes "second-order" mapping to the hypothetical inner organization of audible language, not to the inner organization of language per se—to which it alone is the near-perfect fit!

The intricate rationalization of this primacy of speech position is not the concern of this paper. In its place I am suggesting reconsideration of the basic issues involved. In terms of the processing of language and in terms of the origin and early development of language, our accomplished performance in every established writing system—phonetic or non-phonetic—maps directly to meaning. Further, our inner organization of language can more appropriately be called the structure of *visible* language. The critical point here is the primacy of the visible language system at the very heart of language organization. Fred Householder asks, "Is it more economical to specify phonology first and derive orthography from it, or the other way round?" After eight pages of discussion, he concludes: "The chain of steps which leads from the stored form to the printed shape must come *before* the rules which eliminate the multiplicity of apparent phonological shapes, which must, in their turn, be earlier than the majority of phonological rules. Hence, even if you reject the lexical storing of pure orthography only, and store instead some precursor notation which will yield both orthography and phonology, the written shape must be generationally earlier, prior to the phonological shape. . . . So from the point of view . . . of economy and plausibility of rule construction, we must allow that writing is prior."[20]

I have stated that as a topic for language research and theory, the fit between visible language and audible language is of secondary importance to the understanding and perfecting of man's literacy and oracy. Without doubt, visible language and audible language have a substantial effect on one another, and it is important to understand the relationship. But we must keep in mind that for the accomplished performer in visible language, the phonic code is incidental. Phonetization of the alphabet and other writing systems is a province of orthoepy.

No problem in literacy research is more in need of critical attention than our lack of understanding about the accomplished performance of the literate reader and the literate writer. An important part of this is putting language acquisition into proper perspective. While no literature even approaches the sheer volume of literacy acquisition research, we still cannot seem to sort out methods and goals. The phonic training wheels are convenient and useful, but in a quantum jump to literacy the child short circuits the improvised audible language by-pass and with it his dependence on the phonic code. The surprising thing about leaning to read for the normal child is not how difficult but how easy and natural it is. There are enormous problems yet to be solved in reading research—e.g., in remedial reading and in understanding the reading process—but teaching the normal child to learn to read is not one of them.

Literacy acquisition is the child's introduction to an understanding of what constitutes the rules of language organization. There is no question that in his pre-school years he learns to converse fairly well and, it appears, in creative ways, but reading research is discovering that most children enter school in a state of cognitive confusion regarding the components of language. There is evidence, for example, that they do not understand what constitutes a spoken word.[21] And we have not properly challenged the primacy of speech position that our basic inner organization and processing of language are established during these pre-school, pre-literate years. Consider the contention that while a child has to be taught to read and write, he acquires language spontaneously through speech. M. M. Lewis has suggested that the richness of a child's early linguistic experience is greatly underestimated. "A child with normal hearing, born into a society of speakers, is surrounded by language from the moment of his birth. In his first three years, say his first one thousand days, he must hear some millions of words."[22] And Katrina de Hirsch points out that during this period he has perhaps the most dedicated teacher he will ever know: "The mother's on-going vocal and verbal

exchange with her baby . . . provides the matrix from which spring early communicative attitudes as well as the enjoyment of verbal give-and-take, which is essential for language acquisition and later learning. The mother caresses her baby with her voice; she tailors her own utterances to his specific developmental needs; she endlessly repeats sounds, words, and phrases, thus providing him with the data that allow him to detect and to organize the recurring intonational and phonemic signals into more stable categories. Wyatt describes this interaction as a mutual feedback based on unconscious identification. Piaget calls it 'contagion verbale.'"[23]

With an appropriate tool and a surface for marking, a normal child will begin spontaneous scribbling at about 18 months of age, somewhat later than spontaneous babbling; given a demonstration, he will produce scribbles even earlier.[24] We all know cases of children learning to read by themselves before entering school, although I am not aware of a research study on this. As recently reported in this journal, Danny D. and Miho T. Steinberg with dedicated parental attention beginning at six months of age taught their son "significant reading skills" before he could speak.[25]

Ever since Fernand de Saussure pushed aside his stacks of dusty volumes and abandoned his library carrel for the fresh air of contemporary speech, linguistics has been enamoured of "the living language." Obviously, the human social need for and dependence on the spontaneous flow of conversation is crucial to our understanding both of the origin and development of audible language and of its role in our network of communication processes. Important as talk is to us, however, I believe we need to take another look at its being designated the living source of human language.

Gilbert Ryle has pointed out that in the greater part of our conversation "we say the first things that come to our lips without deliberating what to say, or how to say it; we are confronted by no challenge to vindicate our statements, to elucidate the connections between our utterances, or to make plain the purpose of our questions, or the real point of our coaxings. Our talk is artless, spontaneous, and unweighted. It is not work and it is not meant to edify, to be remembered, or to be recorded."[26] We are interested in differences. R. Quirk has reported that "The Survey of English Usage considers that for grammatical research it is essential to have adequate samples of unprepared speech and free conversation and also collect written material in manuscript form as well as in print. There

is no reason to doubt that our organization of sentences is very different as between speaking and even the most casual letter, irrespective of whatever differences there may be or may not be in our use of vocabulary. We know that a perhaps even greater change comes over our sentence structure when we are preparing a more formal piece of writing—even some announcement for the bulletin board."[27] Why the basic difference? For two major reasons, I think: our audible language performance is caught in a temporal crunch and in an organizational crunch.

The Temporal Crunch

Audible language's original and abiding advantage is immediacy. But language is a complex mentally demanding process, and to organize it properly requires time and concentration. Eric Lenneberg has pointed out that our halting performance of natural speech is not so much the limitation of our articulation as our inability to organize abstract language fast enough. We speak off the top of our Broca's Area; when we are forced to be precise—to find the exact word, to use correct grammar and syntax—we are frustrated. And our listening performance is equally frustrating because we are not in charge of the situation. Since our goal is to approximate meaning, as best we can, we are forced to shift our communication strategy. We call on our non-verbal resources—vocal expression and especially gesture. And when the going gets tough in listening, we get effective support through labiolexia (which may be our only completely speech-based visible language!). There is a danger of confusing the complex total social exchange involved with the speech act for actual *language* performance. What is important for research is the distillation of pure language structure out of the larger field of semiotics —making a clearer distinction between the verbal and non-verbal content of "the living language."

The conversational nature of audible language has, of course, been the concern of a considerable research literature. Audible language is essentially a dialogue—a continuing give-and-take interaction of relatively small language units; in the average conversation a speaker is interrupted after every two or three sentences. The strong emphasis on the processing of speech in our short-term memory seems geared to our remembering just long enough to make a reply. Sentencing is also involved here and appears to be the activity of separate short-term memory mechanisms for the audible language and visible language systems.

While the dialogue pattern of exchange provides the obvious advantage

of communication rapport—including immediate feedback—it carries with it another element in the time vise on audible language performance. As you must realize from your own work, the use of language in any way approaching its true potential requires the time to settle into an idea, time for concentration. We want only to be let alone. Paul Horgan has written about his work as a professional writer: "The working day starts . . . on awakening, with a sort of bated breath in the thought, if I may put it so. Preparation for the morning's task gets under way in a state of absentmindedness. Any contact with a serious distraction or obligation elsewhere may, at this daily moment, disturb a balance already delicate. A phone call is a minor catastrophe and a knock on the door a potential disaster."[28]

Marcel Proust has written on the nature of reading: "The essential difference between a book and [a conversation with] a friend is not their degree of greatness of wisdom, but the manner in which we communicate with them—reading, contrary to conversation, consisting for each of us in receiving the communication of another thought, while we remain alone, that is to say, while continuing to enjoy the intellectual power we have in solitude, which conversation dissipates immediately; while continuing to be inspired, to maintain the mind's full, fruitful work on itself. . . . Reading, in its original essence, in that fruitful miracle of a communication in the midst of solitude, is something more. . . ."[29]

The Organizational Crunch

"Verbal language" is a redundancy. Language has to do with a body of words and the methods of combining them. We are less sure about what constitutes a word and how words function in language. Vygotsky has written "By *unit* we mean the product of analysis which, unlike elements, retains all the basic properties of the whole and which cannot be further divided without losing them. . . . The true unit of biological analysis is the living cell, possessing the basic properties of the living organism. What is the unit of verbal thought that meets these requirements? We believe that it can be found in the internal aspect of the word, in *word meaning*."[30] Gibson and Levin have pointed out that "So far as meaning is concerned, Chomsky is called a 'lexicalist,' since the focus of semantics in his theory involves the choice of words that have meaning in the framework or context of the sentence's grammatical form. His theory of lexical choice, which applies equally to written or spoken language, led him to believe that English orthography is near optimal."[31] Word mean-

ing, of course, is central. Words are useful to us only for the meaning we attach to their arbitrary form. There are, however, some aspects of these language forms we have developed to hold meaning that are pertinent to my thesis.

Words are not a natural language unit for audible language. Division of the unified and continuous stream of speech into constituent elements by researchers has turned out to be extremely difficult. Luria reports that "all aspects of the speech process in normal utterances are connected and indivisible to such an extent that a division into their components and a statement of their underlying factors is not always possible."[32] Reporting on research on conversational speech in acoustically optimal circumstances, Eric Wanner concluded that "conversational speech is simply not clear enough to permit a listener to recognize one word at a time, using the sounds local to each word. . . . Speech is recognized in terms of units which are longer than the single word."[33]

Frank Palmer is a linguist asking the question, "Are there words in the spoken language? . . . We must not assume that whenever we have words in writing we must have words in speech. This is a clear example of one of the areas in which we must keep speech and writing distinct, even if it is very difficult to do so." He ends this discussion: "In conclusion, sadly, we have to say that the word is not a clearly definable linguistic unit. We shall, perhaps, have to recognize some kind of unit that corresponds closely to the written word and define it ultimately in terms of a combination of features. . . . Some theorists have decided to do without the word altogether."[34]

The word *is* a clearly definable linguistic unit—alive and well—in comlang and in the visible language system. David Abercrombie has pointed out: "*All* systems of writing known to us give their symbols to words: the differences between them lie in the way these symbols are constructed. They may be simple symbols, or they may be made up from a small number of subsidiary signs; but however they are made up, it must not be forgotten that they will be read as words, and probably written as words also. . . . The object of writing is to provide an unambiguous symbol for every word in the language concerned."[35]

The word is a visible language concept. The significant visual pattern is the word unit, whether we are dealing with early man's first development of unambiguous language symbols in the form of representational "word" units or whether we are today putting together Chinese characters out of 22 different brush strokes or English words out of 26 alphabetic

letters. The important point is that the unit around which language is organized is directly compatible with verbal processing in the visible language system.

Students of language have since Aristotle recognized the difference between the discrete nature of language and the continuous nature of speech. For this reason primarily linguists have been hard pressed to find a workable unit for audible language research. And it is probably the reason why we have no practical organization of language based on phonological rules. If we were to produce a dictionary of language units based on audible language performance, how would it be organized, or used?

Beginning in the early 1930s Leonard Bloomfield and the post-Bloomfieldian structuralists attempted to build their speech regularities, patterns, and rules on a theoretical unit of sound: the phoneme. But the phoneme has proved to be a very elusive working unit for speech analysis. In summarizing research on errors in spontaneous speech, Victoria Fromkin points out a rationale for the phoneme's existence: "Many errors involve the abstract, discrete elements of sound we call phonemes. Although we cannot find these elements either in the moving articulators or in the acoustic signal, the fact that we learn to read and write with alphabetic symbols shows that they exist."[36] The larger working unit for speech analysis is the utterance—which can be defined as any continuous stretch of speech from a single source. Adaptable to the way people actually speak, it can be made up of grammatically incomplete sentences, a single sentence, or a sequence of sentences. It follows, however, that no matter what form the linguists' characterization of audible language takes, it will ultimately have to be reconciled with word-unit processing in our inner organization of language.

George Steiner has commented on the difficulty of audible language analysis: "To plead the exceeding difficulty of the whole business is no evasion. It turns out that a complete formal analysis of even the most rudimentary acts of speech, poses almost intractable problems of method and definition."[37] It is no wonder (to recall an old joke) that linguists choose the visible language system in which to do most of their work—where the light is better.

Jerome Bruner has suggested that the mind employs two basic rules in perceiving and putting order into our information processing: minimization of surprise and maximization of attention. The reason why no com-

munication can match the printed page in efficiency of information transfer is because only typography provides the uniformity of language performance required to minimize surprise and maximize attention—in fact, to such an extent as to make the visible language process transparent.

Typography involves both the design of a matched set of letters and their organization on the page. In his attempt to imitate contemporary handwritten manuscripts, Gutenberg's most difficult task—and the secret of typography's success—was the fit of these interchangeable letter units. A serendipitous result was the quantum jump to silent reading. (Could the ancient and medieval practice of only reading aloud be a legacy of the Greeks' addition of vowels to the alphabet to facilitate pronunciation?) John Mountford has referred to "the change from the manuscript-age practice of teaching writing (with reading intrinsic) to the growth of the policy, induced by the advance of printing and its concomitant literacy, of teaching reading (with writing extrinsic)."[38]

The audible-language Gutenberg may be at work now at the Massachusetts Institute of Technology. A machine has been developed there that converts printed or typewritten text into computerized speech. The computer analyzes the signals according to programed rules for pronunciation and sends a command for coded speech units to a speech-producing device which transforms the coded signals into language sounds. The intriguing question is whether the new machine will provide the necessary uniformity of speech units for a parallel quantum jump in audible language processing—from the current emphasis on speaking (with spauding extrinsic) to an emphasis on spauding (with speaking intrinsic).

You may well ask: But what happens to the living language? During printing's incunabula period the Duke of Alba is reported to have forbid the placement of any printed book on his library shelves. Who can look at a medieval illuminated manuscript and not identify with the hue and cry that must have accompanied the mechanization of handwriting. Living language remains in much visible language expression—we are apt to forget this dimension in the flood of typography—and it will remain in audible language. But the attack on the inefficiency of speech production may be an idea whose time has come. Special requirements for the blind have sparked the invention of computerized speech; communication pressures will undoubtedly exploit it.

V. The Evolution and Early Development of Language

Last September I attended the week-long conference on Origin and Evolution of Language and Speech sponsored by The New York Academy of Sciences—53 speakers plus discussion. I missed no more than an hour or so and recall only one fleeting reference specifically to written language. You are not surprised; I was not surprised. Nowhere is the primacy of speech position more ingrained than in the theoretical link of speech and language in glottogenesis. Which is not to imply, however, that the conference was without valuable evidence to support this manifesto. A more accurate name for the New York meeting would have been Primate Communication and the Gestural Origin of Language—to borrow the title from Gordon Hewes's excellent article on this topic which must have sparked the conference.

While it is still a moot point, anthropologists seem generally agreed that articulate speech has been a fairly recent human acquisition. How recent depends on whom you read. Philip Lieberman has determined that reconstruction of the vocal apparatus of Neanderthal man (ca. 70,000 to 40,000 BC) indicates he lacked a pharynx, which plays the major role in determining phonetic quality of vowels and consonants of human speech.[39] It would thus be impossible to teach a Neanderthal to talk any human language. It also seemed to be the consensus that, contrary to most previous theory, sophisticated audible language was not required for early man to make tools and perform his day-to-day activities. And neuro-anthropologists had previously pointed out that all of the basic evolution of the brain took place before the emergence of speech.

In essence, the gestural theory of origin supplies the proto-language base from which audible language is said to have sprung. I find myself eager to agree with most of the gestural theory arguments. For example: Man's language is connected to his superior intelligence and depends on more than the presence of organs capable of producing sound. The ultimate origin of language must lie far back in time, in connection with environmental and social pressures and in relation to earlier primate communication. The capacity of higher animals to "read" signals emitted by other species is an important primate preadaptation for language. The handing down of tool traditions probably depended for a long time not on speech, but on visual observation. Cerebral lateralization preceded the development of speech and depended on "the joint selective produc-

tion of more precise tool and weapon manipulation, pressures for much greater terrain cognizance involving right-left consistency with respect to responses to visible landmarks, and the growth of a manual-gesture did not wither away but persists as a common accompaniment of speech, either as "a kinesic paralanguage for conveying nuances, emphasis, or even contradiction of the spoken message."[40]

While the arguments and logic of the gestural origin theory help clarify the primacy of speech position, I have trouble coming to similar conclusions. The gestural theory (perhaps better: the "gest-oral theory") goes a long way—but only part way. If we are going to revive the language origin issue after a hundred dormant years, we had better get *all* the folders out of the file.

It is also important to keep in mind that the origins of gesture and speech and writing are all intermediate checkpoints; our primary target is understanding the origin of language. The late arrival of sophisticated speech on the human communication scene is, in itself, incidental to the larger issues involved. The basic assumption in emergence-of-man research is that most contemporary behavior is based on patterns established during the last few million years of evolution. We are interested, then, in determining the most logical natural connection of language origin with the total development of man. More specifically, if the ties between the visible language system and our basic inner language capacities are as direct as they appear to be, we need to ask how these patterns were established.

A second major theme of the New York meeting was the possible continuity of cognitive processes between subhuman and human primates, primarily as demonstrated by the chimpanzees which have been taught language. There seems to be little doubt that chimps have learned—by using sign language or geometric visual symbols—to communicate with a visible "language." Lana (at the Yerkes Primate Research Center in Atlanta) using a vocabulary of about 120 words is reported to have developed far beyond simple signs and is able to grasp abstract concepts and to compose novel, meaningful sentences. Lana initiates linguistic exchanges, composing both questions and statements not taught to her. But is she or is she not using language similar in some degree to our use of language?

Ann J. and David Premack have written, "Why try to teach human language to an ape? In our own case the motive was to better define the

fundamental nature of language. . . . It is possible that certain features of human language that are considered to be uniquely human belong to the more general system, and that these features can be distinguished from those that are unique to the human information-processing regime. If, for example, an ape can be taught the rudiments of human language, it should clarify the dividing line between the general system and the human one."[41]

Several points are pertinent here: (1) The theoretical gulf separating the cognitive processes of man and animal seems to be filling in. Linguistic potential or capacity of primates is one of the approaches to understanding the similarity and differences in these processes. (2) Lana (from Atlanta) uses a computer keyboard (with geometric symbols) and a video screen; Sarah (Premack) uses variously shaped and colored pieces of plastic; Washoe (Gardner) uses American Sign Language.[42] The common factor in all of the sussessful attempts to teach at least the rudiments of language to apes has been in the visual/manual mode. (It would be interesting to see how Lana and Sarah react to symbols constructed out of straight parallel lines on a surface.) (3) In a book review Peter C. Reynolds writes, "Why [does] communication develop in one channel and not another. . . . Tembrock points out that in mammals, acoustic and visual communication succeeded the more primitive chemical channel; but in some taxa vocalization has undergone a secondary regression, whereas in man it became the vehicle for language—a curious development for a visual animal."[43] The ideas get curiouser and curiouser. The initial attempts (in the 1930s and 1940s) to teach chimps to communicate with language started out with the idea that if language learning were possible at all one could, of course, elicit and control vocalization in apes. The efforts failed. Recent evidence reported by Richard Restak suggests why: "Ronald E. Myers . . . has studied the comparative neurology of vocalization and speech. His research indicated that human speech developed spontaneously at a certain level of hemisphere integration and is totally unrelated to the crude vocalization of the other primates."[44] The audible language system was apparently an adaptation—a grafting on to basic processing already established.

In order to come to terms with his environment as well as with his contemporaries, early man must surely have used his entire primitive semiotic repertory—gestures, cries, expressions, marks. Out of this mixed bag, which communication effort was he better equipped and more strongly

motivated to capitalize on as part of his developing human condition? Robert Baidewood lists four elements involved in the earliest differentiation of man: "(1) The increasing usefulness (specialization) of the thumb and hand. . . . (2) The development of tools. . . . (3) The increasing size and development of the brain. (4) The development of simple language. Nobody knows which of these is most important, or which came first. Most probably the growth of all four was very much blended together. . . . Unless your hand is more flexible than a paw, and your thumb will work against (or oppose) your fingers, you can't hold a tool very well. But you wouldn't get the idea of using a tool unless you had enough brain to help you see cause and effect. The increase in brain size and the internal reorganization were probably associated with basic behavioral changes. These changes probably resulted in language and tool production. And it is rather hard to see how your hand and brain would develop unless they had something to practice on—like tools. In W. M. Korgman's words, "*the hand must become the obedient servant of the eye and the brain* [my italics]."[45]

No idea has had more support in anthropology than the critical importance to man's emergence of tool making and tool use. George Miller and Jerome Bruner, among others, have stressed the connection between the use of tools and the development of language; the development of manual skills includes strategies later used for thought and language.

That tool use preceded language use there is little doubt. The earliest tools found have been dated to about 3 million years ago. Man's first thoughtful mark making, therefore, can be similarly dated, since the first thing one does with any tool is make a mark, if it is only the impression left by an unworked, hand-held rock. Tools got more sophisticated; marks got more sophisticated—and, I suggest, more meaningful. How does one tell one flake tool from another except by its distinctive surface pattern of marks? Archaeologists report that tools were made to a pattern at least a million years ago, about the time the control of fire appeared as a major technological addition—and with it the marking tool we still find almost impossible not to experiment with while sitting around a camp fire.

Early man was a visual animal, but he could depend on both his sight and his hearing for accurate, precise sensory information; although, as I have indicated, human vocal capabilities were severly restricted until much later in human development. The communication effort for which

man was best equipped was mark making. From among the bones just reported discovered in East Africa (dated to at least 3 million years ago), Donald Johanson has "pieced together a composite hand that he said approximated modern man's in size . . . and appeared capable of as much dexterity as today's human hand."[46] According to Alan Lomax, "There can be no doubt of a rapid evolutionary development in systems for handling symbols. In fact, the close parallel between the manipulative and the differentiative factor suggest that every major human advance has been made possible by an increase in manipulative finesse."[47]

At the New York meeting Alexander Marshack presented photographs of a fragment of an ox rib dug up in France and dated to the Early Mousterian Culture of about 300,000 years ago. On it someone had scratched over and over again pairs of straight parallel lines. Composition of individual zigzag elements involving several lines was continuous, made without lifting the tool from the surface.[48]

Is the system of markings on this Mousterian fragment a form of decoration? Perhaps. But keep in mind that until as late as the eighteenth century hieroglyphics were thought to be only Egyptian tomb decoration. Are the marks writing? Surely not in our generally accepted definition. Are they a form of visible language? It would be tempting to compare Marshack's discovery with, say, a crude line of eighth-century runes and extend the emergence of visible language back to Homo erectus! There is other evidence that supports the idea. Ralph Holloway has pointed out that a region of the brain associated with language ability and that is visible as a bulge on the brain of modern man is just barely discernible on casts made inside the "1470" Leakey skull (estimated between 2 and 3 million years old). This suggests that a region of the brain involved in language may have begun to develop that long ago.[49] But let us settle—for now—on the marked fragment being just that, only a piece of the puzzle.

If what we have here is evidence that our ancestors 300,000 years ago were interested in and capable of making a meaningful pattern of visible marks that appear to be at least visually related to later development of writing, then all of the pre-historic scratches and drawings and decorations we assemble since that period take on added significance. The bulk of Marshack's research has been concerned with analyzing recurring patterns of markings on fragments of bone, antler, and stone used throughout most of what is now Europe and beginning about 34,000

years ago during the last ice age.[50] It becomes easier in light of the earlier find to think of these schematic symbol systems of upper Paleolithic "Europe" as documenting the presence of the necessary cognitive, abstractional, and linguistic capacities required for an operational visible language system. The complete meaning and function of these systems to early man are undoubtedly forever beyond our comprehension. While it is dangerous to over-generalize from this mere inkling of what early man was capable of, it is equally dangerous to sell him short. As Sir Mortimer Wheeler put it, "The archaeologist may find the tub, but altogether miss Diogenes."[51]

Ashley Montague has pointed out that creative practical intelligence preceded rational intelligence. In searching for the origin of language we are interested not so much in early man's making signs as in his creation of symbols. The very essence of our being human lies in our ability to use symbols. More to the point is Julian Jayne's statement that in the history of animals, of early man, and in young children audible signals are used to express emotion and visible signals to express rational concepts. A later development is the transfer of intentional signals from visible to audible expression. Further, the earlier visible, intentional signals are more likely to have been responsible for the development of symbolization in early man.[52]

Symbolization involves first a process of abstraction; the starting point is something to abstract from. The advantage visible symbols have from the start is that their roots lie in representation. Most gestural signs for independent sign systems for the deaf are also originally based on the representation of objects or activities, and surely—as gestural theorists have shown—signing must have been an important communication medium for early man. But as skilled as signing practitioners can become, visible gestures are no match for visible marks in the range and adaptation of original representation—cf. the comparative development of mime and the visual graphic arts. Audible signs are almost totally arbitrary from the beginning. And gestural expression has problems similar to audible expression in the differentiation of units of meaning and in the purity of its language structure and performance. (I would, however, generally agree with William Stokoe, et al., that Sign is most likely a distinct expression of our inner organization of language, relating directly to experience and not mediated by audible language.) Gesture is involved in tool making, tool use, and symbolization, but as a second-

ary, derived element. Which of the two—the gesture or the mark—is more likely to survive as the significant form?

The representational nature of the visible units provides the purchase for their development as infinitely more powerful abstract symbols and, eventually, the complex visible language system we are now sharing. We are, of course, interested in the symbolic function of a "word" unit, not in its sign function. Susanne Langer has written, "The power of understanding symbols, i.e., of regarding everything about a sense-datum as irrelevent except a certain *form* that it embodies, is the most characteristic mental trait of mankind. It issues in an unconscious, spontaneous process of *abstraction,* which goes on all the time in the human mind: a process of recognizing the concept of any configuration given to experience and forming a conception accordingly. That is the real sense of Aristotle's definition of man as 'the rational animal.' *Abstractive seeing* is the foundation of our rationality."[53]

The representational link gradually loses its importance as the visible pattern takes on symbolic meaning by assuming the semantic values of the object and the aura we build around it. In a quantum leap the visible mark becomes an arbitrary symbol, whose original meaning can only be traced etymologically. The development of any symbol is a history of abstraction. Our verbal symbols develop simultaneously as personal ideas and shared social concepts. Like a string of Greek worry beads, our words are polished a little each time we handle them.

Similarly, the actual visual configurations are gradually simplified. We may be aware, for example, that the letter A could be an upside-down abstraction of an ox head or that the Chinese character for man  is an abstraction from a human figure, but the derivation and modification of our visible language symbols are inconsequential to accomplished processing of that expression as language.

The concept of naming becomes important here. With the gradual development and refinement of man's vocal abilities, sounds were undoubtedly attached to objects, actions, and activities. They were also very likely attached to meaningful visible configurations—whether the painted representation of a bison hunt, the scratched representation of the bisons' likely migration route, or the repeated abstract symbol for a killed bison. Given man's early graphic sophistication and his probable late speech performance, it is difficult to imagine that the reverse was true; i.e., the attempt to attach objects to sounds. There is strong evidence that gestures, among other human activities, were represented in later writing

systems. However, Colin Cherry has pointed out, "It is the outward and visible symbols which persist so obstinately; it is their forms which remain whilst they take over new content and meanings in their new environments."[54]

George Miller has commented on the importance of visible language as object. "The written proposition is a tangible representation of an act of thought. It is a physical thing, an object, and it can be reacted to as any object can. Thus writing made it possible to react to one's own thoughts as if they were objects, so the act of thought became itself a subject for further thought. Thus extended abstraction became possible, and one of the brilliant abstractions recognized by the Greeks concerned the forms of valid arguments. And so, out of writing, was logic born."[55]

Miller's statement brings up another basic difference between visible language and audible language that requires brief consideration. Richard Gregory has considered a related point: "As symbols escaped the semblance of objects and became less like pictures, so they became more powerful. In the development of the determinatives, and the signs for logical operations, we see how the power of symbols and formal languages as tools developed, drawing men inexorably away from their biological origins. It was, surely, the artists who took the first crucial step: to see and to select and to make objects as representing something existing in a different place and time, or not existing at all. This used the eye in quite a new way. . . . By introducing the strange power of formal symbols, it made science possible."[56]

Visible language, by definition, is the basic communication for the literati; audible language is the basic communication for the illiterati. In civilizations and in cultures which developed into civilizations, the literati have been in control of language. Edward Sapir has referred to language as the most massively resistant to change of all social phenomena. Both systems contribute to language development, but it is visible language that provides the logical continuity—the unifying centripetal force—of man's continuing effort to organize and to communicate meaning. Audible language is a dog on a leash.

But control of language implies much more. Jacob Bronowski spoke of "the aristocracy of the intellect." Claude Lévi-Strauss has referred at various times to writing as a tool of the elite to control and exploit the masses. An Egyptian inscription in New York's Metropolitan Museum puts the idea more simply: "Be a scribe, for the scribe directs every work that is in this land." It seems inconceivable that the crucial break-

throughs in the evolution of language from its earliest beginnings could have been taken by other than the most creative minds of the day. And because of this, language has been more than a match for countless generations of the best minds the human race has produced—our literati.

Primarily because of the primacy of speech position among linguists the differences between literate and illiterate societies have been played down. The important consideration is not the complexity of the vernacular languages—which is still a moot point—but the thinking tool that literacy provides. In his book *Applied Communication in Developing Countries* Andres Fuglesang points out that the power of abstract thought varies according to the degree of literacy.[57] The illiterate villager is not open to alternatives; he can only deal with the "here and concrete"; he has trouble with counting, straightness, and planes. Illiterates have difficulty in building on their experiences of the past. Yet cumulative tradition is one of our most basic, unique human behaviors. Alfred Korzybski made it the basis for his time-binding theory: men and men alone pass on to each other what they have learned; each one starts where his predecessors ended. What are the critical differences between the language organization and the thinking of the literati and the illiterati? And what connection does this have to the illiterati being split off from the mainstream of language development—either as groups at some pre-historic time or as an individual in today's society?

The first recorded attempt to develop a writing system for an unwritten language appears to have been by the Sumerian literati for their illiterate Semitic conquerors. The Sumerian scribes adapted their existing visible language system to reproduce as best they could the language sounds used by Semitic invaders. It seems likely that the limited repertory of speech sounds, which had to be repeated and combined for differentiation, led the scribes to grasp the revolutionary concept of interchangeable units for constructing visible language symbols. The creative talent of the scribes gradually seized on the idea as a vastly simpler, more flexible system with which to work. In essence, the basic visible language processing unit—the meaningful symbol—was reconstituted as the word.

To deduce from this adaptation process, however, that the entire visible language system assumed the character of the audible language system is to ignore the basic relationship that has existed among language and the two language systems through history and pre-history. There is no indication during this transition period of any preoccupation with the

fit of visible language to audible language; the gap between the two was a long time in narrowing. It took another millenium before the Greeks added vowels—most likely to help pronounce borrowed words—for the alphabet to develop the form we more or less know it as today.

Letters and words do not represent speech sounds; sentences and written composition do not represent oral composition. They never have. Early writing systems were essentially visual, as they continue to be today. As reported by John Chadwick, Michael Ventris in the decipherment of Linear B "laid stress on the visual approach to the problem; he made himself so familiar with the visual aspect of the texts that large sections were imprinted on his mind simply as visual patterns, long before the decipherment gave them meaning. . . . Ventris was able to discern among the bewildering variety of the mysterious signs, patterns and regularities which betrayed the underlying structure."[58]

One of the Paul Bunyan stories reports a winter of such intense cold that everybody's speech froze up, and it wasn't until the first spring day that it all thawed out with a cacophonous roar. Is the decipherment of ancient texts just the thawing out of our ancestors' encapsulated speech? We can discover and recreate lost languages through the decipherment of visible language fragments, but we will never know what the contemporary audible language was like—or about. It is difficult to imagine that the quality of our ancestors' speech could have been much different —certainly no better—than our own speech is today. On what basis then can we continue to assume that the ancients were gifted with the superior audible language performance necessary to instill the complex rules and organization which govern our language processes today?

General Conclusions

First, it should be recognized that as an advocate for the critical importance of visible language, I am the traditionalist. The rise in influence of phonetics and phonology to the dominant position in linguistics is a recent phenomena in the history of language study. While the contributions this movement has made to our understanding of the audible language system are enormous and long overdue, they have been made at the expense of perspective on the language process as a whole. This manifesto is an appeal for language research to seek a middle ground. We must, for example, recognize that the visible and audible language systems are discrete; of first importance is understanding how each system operates independently, and how each helps determine—and is determined by—our inner organization and control of language.

Second, I suspect that general disenchantment with the control over language study which the primacy of speech position has exercised is more widespread than indications in the literature would lead us to believe. The problem is one of focus; there appears to be no established counter-position to marshal the scattered evidence and dissident opinions. Meanwhile, however, research accumulates in language-related areas based on hypothetical assumptions of the primacy of speech position. This manifesto suggests that a new concept of visible language should provide the rallying point for a concerted effort from all disciplines which impinge on language study to clarify the relationship among three basic components: language per se and its expression as visible language and as audible language.

Third, the research reported here barely scratches the surface of the issues involved; each area requires the deeper insight and the selective investigation which can be provided only by appropriate research specialists. But if, as the evidence seems to indicate, a closer affinity does exist between man's total human development and the visible language system, important modifications will have to be made in our thinking about the relationship and specific characteristics of the components of language, as well as our developing total concept of language in man. This manifesto is an appeal for your support. We need to sort out new priorities for language research—what are the basic issues, how do we put them to test? It is the stated purpose of this journal to provide a forum for research and theory on visible language issues. We invite your comments and your editorial contributions.

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A Nomenclature for the Letterforms of Roman Type

Philip Gaskell

While the the organization of nomenclature for the elements of letterforms has had a long history, there is today no fully codified system. This paper attempts to define all of the necessary terms for naming the parts of the printed images of roman types in one self-consistent system, and to illustrate their use.

The discussion of typefaces requires a system of nomenclature for the elements of the letterforms so that individual parts of printing types can be referred to. The authors of the fifteenth-and sixteenth-century treatises for sign-writers and calligraphers had to refer to individual parts of the letters of the roman alphabet, and they found or invented terms in French, German, Italian, and Latin for stroke, serif, thick, thin, and so on; and it is likely that these or similar terms were used by the early makers and users of roman type. The first published nomenclature for typographical letterforms, however, was the group of English terms explained by Joseph Moxon in the section on letter cutting in his *Mechanick Exercises* of 1683.[1] Moxon defined the imaginary horizontal lines which join certain repeated elements of a typeface, calling them the top-line, head-line, foot-line, and bottom-line, and went on to speak of fat and lean "stroaks," stems, toppings and footings (meaning double ascender and descender serifs), beaks (meaning single serifs, and also the shoulder of f, f and the ear of g), and tails (meaning not the descending tails of g, j, y, etc., but the base-line serifs and terminals of d, t, u, etc.).

Most of Moxon's terms have been superseded by new ones, and there is today a generally accepted, though until now not fully codified, system of nomenclature for the letterforms of roman type used in the English-speaking countries. There have been two important attempts to organize and explain these terms: Joseph

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Thorp's "Towards a Nomencalture for Letter Forms" (1931),[2] and the British Standard specification for typeface nomenclature, 1958 (BS 2961), revised in 1967. Thorp's paper, though it deals with the description of serifs, terminals, etc., in great detail, omits to define some important terms (e.g., stroke, tail) while including others which may be dispensed with (e.g., loop, spine). The 1967 revision of the British Standard is satisfactory as far as it goes, but it is too scanty, defining only some ten terms for typeface nomenclature. Neither Thorp's paper nor the British Standard gives comprehensive illustration of the roman letterforms with all the parts named.

This paper attempts to define all the necessary terms for naming the parts of the printed images of roman types in one self-consistent system, and to illustrate their use.[3] Wherever possible it conforms with current English usage, and it is much influenced by the precedents of Thorp's paper and the revised British Standard. This has resulted in the inclusion of terms of widely different origin, so that stroke (a calligraphic term) is found along with diagonal (geometric) and arm (anthropomorphic). Several of the terms (e.g., counter, kern, ligature, titling) may refer both to actual printing types (or to parts of them) and to their impressions; while a few others (body, fount, set, sort) refer primarily to printing types but are included because they may be used in discussion of the impressions of type. But terms which are used only for actual types (beard, foot, nick, etc.) are excluded, as are the terms which chiefly concern the classification of typefaces (family, grotesque, lineale, etc.).

This system of nomenclature is intended for use with undecorated roman typefaces, and with roman inscriptional lettering of similar form. Some modification is required for describing italic typefaces, in which there is no clear distinction between vertical and diagonal strokes. Most gothic typefaces are based on entirely different graphic elements and they require a separate terminology.

Glossary of terms

The following modifiers are used:

thick, thin
vertical, diagonal, horizontal
right, left
top, bottom
upper, middle, lower
single, double
first, second, third, fourth

arm	a horizontal stroke
ascender	the extended stem of b, d, f, h, k, l, f
ascender line	the imaginary line which would join the tops of the ascenders
bar	the crossing stroke of e, f, t, A, H, T
base line	the imaginary line which would join the bases of the letters other than g, j, p, q, y, J, Q
body	the depth of the metal shank on which the types are cast (see illustration)
bowl	a curved stroke enclosing an area (but the lower part of g, which may be open or closed, is called a tail)
bracketed	(of serifs) with the angle between cross stroke and main stroke filled in
calligraphic	forms deriving from pen-drawn letters
capital line	the imaginary line which would join the tops of the capitals
capitals	the large or majuscule (as opposed to the small or minuscule) letters
contraction	a symbol representing two or more letters (& ē, etc.)
contrast	the difference between the thick and the thin strokes, which may be much, or little, or none at all
counter	the area enclosed by a bowl, or by the closed tail of g, or by the bar of A
descender	the extended stem of p, q; and the tails (except R)
descender line	the imaginary line which would join the bottoms of the descenders
diagonal	a stroke between vertical and horizontal
diphthong	the characters **æ, œ, Æ, Œ**
ear	the small stroke to the right of the bowl of g
face	*see* typeface
fount	a group of typecast letters, numerals, signs, etc., all of one body and typeface
hair-line	(of serifs) much thinner than the stem, and unbracketed
inscriptional	forms deriving from stone-cut letters
kern	part of a piece of type overhanging its shank (the shoulder of f, f, ff, ff, the tail of j, Q)

ligature[4]	two or more letters cast on one body, with some combination of form (ff, ffi, &, etc.)
link	a stroke joining two letters, also the middle stroke of g joining bowl to tail, and the stroke joining the displaced tail of Q to the bowl
majuscules	*see* capitals
mean line	the imaginary line which would join the tops of the minuscules without ascenders
minuscules	the small (as opposed to the capital or majuscule) letters
sanserif	without serifs
serif	a small cross ending a main stroke; serifs may be single (on one side only) or double (on both sides); *see also* bracketed, hair-line, sanserif, slab
set	the width of the metal shank on which the types are cast (see illustration)
shoulder	the curved stroke springing from the stem(s) of a, f, h, m, n, r, f
slab	(of serifs) as thick as the stem, and unbracketed
sort	each variety of letters or other symbols in a fount; used by printers to mean individual pieces of type
spur	a small projection, usually pointed, from a stroke or terminal
stem	a vertical stroke
stress	the directional tendency of contrast (stress is diagonal when one set of diagonals—usually those running from upper left to lower right—are thick and the others thin, the vertical and horizontal strokes being intermediate in thickness; and is vertical when the vertical strokes are thick, the horizontals thin, and the diagonals intermediate)
stroke	a single line, straight or curved
tail	the parts below the base line of g, j, y, J, Q; also used for the diagonal of R
terminal	stroke-endings other than serifs, described as bulbous, pointed, or sheared; sometimes cupped or hooked
titling[5]	capitals cast full on the body, without room for descenders
typeface	the uniform design of a set or sets of letters, numerals, signs, etc., for printing
weight	the degree of contrast of a typeface, described as light, medium, or bold
x-height	the distance between the base line and the mean line

Note on the term "ligature"

Up to about 1900 English printers called the ff, etc., sorts either "ligatures" or "double letters," without much preference for one term over the other. Thus Fell called them ligatures in 1671/2, Moxon called them double letters in 1683, and Smith used both terms interchangeably in 1755.[6] During the present century, however, the term "ligature" has prevailed over "double letter"—which may in fact refer to a combination of three letters—and it is therefore used here.

The British Standard specification of 1958 called these sorts "logotypes," and used "ligature" to mean a joining stroke—a link—connecting any two letters; but in the revision of 1967 logotype was dropped and ligature was used for the sorts and for the joining strokes. Logotype (a word invented by about 1810 by Earl Stanhope[7] to describe his quite different two-letter sorts which were not joined by links) is in any case an unsuitable term for the ff, etc., sorts, as it is widely used nowadays to mean individual trademarks in particular typographical styles.[8]

It may be added that fifteenth- and sixteenth-century printers and type-founders sometimes cast letter-group sorts from special matrices which were made without margins and were placed side by side in the mould; and that they also achieved a similar effect by filing down the sides of individual pieces of ordinary type so that they abutted closely.

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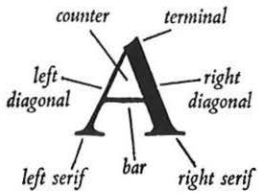
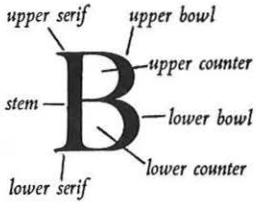
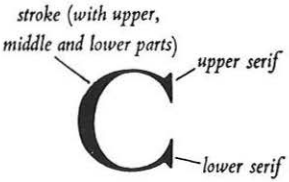
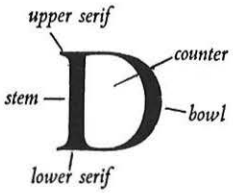
2. *The Monotype Recorder,* xxx (1931), 9-19.
3. I am most grateful to James Mosley and to John Dreyfus for help in evolving and refining this nomenclature.
4. See note on the term "ligature," below.
5. Formerly called two-line letters.
6. H. Hart, *Notes on a Century of Typography,* Oxford, 1900, repr. 1970, p. 165; J. Moxon, *Mechanick Exercises,* ed. Carter and Davis, p. 338; J. Smith, *The Printers' Grammar,* London, 1755, repr. 1965, p. 56. Both Moxon and Smith included the diphthongs as double letters or ligatures.
7. Information from Michael Turner. The earliest dated use of the word he has found so far is in a letter written in French by Stanhope to J. P. Poterat on 19 Sep. 1814.
8. Thus  and  are logotypes. The word is usually abbreviated as "logo," rhyming with no go.

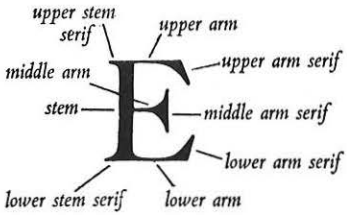
CAPITALS

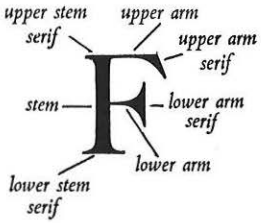


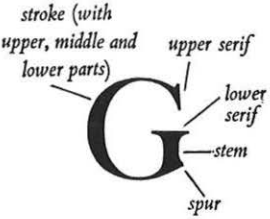


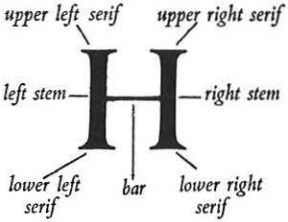


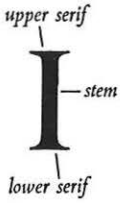


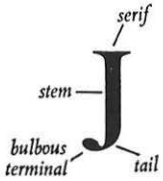


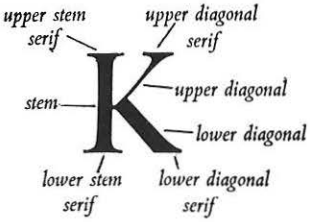


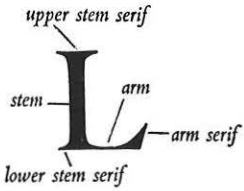


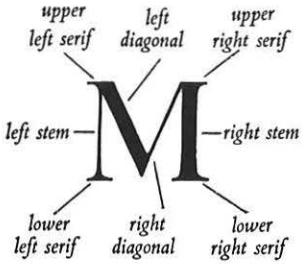




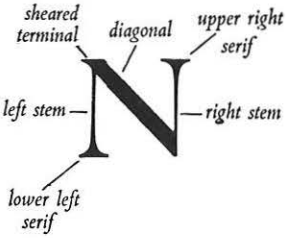


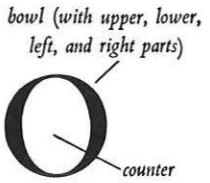


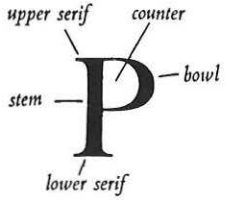


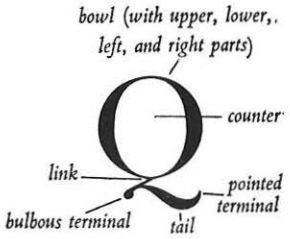


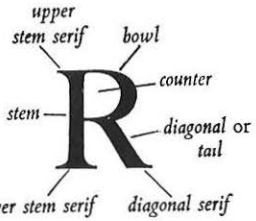
(*A splayed* M *would have 1st, 2nd, 3rd, and 4th diagonals; cf.* W)

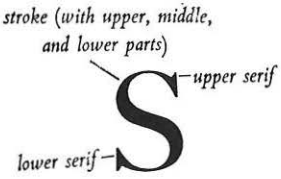


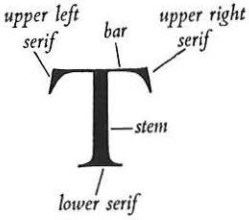


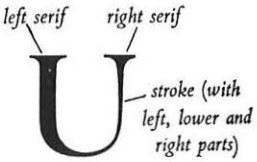

upper serif
counter
bowl
stem
lower serif

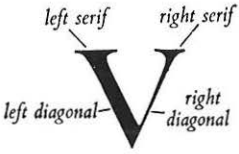

bowl (with upper, lower, left, and right parts)
counter
link
pointed terminal
bulbous terminal
tail

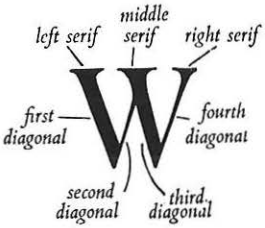

upper stem serif
bowl
counter
stem
diagonal or tail
lower stem serif
diagonal serif

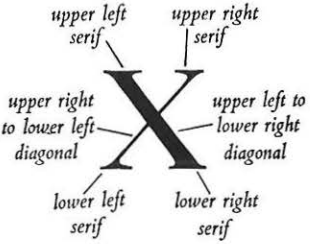

stroke (with upper, middle, and lower parts)
upper serif
lower serif

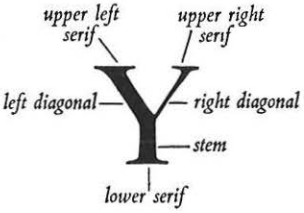

upper left serif
bar
upper right serif
stem
lower serif

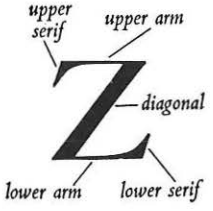

left serif
right serif
stroke (with left, lower and right parts)


left serif
right serif
left diagonal
right diagonal

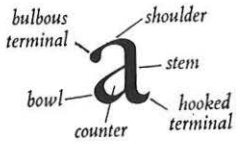

middle serif
left serif
right serif
first diagonal
fourth diagonal
second diagonal
third diagonal

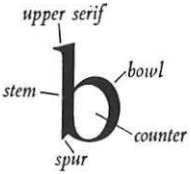

upper left serif
upper right serif
upper right to lower left diagonal
upper left to lower right diagonal
lower left serif
lower right serif

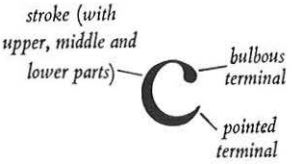

upper left serif
upper right serif
left diagonal
right diagonal
stem
lower serif

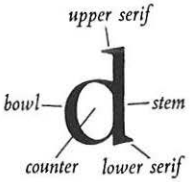

upper serif
upper arm
diagonal
lower arm
lower serif

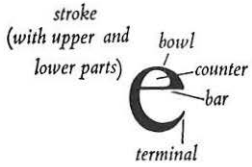
MINUSCULES

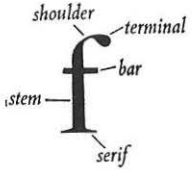

bulbous terminal
shoulder
stem
bowl
hooked terminal
counter

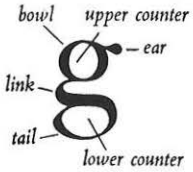

upper serif
stem
bowl
counter
spur

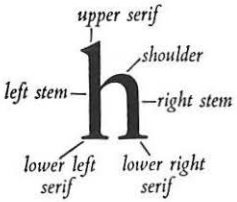

stroke (with upper, middle and lower parts)
bulbous terminal
pointed terminal

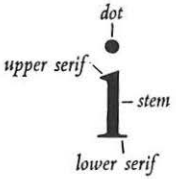

upper serif
bowl
stem
counter
lower serif

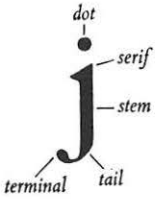

stroke (with upper and lower parts)
bowl
counter
bar
terminal

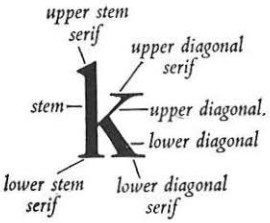

shoulder
terminal
bar
stem
serif


bowl
upper counter
ear
link
tail
lower counter

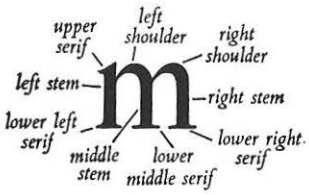

upper serif
shoulder
left stem
right stem
lower left serif
lower right serif

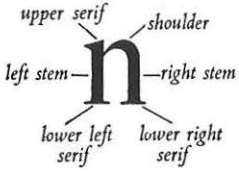

dot
upper serif
stem
lower serif

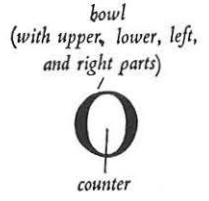

dot
serif
stem
terminal
tail

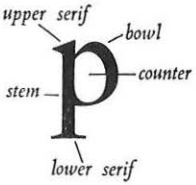

upper stem serif
upper diagonal serif
stem
upper diagonal
lower diagonal
lower stem serif
lower diagonal serif

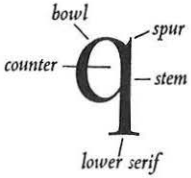

upper serif
stem
lower serif

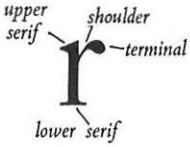

upper serif
left shoulder
right shoulder
left stem
right stem
lower left serif
lower right serif
middle stem
lower middle serif

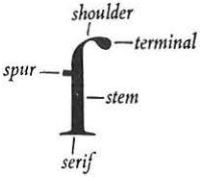

upper serif
shoulder
left stem
right stem
lower left serif
lower right serif

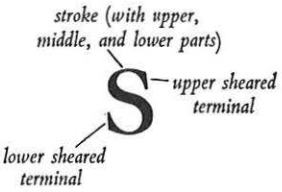

bowl (with upper, lower, left, and right parts)
counter

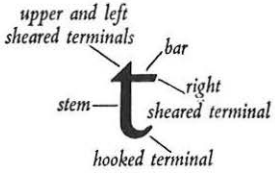

upper serif
bowl
counter
stem
lower serif

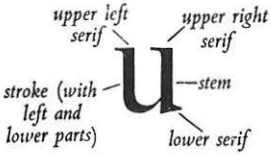

bowl
spur
counter
stem
lower serif

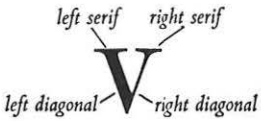

upper serif
shoulder
terminal
lower serif

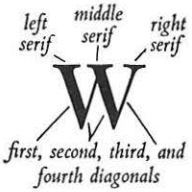

shoulder
terminal
spur
stem
serif

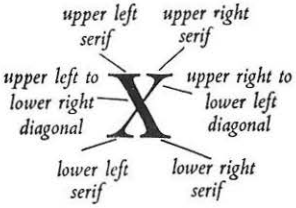

stroke (with upper, middle, and lower parts)
upper sheared terminal
lower sheared terminal

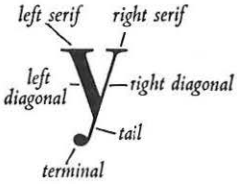

upper and left sheared terminals
bar
right sheared terminal
stem
hooked terminal

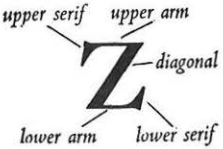

upper left serif
upper right serif
stroke (with left and lower parts)
stem
lower serif


left serif
right serif
left diagonal
right diagonal

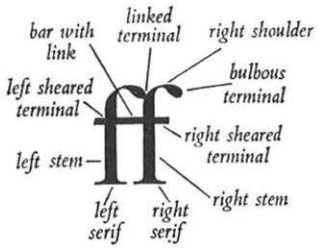

left serif
middle serif
right serif
first, second, third, and fourth diagonals

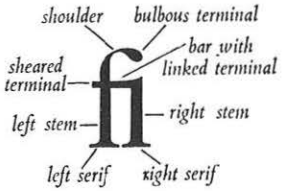

upper left serif
upper right serif
upper left to lower right diagonal
upper right to lower left diagonal
lower left serif
lower right serif

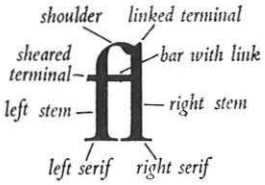

left serif
right serif
left diagonal
right diagonal
tail
terminal

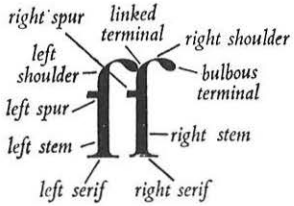

upper serif
upper arm
diagonal
lower arm
lower serif

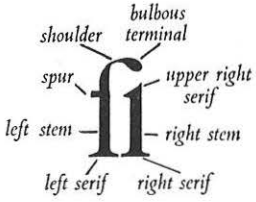
LIGATURES

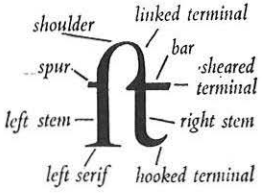




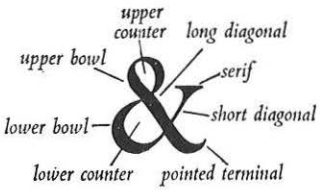








CONTRACTION



SERIFS

single bracketed

double bracketed

slab

hair-line

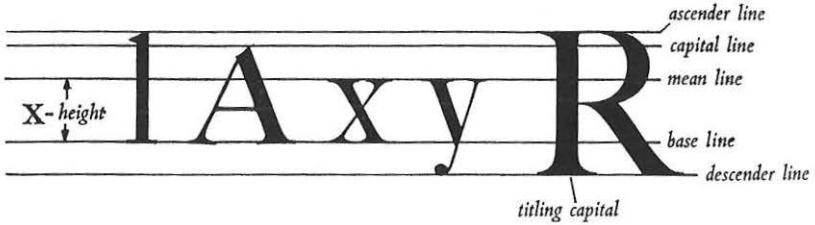
sans serif

TERMINALS

bulbous — *hooked (and pointed)* — *sheared* — *cupped* — *pointed*

Spurs

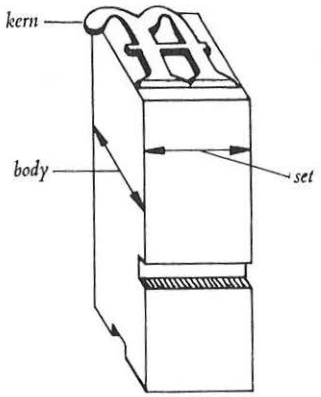
LINES



CONTRAST

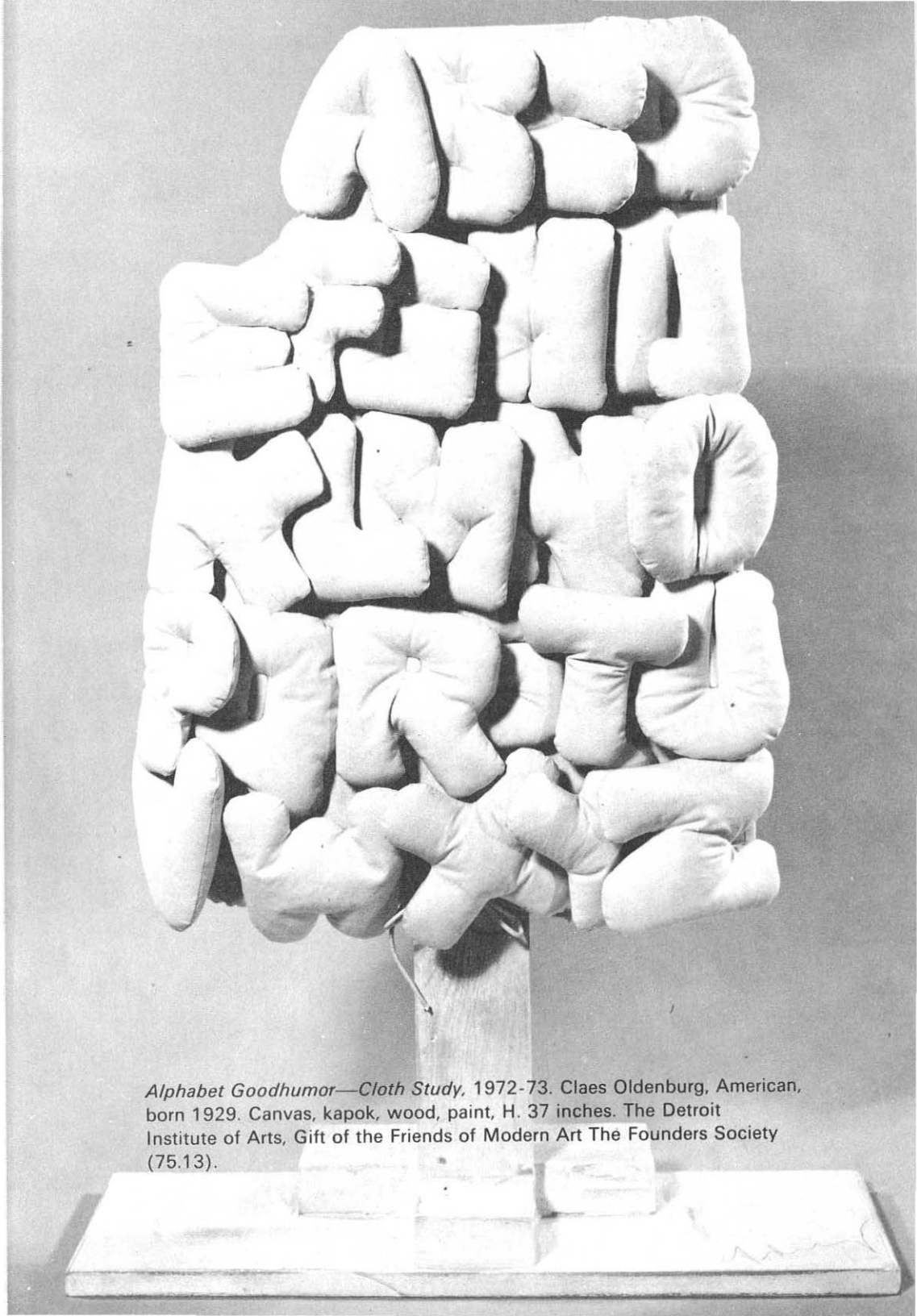
much contrast — *little contrast* — *no contrast*

PIECE OF TYPE



STRESS

diagonal stress — *vertical stress*



Alphabet Goodhumor—Cloth Study, 1972-73. Claes Oldenburg, American, born 1929. Canvas, kapok, wood, paint, H. 37 inches. The Detroit Institute of Arts, Gift of the Friends of Modern Art The Founders Society (75.13).

The Argument for a Semiotic Approach to Shaped Writing: the Case of Italian Futurist Typography

John J. White

Using Futurist poetic experiments as its demonstration object, this paper explores what advantages a semiotic approach has in the investigation of shaped writing. The examples considered are seen to belong to the class of iconic signs, and the concept of iconicity is shown to offer both a more systematic and differentiating method of analysing their constituent parts than the traditional mimetic model did. Consideration is given to the way in which Gestalt psychology has modified the definition of iconicity to take account of codes of recognition and graphic conventions. Examples of such codes and conventions are explored and attention is paid to the signaling of new codes within an innovative work. Finally, the relationship between the signification of dynamism in Futurist painting and poetry is compared in order to show how a semiotic model is able to distinguish between iconic, conventionalized, and codified elements; particular attention is paid here to the accommodation of iconic effects to the medium of print.

In their foreword to *Concerning Concrete Poetry,* Bob Cobbing and Peter Mayer suggest that "perhaps this is a field in which to apply C. S. Peirce's trichotomous theory of signs," noting that a "start in this direction has been made by Max Bense, Paul de Vree, and others."[1] In fact, among the attempts made so far to relate typography to semiotics three main categories of approach can be discerned.

First, there are those works which, either in their terminology or general assumptions, appear to concede the status of the printed word as "sign" and yet do so without subsequently adopting any rigorously semiotic approach to their examples. Thus, the first part of Carlo Belloli's excellent historical study, "La componente visuale-tipografica nella poesia d'avanguardia,"[2] makes frequent and pertinent reference to the "semiotic problems" of interpreting Futurist poetry and to "semiotico-typographical correspondences," but (hardly surprisingly, considering how early it was written) .

Visible Language, X 1 (Winter 1976), 53-86.

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refrains from drawing any precise methodological conclusions for its technique of analysis from the underlying premise that typography is a sign-system. (With the current growth in the popularity of semiotics, works gesturing to the method by using terms like "sign," "denotatum," or "semiosis" are beginning to proliferate—but without necessarily engaging in the discipline of semiotic analysis.)

A second major group is formed by systematic taxonomic studies of the materiality and organization of the written signs themselves. This includes Mayer's classification of the ways in which different kinds of word-signs "form a spectrum from 'normal' writing through various stages to pictures,"[3] Felix Andreas Baumann's categories of printed word in *Text Buchstabe Bild*,[4] and, most recently, Aaron Marcus' significant "Introduction to the Visual Syntax of Concrete Poetry" which, as its author justifiably claims, "creates a strong basis for further analysis of the semantic and pragmatic dimensions" of the genre.[5] One value of both micro- and macro-aesthetic explorations of this kind is that they help to integrate a form of structural analysis—which could, in many cases, have been carried out independently of sign-theory—into a semiotic framework.

The third and final category of approaches linking typography with semiotics is that of studies which attempt a more general consideration of the various aspects of sign-denotatum and sign-reader interaction, as well as exploring the nature of the sign-vehicle itself. Probably the most important discoveries here have been made by Max Bense and his Stuttgart school; and this work has in turn influenced a number of practising poets, including Paul de Vree and the Noigandres poets. In particular, the advances towards a synthesis of information theory, generative aesthetics, and semiotics (most conveniently summarized in Bense's *Einführung in die informationstheoretische Ästhetik*[6]) have led to some degree of quantification in this field.

Yet within the particular context of experimental typography, the actual case for any such semiotic approach has not been demonstrated in detail; nor have many specific features and concerns of such a conceivable visual semiotic been outlined. Does semiotics simply constitute an *alternative* method of approach or

does it offer a more *differentiated* conceptual framework? Are the advantages it brings at a macroscopic or at a detailed level of application? To what extent does the semiotic model simply supply a tool of analysis already used in other fields and to what extent will it have to be modified to suit the typographical context? And to which semiotic model (or combination of models) can the investigator most profitably turn? (For semiotics is nowadays by no means always derivative of Charles Sanders Peirce's thinking in this field; nor can Peirce's concepts be taken over without considering the many significant developments since his work appeared.) These are some of the questions which the present paper[7] seeks to focus on, using certain features of Italian Futurist typography as its demonstration object. Apart from the generally acknowledged historical importance of many of the movement's layouts, these particular experiments have been chosen as being of methodological interest in two key respects: (1) because the self-styled Futurist "Typographical Revolution" was very much concerned with the nature of sign-object relationships in language and hence led to the creation of many works involving a complex variety of semantic dimensions, and (2) because the experiments were carried out in an area of apparent typographical mimesis, thus encouraging a majority of critics to assume that the representational aim of such works was self-evident and in little need of close analysis. In fact, as semiotics has often shown, it is in areas where our responses are largely automatic that some of the most complex effects take place.

Futurist "Auto-illustrations" and the Limitations of Some Non-Semiotic Reactions to Them

"Words-in-freedom" ("parole in libertà")—as the Italian Futurists called their new kind of poetry—would, so Filippo Tommaso Marinetti prophesied, "in a continuous effort to express things with the greatest force and profundity, naturally transform themselves into auto-illustrations. . . . As soon as this greater expression is reached, [they] return to their normal flow."[8] At vital poetic junctures, in other words, discursive sequences of poetry would culminate in a pictogram or some equally expressive visual effect. Soon, Futurist poetry abounded with such "auto-illustrations."[9]

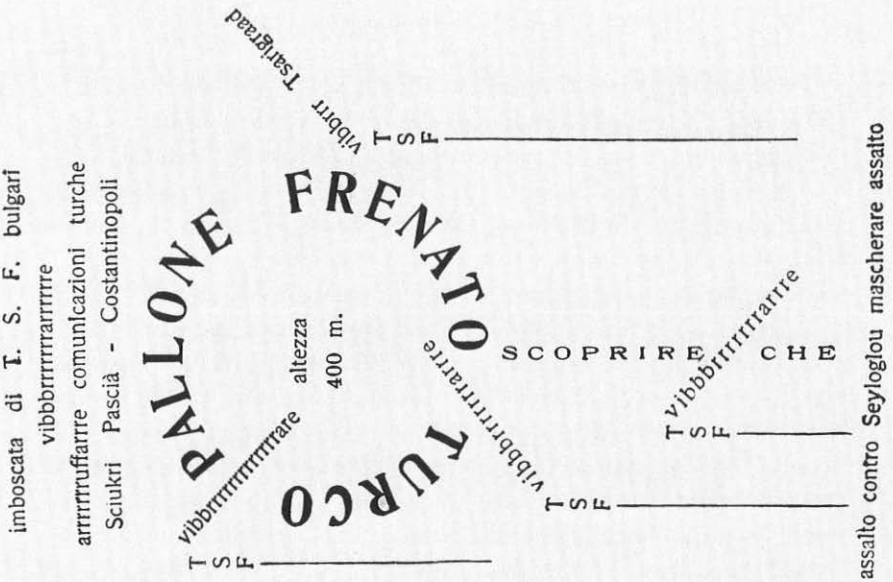


Figure 1. F. T. Marinetti. Extract from *Zang tumb tuuum,* 1914.

Figure 2. Francesco Cangiullo. First page of "Fumatori.ll.," 1914.

Figure 3. M. Bétuda. "Looping the Loop. Parole in Libertà.," 1914.

One of the earliest, setting the Italian word for "balloon" in the actual shape of a balloon, together with a number of other concomitant visual effects,[10] can be found in Marinetti's volume of war-poetry, *Zang tumb tuuum* (Fig. 1). Other equivalents include: the arrangement of the words for "bi-plane," "tri-plane," and "poly-plane" on two, three, and multiple lines,[11] the printing of the word "oscillamenti" in an undulating line[12] or the use of similar wavy lines in a poem about the sea,[13] the reproducing of the word for "baggage" a number of times in a configuration[14] suggesting the actual shape of a pile of luggage (Fig. 2), or having a line of poetry literally "looping the loop" in a sequence[15] describing aerobatic maneuvers (Fig. 3).

qu'il allait dire : « Celui-là est heureux, il a le temps rêvé pour se livrer à ses orgies de couleurs ! »

Cézanne se plaisait à ces amusements de rapin. Ainsi, à l'époque lointaine où l'on avait mis à la mode le cri « Ohé Lambert ! » il aperçoit, un jour de promenade aux environs de Paris, le sympathique peintre de chats du même nom, qu'il connaissait un peu. Voulant « faire une petite blague », il crie : « Ohé Lambert ! » en mettant, ou plutôt en croyant mettre une sourdine à sa voix. L'autre se retourne, et, naturellement, vient vers lui. Alors Cézanne, tout saisi, et pensant qu'il aurait une lutte à soutenir, ramassa une pierre, s'apprêtant à défendre chèrement sa vie. Mais Lambert s'avançait la main tendue, en souriant, heureux d'avoir rencontré quelqu'un de connaissance. « Excusez les sons gutturaux qui sortent de ma gorge ! » lui dit Cézanne. Lambert, qui ne comprenait rien à ces excuses, lui donna une bonne poignée de main, on se promena ensemble, mais Cézanne resta sur ses gardes : « Quand on est faible dans la vie ...! »

VOLLARD.

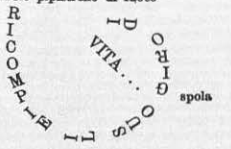
RÉTUDA.

LOOPING THE LOOP

PAROLE IN LIBERTÀ

Alzata di mano sciamento rapido
fremito lungo ansare del motore vortice dell'elica
specchio di raggi turbinosi nel sole
azzurro di viola ingoia l'ali e il rumore
l'areoplano è nel cielo alto immobile
quasi piccolo punto sull'I dell'antenna
s'impenna poi
un urlo della folla brividire di freddo di
voluttà per le reni gli occhi immobili pieni
d'un baluginore di morte di sangue diaccio
un morirr di sogno

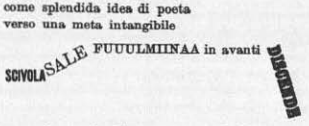
un pezzo di MACIGNO il sospiro sospeso come una spada sul cuore un abisso
di silenzio freddo e vivo come serpe rapido
e pur lento come un supplizio l'acrobatico esercizio di morte si esplica nel suo giro di ritorno
e il funambolo pipistrello di fuoco



che riattacca nel telaio del cielo il suo aereo filo
di audacia e di sfida
un ansito nella folla un levarsi di grida
un gioire di spasimo soffocato un
vibrare di nervi tesi come corda di minugia spezzati d'un sol colpo e sibillanti al vento avvitichiati
e
la magica macchina di

FORZA AUDACIA PENSIERO

segna
un suo sentiero ideale
nel campo dell'infinito
come splendida idea di poeta
verso una meta intangibile



sogna le parole di una nuova vitale fulgenza
nel gran libro del cielo è fermo a un tratto

giro di costole allo scheletro della morte in un precipitare di audacia ha più voce il motore in un lento volo ecco alfine che l'uomo

CANGIULLO.

FUMATORI.

II.

PAROLE IN LIBERTA'

One reaction to such "auto-illustrations" has been to assume that they aimed at reducing the substantial differences between the printed word and reality. The Futurists had, after all, themselves declared that they were thereby throwing "a marvellous bridge between the word and the real object."[16] "Marinetti, with his words-in-freedom," a contemporary wrote, "relies on the visible image . . . in the form of words or phrases arranged typographically in such a way as to suggest with an ideogram the vision of the thing spoken of. . . ." There followed a solemn-sounding warning that "if this method were accepted and pushed to its rigorous final conclusion, the result would be that the finest of still-lifes would be a furnished room; the best concert would be a mixture of noises of a crowded city; the best poetry would be the spectacle of a battle with its sound cinema. . . . These are absurd prospects, but they are direct extensions of premises and experiments which already exist."[17] The (admittedly, satirically exaggerated) assumption that such poetry should *eo ipso* be construed as an experiment inevitably to be "pushed to its rigorous final conclusion"—presumably proceeding from simple visual effects via more detailed picture-poems to the closest approximation to mimesis that the medium will permit—is as misconceived as the once popular view of mimesis in painting as straining towards *trompe l'oeil,* even borrowing materials from the real world in the creation of a deceptive duplicate reality. Yet the assumption that such typography is essentially pro-mimetic is shared not only by the proponents of this back-to-life interpretation, but also by the upholders of a second (probably most widespread) view of what free-word poetry entails; i.e., an attempt at "pictorial" mimesis, *as seen in the other visual arts.*

Again the idea is prefigured in Futurist theory, for the full sentence, partly quoted above, reads: "We shall set in motion words-in-freedom, destroying the boundaries of literature and marching towards painting, the art of noise-making and throwing a marvelous bridge between the word and the real object." The point has been frequently echoed in the secondary literature on the subject. Fausto Curi refers to the "pictorial quality" of the movement's typography,[18] and Pär Bergman to the "imitative element" it contains.[19] Michel Seuphor uses the phrase "poème plastique"

to describe such experiments,[20] while Rosa Trillo Clough mentions Futurism's "utilization of the pictorial possibilities of typography."[21] And Luciano De Maria, the editor of Marinetti's collected works, has argued that the "extensive introduction of designative elements" into such poetry has shifted it substantially "in the direction of painting."[22]

Such descriptions and reactions do, in a generalized way, make acceptable sense. The Italian Futurists' "auto-illustrations" *are* undeniably closer to both three-dimensional reality and to the pictorial arts than conventional typography can ever be. And yet despite this, there are good reasons why recourse to such an essentially mimetic model is not very conducive to an understanding of words-in-freedom—and why it also remains an undifferentiated[23] approach to adopt to most shaped writing.

One drawback is that mimesis-oriented terminology proves inadequate to characterize the deliberately schematic nature of Futurist "auto-illustrations," a quality summed up at the time by Ardengo Soffici as "approximately like hieroglyphic writing, *reduced to the schematic.*"[24] (Clearly, whilst the Futurists may have thought of themselves as "painter-poets,"[25] they were by no means therefore "pictorial poets.") Compared with that of the Baroque figured poem, for instance, the quality of representation in their works often appears crude (but only because the Futurists were not seeking after such an aesthetic effect, which they in fact also decried in painting itself[26]). But even leaving aside the specifics of historical accuracy at this stage of the argument, it is possible to conclude that any method which uses the same kind of vocabulary to describe a schematic configuration like Marinetti's "balloon" and an example of high-definition mimetic typography —be it an Indian word-picture or a piece of the once-voguish art of typewriter pointillisme[27]—is content to work with too blunt an analytic tool.

Viewing "auto-illustrations" as examples of typographical mimesis may seem a viable, albeit somewhat generalized way of accounting for the illustrations of Futurist layout cited so far. However, this is only because the selection has been restricted to examples of visible signs standing for visual impressions or objects. Many other free-word configurations are by no means "pictorial"

Correzione di bozze + desiderî in velocità

Nessuna poesia prima di noi
colla nostra immaginazione senza fili parole in libertà vivaaaaAAA il FUTURISMO finalmente finalmente finalmente finalmente finalmente

FINALMENTE

poESIA NASCERE

treno treno treno treno **tron tron tron tron** (ponte di ferro: **tatatluuuntlin) sssssssiii ssiissii ssiissssssiiii**
treno treno febbre del mio

---

portare a casa (*camera tepore abitudine affetti intimità dignità igiene gelosia*) 50 goccie essenza essere umano IGNOTO perduto scomparso infinito mondo
fermentare riposare in famiglia angolo buio sotto tendine ricamate trasparente verde toilette lavoro a mano
Serate castissime *Famiglia* *Focolare* *Sorella Vergine.*

CANGIULLO.

ADDIOOooo

Parole in libertà

LATO PARTENZA

facchini
marea di bluse blu
fra scogliere di valigie
viaggiatori spolverine = volo di zanzare
binari di berretti binariati oro rosso argento
ferrovie dello Stato
fretta delle lettere = pillole indigeste
nelle cassette " Lettere " " Stampe "
Biglietti biglietti
biglietti = lasciare tutto
ANDATA coraggiosi
ANDATA-RITORNO nostalgici
casa caffè biliardo
sudore di una carne
chiacchiere quotidiane
con un idiota preferito
fiiiiisch fiiiiiisch
uomini macchina ruote

in this narrow sense. By writing the word "ADDIOOOOO" ("farewell") in letters of ever-diminishing size (Fig. 4), Francesco Cangiullo manages to signify a call dying away (an effect which he further reinforces by vowel-duplication) in such a way that a relatively complex non-visual effect is achieved by the visible typographical layout.[28] Marinetti more than once exploited the converse shape: for instance, with the words "poesia nascere" ("poetry" "to grow")[29] printed in a typeface which itself increases in size from letter to letter (Fig. 5). Similarly, after exhorting his compatriots to take courage, Giovanni Papini concludes part of a rousing political rally-call with the word "coraggio" itself written six times, each time in a successively larger typeface so that the words share the quality of upsurge which he wishes to find in his audience's hearts.[30] An article by Carlo Carrà prints the verb "rispettare" ("to respect") in letters that gradually grow in size, while "disprezzare" ("to dislike") shrinks gradually away to virtually nothing.[31] In another instance, in a poem by Guglielmo Jannelli (Fig. 6) the noun "passato" ("the past") is printed with characteristically Futurist disdain: with a cut-like line running through it, seeming to cleave it, while the noun "avvenire" ("the future") is set out contrastingly intact and in bold letters of increasing size.[32]

Figure 4. Francesco Cangiullo. "Addiooooo. Parole in Libertà.," 1913.

Figure 5. F. T. Marinetti. "Correzione di Bozze+ Desideri in Velocità," 1913.

Figure 6. Guglielmo Jannelli. "Messina," 1914.

REGGIO Villa S. GIOVANNI = sbarre ferro gocciolare acqua-elettrica oro

VEGLIONE IN MASCHERA DI ELICHE

Valvole-di-refrigerio

Bohémieggiare

passato MESSINA = Equilibrista filo di ferro AVVENIRE

sorridere Mondo in ondeggiare **RINASCITA** tendendo Disco

DANZA FUTURISTA

JANNELLI GUGLIELMO.

It would seem even less discriminating to term these effects "pictorial" (or even "mimetic," in any simple sense of the term). The Futurists themselves, as the following passage from one of their manifestos indicates, envisaged them as "designed analogies," because the visible typographical configuration offered an analogy for some non-visual impression: "The free-word poet Cangiullo, in *Fumatori.*II., had the happy thought of rendering with this *designed analogy:*

FUMARE

the long and monotonous reveries and self-expansion of the boredom-smoke of a long train journey."[33]

It would, of course, be possible to make a typological distinction between "auto-illustrations" and "designed analogies," seeing the one form as "pictorial" and the other as working on a principle of synaesthetic analogy. Yet this would be an unwise move, one which would serve to erect an artificial barrier not only between different forms of expressive layout, but also between Futurist shaped writing on the one hand and, on the other, many of the movement's orthographical innovations, its concern with onomatopoeia, and other forms of verbal expressiveness. At least in this context, an inadequate conceptual framework would seem to be both leveling and divisive at the same time. Semiotics, in contrast, is neither. For it is, to quote Pierre Guiraud, "one of the main tasks of semiology to establish the existence of systems in apparently a-systematic modes of signification,"[34] and in this respect it is able to offer an integrating picture of a wide range of apparently disparate experiments. Furthermore—and this must remain the chief argument in its favour as a means of analysing typography—semiotics reveals a more differentiated and accurate way of accounting for any of these individual effects.

Fundamentals of a Semiotic Approach: The Printed Word as Sign

Essentially, semiotics rests upon a rejection of the notion of a fixed bi-partite relationship between a sign and a meaning. Instead, it proposes a more relative, triadic one. In Peirce's words: a sign can be "anything which on the one hand is determined by an Object

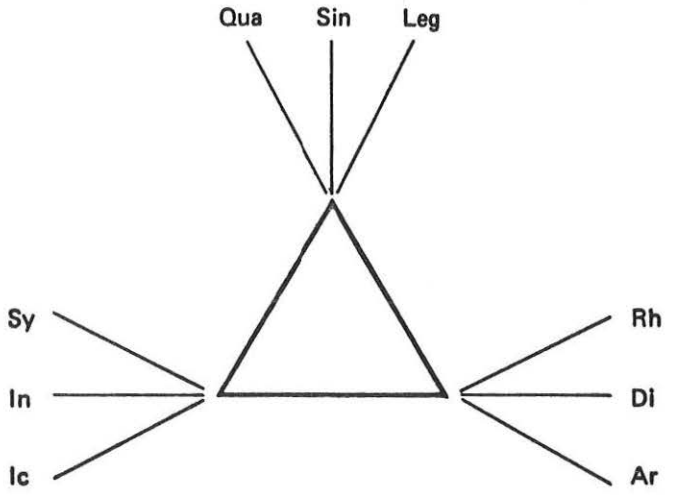
and on the other hand so determines an idea in a person's mind, that this latter determination, . . . the *Interpretant* of the sign, is thereby mediately determined by that object. A Sign, therefore, has a triadic relation to its Object and to its Interpretant."[35]

Signs are thus seen to mediate between an object (sometimes called the denotatum or representatum) and an interpretant, that is to say "an effect in a mind resulting from the sign."[36] Semiotic analysis is able to focus on all or any combination of these aspects, or "dimensions" of the sign relationship (as Charles Morris calls them), as well as on their interrelationship. In order to assist in this, different types of sign have been enumerated, depending on which aspect of the trichotomous sign-relationship one is concentrating on. This taxonomic clarification subsequently attempted in Peirce's theory is of crucial concern for an analysis of typographical signs. In particular, what has (in agreement with Peirce) been rightly recognized as his "most important division of signs"[37]—the division into icon, index and symbol, depending on the sign-object relationship—is fundamental to a semiotic appreciation of shaped writing.

In volume one of his *Principles of Philosophy,* Peirce sets out this aspect of the "triple connection of *sign, thing signified,* [and] *cognition produced in the mind*" in the following terms: "There may be a . . . relation of reason between the sign and the thing signified; in that case the sign is an *icon.* Or there may be a direct physical connection; in that case, the sign is an *index.* Or there may be a relation which consists in the fact that the mind associates the sign with its object; in that case the sign is a *name* (or *symbol*)."[38] Thus, in Pierce's classification, an identikit picture would be an icon, a criminal's fingerprints would be an index, and his prison-number a symbol. Invariably, written language is likely to belong either to the iconic or the symbolic class of signs.

Of Peirce's other two sign-dimensions, probably the more important in the present context is the subdivision according to the materiality of the sign-vehicle,[39] which clearly furnishes another model with which to approach what Aaron Marcus has referred to as the "Visual Syntax of Concrete Poetry." In contrast, Peirce's thinking on the sign-interpretant relationship[40] is less easy to transfer to a consideration of aesthetic information in typographical form.

Figure 7.



Peirce's classification of signs, to recapitulate, could thus be represented by a diagram showing three basic aspects of the sign-relationship, each of which would be indicated by a subdivision: into symbol/index/icon, quali-sign/sin-sign/legisign, and rheme/argument/dicent (depending on whether one is considering the sign-object dimension [O], the interpretant [I], or the sign-vehicle itself [S]). See Figure 7.

Although, as was suggested, not all of this complex is equally relevant to a semiotic approach to typography, this model nevertheless remains the underlying premise of any such approach. However, for most of the following discussion, attention will in fact focus on the bottom left-hand corner of the triangle in Figure 7: the semantic dimension of the relationship of the sign to its object.

The printed word on the page behaves as a sign in more than one sense. It is both the token of a set of sounds, and it and they in turn also stand for an object. Within most twentieth-century European languages "all words, sentences, and other conventional signs are Symbols," in Peirce's sense;[41] that is to say, there is no motivating connexion between the shape of the letters or total utterance, or the colour of ink used, and the object. (Shaped

writing, be it in the poetic or the commercial domain,[42] is clearly an exception to this general principle.) The other main progenitor of modern semiotics, Ferdinand De Saussure, has even defined the two chief characteristics of language as "the arbitrariness of the linguistic sign" and "the linear character of the sign."[43] And certainly within the context of his argument, this contention holds true, although the simple binary opposition which it has since generated between "motivated" and "arbitrary" signs (which are only partially synonyms of icons and symbols[44])—and some of the resultant positions held about the nature of language here—often fails to do justice to the complexity of the situation. Arbitrariness (or "immotivation," as some recent scholars have preferred to call the linguistic sign's condition[45]) remains at best a general rule for which various exceptions obtain and in which can be frequently detected the possibility of hybrid forms (as we shall see later). Principally, however, it is because Peirce's concept of "iconicity" has been subsequently refined to take account of some of these factors that it tends to prove more helpful than the Saussurean model in the investigation of something like Futurist typography.

Futurist "auto-illustrations," in contrast to the conventionally printed word (which is normally a symbolic sign, at least as far as its typography is concerned), are predominantly iconic. That is to say: they are "like [some] thing and used as a sign of it," to employ Peirce's original definition of the motivated relationship between the iconic sign and its object.[46]

In a later attempt at investing Peirce's concept of iconicity with greater precision, Morris summed up the relationship between such a sign and its object in the following terms: "icons . . . denote those objects which have the characteristics which they themselves have—or more usually a specific set of their characteristics."[47] This shift—from the isomorphic notion of signs possessing "the characteristics which [their denotata] have" to "more usually a specified set"—is a crucial modification from the present point of view, for it allows one to appreciate the common ground between "auto-illustrations" and "designed analogies." The idea of a conceivably small number of "shared characteristics" clearly lends itself to many more types of visible language than that of mimetic representation. (And, as we shall see later, a recognition of the

limited number of shared characteristics raises questions of how these relate to the other features of the shapes in which they occur.)

In fact, many of Morris' examples of the difference between the symbolic (unmotivated) sign and the iconic (motivated) one lie precisely in this area of a minimal number of shared characteristics—and in this way come much closer to the aspect of semiosis explored by Futurist typography and most shaped writing than any theory of imitation could. Morris points out, for instance, that "a photograph, a star chart, a model, a chemical diagram are icons; while the word 'photograph,' the names of the stars, and the chemical elements are symbolic."[48] Significantly (as previously mentioned), Soffici compared Futurist words-in-freedom to hieroglyphic writing, describing them as "reduced to the schematic."

It might be contended that so far all that has really been proposed is a rather elaborate system to justify a semantic substitution: of the term "iconic" for "mimetic" or "pictorial." Eliseo Vivas has in fact objected to the semiotic approach on precisely these grounds, suggesting that "it is difficult to see the difference between the iconic theory and the theory of imitation," that "the notion of imitation has been avoided only by translating it into the notion of iconity."[49] This is true. And it would be a criticism, if all one were proposing was the labelling of, say, Marinetti's "balloon" as an iconic sign instead of viewing it more traditionally as an example of mimetic typography—as a word-configuration imitating the shape of a balloon. But even in the case of this simple example, the term "icon" must needs be the starting-point for analysis, not some *terminus ad quem.*

In fact, even the most rudimentary of Marinetti's so-called "auto-illustrative" effects offers a neat demonstration of Umberto Eco's reported statement that iconicity "must be defined in connection with the process of perception,"[50] not merely as a matter of shared characteristics. It is a point which Eco has demonstrated most persuasively in the case of a feature often highly relevant to the study of shaped writing: that of the cognitive value of the outline.

"If I take a pen," Eco explains, "and draw on a sheet of paper the silhouette of a horse, through creating this silhouette by the extension of a single, elementary line of ink, everyone will be pre-

pared to recognize a horse in my drawing; and yet the one property which the horse in the drawing has (a continuous black line) is the sole property which the real horse *does not have*. My drawing consists of a sign, which delimits the 'space within=horse' and separates it from the 'space without=non-horse,' whereas the horse does not possess this property. . . . Therefore I have produced on my drawing *not one condition of perception;* for I perceive the horse on the basis of a large number of stimuli, not one of which is distantly comparable to an extended line." The redefinition of the iconic sign which Eco offers to cover such (Gestalt) contingencies is the following: "Iconic signs reproduce a few conditions of perception, but only when these have been selected on the basis of codes of recognition and explained on the basis of graphic conventions."[51] Already contained in Pierce's notion of the interpretant—for example, in the definition of an iconic sign as one which displays qualities that "resemble those of [its denotatum] and *excite analogous sensations in the mind for which it is a likeness*"[52] there was a concession to the psychology of perception which points the way to that synthesis of semiotics and Gestalt psychology which is at present being undertaken. What Eco says concerning the role of the outline in his horse-illustration can, with some modification, be transferred to a semiotic commentary on Marinetti's balloon and similar figures. For here, while there is no simple outline even, the linearity of the writing functions as a more complex variant on the same principle. We decode the linearity, which is far from being mimetic, depending as it does on both codes of perception and our reaction to certain graphic conventions. Without wishing to belabor this specific example unduly, I would suggest that in many cases there is a logical connection between the Futurist interest in the rapid transmission of information through instantly recognizable images and their dependence on Gestalt models.

So far, only some of the more fundamental aspects of a semiotic approach to typography, based on the concept of iconicity, have been considered. In its exploration of how we react to such signs, semiotics has been most concerned with the visual side. Here, it has a marked contribution to make to the analysis of shaped writing. In the particular Futurist context, however, there are

different forms of visual iconicity: on the one hand, there is the simple form where a visible sign has a visible object (e.g., Cangiullo's pile of words, which Bergman describes, using traditional impressionistic terminology, as "placed in such a way as to *evoke* in the reader the dimensions and positions of suitcases"[53]). Here the shared characteristics include features of conglomeration, standing in disorder, consisting of what Eco would call a "code of recognition" denoting rectangular shape, etc. On the other hand, there is the synaesthetic form of "designed analogy." Rather than a visual-to-visual relationship between sign and object, one is dealing, for example, in the way "fumare" is written in the same poem (Fig. 2) with a synaesthetic semiotic analogy. Here one can detect a number of features common to the printing of the word and to what the pictogram is a sign of; and these involve a number of senses, as well as the visual. The relationship between smoke and boredom rests on shared characteristics related by Marinetti to length and dynamic self-expansion, involving also an equation of typographical length, vowel-multiplication, and changing typeface. (Whilst it is possible, in the case of some "auto-illustrations," to follow those semioticians who prefer to view iconic motivation as a special case of metonymic *pars pro toto*,[54] this seems a less suitable approach for synaesthetic "designed analogies," where the "part" standing for the whole is presented in a highly coded form.) Futurist typography is, of course, not only iconic when it involves shaped writing; its use of boldness of print and size of typeface to indicate degrees of importance or acoustic properties (with an eye to declamation) also involves a form of iconicity.[55]

However, a consideration of iconicity in printing can often be faced with an even more fundamental question than that of how this kind of sign works. The issue of whether or not a particular mode of iconicity is actually operative can be a problem in some instances. In Futurist poetry one can usually ascertain with some accuracy when shape becomes iconic because of the marked departure from linear printing which heralds such a change of sign-function. Yet this awareness of what is (or is not) iconic may not be so easy to arrive at in other cases.

Arthur W. Burks once protested that Peirce was willing to see a sign as an icon "merely if it possesses or exhibits the quality or

relation it signifies. . . . On this criterion any token of 'black' printed in black ink is iconic, though the reader . . . is unaware of the fact that it is displaying the quality it represents. . . . Such a criterion, however, contradicts the original definition of an icon as a sign which exhibits its object to an interpretant;[56] for the objection implies that a sign is not iconic unless the interpretant recognizes it as such."[57] In fact, this objection disregards one crucial factor: that Peirce goes no further than to describe something as "fit to be" an iconic sign under such conditions.[58] Whether it becomes one or not will depend on other controlling factors, including adequate identification (in the case of poetry by signals to the reader) of the code which permits this sign-role to operate. Nevertheless, Burks' misconstrued illustration is singularly relevant to the subject in hand, for it raises certain questions connected with the appreciation of motivation in a lot of experimental poetry.

Conventionally, we are aware, black ink is not iconic in printing. Burks is therefore surely quite justified in deducing that it would be ridiculous to expect a reader to interpret any degree of motivation into the fact that the adjective "black" will normally be printed in black ink. To be more accurate: what he says holds true for most non-aesthetic contexts because we as readers correctly infer that one of the conventions (or dominant codes) within such areas decrees that the materiality of the printed sign-vehicle be ignored (as non-iconic). When it comes to the potential iconicity of printing techniques, this even obtains for most poetic works; the "designed analogy," like all shaped writing, is an exception to this convention. But like all art, poetry exploits the materiality of its elements, and in so doing has to create new reading processes. It has been suggested that "a poem generates its own code of which the poem is the only message,"[59] but the real point of interest for us here is how it not only manages to operate with, but also to identify and transmit to the reader, the presence of a specifically iconic typographical code, when this conflicts with his normal horizon of expectation.

Whereas a departure from linearity is likely to indicate one order of iconicity (shaped writing, for instance) quite readily, motivation will be less obvious when, for example, a conventional feature like blackness of print has been retained for iconic reasons.


SCRABrrrRrraaNNG
Paa piiig
Paaak
Piing
futurista
GRAAAG
tumb-tumb
PUUN PAMPAN
TRAC
ISONZO
campestre intre fresca
SIMULTANEITA
ESPLOSIONE
Guerra ai
tedescofili!
verdi
sdraiato

In his collection, *Les mots en liberté futuristes,* Marinetti includes a free-word composition which illustrates some of the issues associated with the process of recognizing coding in the case of the printed medium. The work in question is Marinetti's own much-anthologized *Le soir, couchée dans son lit, elle relisait la lettre de son artilleur au front.*[60]

Marinetti's "collage tipografico" (Fig. 8) can be experienced as existing on a number of structural and temporal planes. The blacked-in figure in the bottom right-hand corner is identifiable as the girl who, according to the work's title, "that evening, lying in bed, re-read the letter from her gunner at the front." While this depiction of her is obviously an iconic sign, it could well be codified in a number of different, mutually exclusive ways. Bearing in mind the setting signaled by the title, it would be feasible to view the girl's shape as a silhouette (or possibly even her shadow on a wall). Even her relatively small size may be iconic: suggesting her subordination to what is being presented in the rest of the poem. An alternative reading is that this part of the design is iconic in the way that many roadsigns are, with a black-filled figure standing as a pictogram of "girl" ("elle"). Moreover, how one interprets this aspect of the design may well affect one's reading of its other codes (and vice versa). If only the girl's *shape* is taken to be the motivated element in the pictogram, black is deemed non-iconic and consequently might be expected to be so elsewhere in the poem; e.g., in the thick black letters of the exploding words near the center. On the other hand, if the form's color *is* iconic (*qua* silhouette or shadow), the blackness elsewhere could conceivably denote the dark smoke and pall of battle with a number of shared characteristics. Another possibility is that the rest of the poem signifies what she is reading (Bowler calls it a "poem in the form of a letter from a soldier to his sweetheart"[61])—presumably offered to her in the shape of a Futurist free-word poem! Or it could even be meant to signify the battle itself, not an iconic version of it put on paper by him. Indeed, there is also no reason why it cannot be a sign of his

Figure 8. F. T. Marinetti. "Le soir, couchée dans son lit, elle relisait la lettre de son artilleur au front," 1919.

letter's interpretant: the image created by his vivid description in her mind's eye. Whether or not the black is iconic (and where) will obviously differ from reading to reading.

Although the reference to "evening" in the title does at least give a clue that the reader is to some extent warranted in suspecting the blackness of some parts is motivated, the actual latitude of semiotic iconicity in *Le soir* deliberately resists unambiguous definition. Carlo Belloli once described it as a work in which "Marinetti attempted to exhaust all the possibilities that typography has of reproducing an experience, in order to open up new paths for it in the future."[62] Not surprisingly, therefore, this compendium of methods proves an illustration of some complexity, depending for many of its effects upon an act of equivocation about the exact nature of its sign-vehicle's codes. The questions which a detailed interpretation of its signs raises touch on one of the basic needs of any sign-system: to identify its codes and sub-codes.

Generally, Futurist poetry involves less ambiguous, but nevertheless often unaccustomed forms of iconicity, and for that reason it usually needs to establish at an early juncture what type of sign and what range of codes and conventions is being worked with. It is frequently, of course, the covers of such experimental volumes that perform this task. As Guiraud points out, "the title of a work of art refers to the code adopted much more often than to the content of the message."[63] The cover of Auro D'Alba's volume *Baionette* (Milan, 1915) has the title-word so printed as to signify the shape of a dynamic series of advancing bayonettes and the letters which form the title of Luciano Folgore's *Ponti sull'Oceano* (Milan, 1914) recede in perspective like the contours of some huge, multi-arched sub-marine bridge. The cover of the 1914 edition of Marinetti's *Zang tumb tuuum* (analysed in detail, below) arranges multiples of these three words in such a way that they radiate outwards in the same way as their denotata (the sounds of war) could be imagined doing from the battle scene. Here is one obvious area of overlap between the iconic identification of code (which Guiraud ascribes to titles in works of art) and the exploitation of iconic signs in advertising (cf. Roback's "Simulates"), for the style of a Futurist title is to some extent an act of (commercial) propa-

ganda. And since this publicity factor also requires rapid recognition of both sign and code, the covers of leading volumes of poetry might be thought of as epitomizing many aspects of the whole Futurist aesthetic: a concern with dynamic reading processes, an iconic exploration of language's materiality and yet a degree of experiment always circumscribed by various graphic codes and conventions of reading. It is these aspects of the iconic sign which need to be examined in greater detail now in order to discover what insights semiotics affords.

Shared Characteristics, Graphic Codes, and Conventions of Reading

So far shaped writing has been treated largely as if it were an unadulterated example of the iconic sign. But the iconic sign itself is in fact only an ideal type. As Fitzgerald points out, "while there is an iconic aspect or characteristic of things, there is nothing that is purely iconic."[64] Although this point has not to my knowledge been incorporated into any semiotic approach to typography, it has been recognized and acted upon in other quarters. Thus, Peirce himself describes a diagram as "predominantly an icon of relations . . . aided to be so by conventions."[65] And Guiraud points out, "Motivation does not exclude convention: the schematized diagram of a barrier which heralds a level-crossing is, despite its iconic value, a conventional sign which the users of the code can neither alter nor replace."[66] In a way that the mimetic model does not, semiotics can give one a means of isolating various separate constituents within such a sign-structure as shaped writing: of distinguishing between the iconic elements (both simple shared characteristics and those germane to Eco's "codes of recognition"), elements of the sign that take account of convention (for convention is a matter of structure, not just reading habit) and other non-iconic and non-conventional ingredients. The following tentative exploration of the central, *dynamic* quality of Futurist typography will illustrate some of the factors—and also some of the problems—which such a distinction throws into relief.

For Marinetti and his followers the new free-word poetry was to be a celebration of "dinamismo," "velocità," and "simultaneità." A "love of speed" was equated by them with the need for "abbreviation, and the summary,"[67] and in construction Futurist

paintings and poems were to represent the pace of the modern world. The new aesthetic, in fact, centered on "the beauty of speed."[68]

Some of the most striking iconographic aspects of the geometry of dynamism (ironically, something well appreciated by the Renaissance painters whose heritage the Futurists were trying to shake off[69]) were spelled out in the writings on painting. Gradually, many of the structural principles outlined there found their way into the techniques of poetic layout—hardly unexpectedly, since many of the Futurists were both painters and poets and there was a close collaboration between all members of the movement.

In his *Pittura scultura futuriste,* Umberto Boccioni observes that "every rapidly moving object—a train, a car, a bicycle—generates in pure sensation an emotional milieu which takes the form of *horizontal penetrations at an acute angle* . . . [a] crowd starting off at a run appears in our dynamic consciousness as *a maze of acute angles, oblique lines,* and aggressive zig-zags."[70] In a similar vein, and still elucidating the geometric principle primarily in respect of painting and the phenomenon of motion perceived, Carlo Carrà suggests: "The acute angle . . . is passionate and reveals volition and aggressive onslaught. The obtuse angle manifests a fluctuation and a diminution of this volition and this aggressive penetration."[71]

Carrà went on to elaborate on these implications in even further detail in his manifesto "The Painting of Sounds, Noises, and Smells," a document which casts a great deal of light on the poetry also being written at this time (including Carrà's own volume *Guerrapittura,* published in Milan in 1915). "THE PAINTING OF SOUNDS, NOISES, AND SMELLS," it is proclaimed, desired *inter alia:* "The clash of acute angles . . . the angles of volition. . . . Oblique lines which affect the soul of the observer like so many bolts from the blue. . . . The inverted cone (the natural shape of an explosion), the slanting cylinder and cone. . . . The collision of two cones at their apexes (the natural shape of a waterspout) with floating and curving lines. . . . The zig-zag and wavy line. . . . Ellipsoidal curves seen like nets in movement."[72]

The emphasis on "natural shapes" in this argument is of importance in a consideration of the sign-object relationship, especially when one comes to explore the relationship of iconic ele-

ments to the degree of typographical convention and codification involved. Marinetti once referred to the "visual foreshortening and visual synthesis caused by the speed of trains and cars,"[73] and yet it would be an oversimplification to assume that Futurist typography was simply trying to imitate this, or could: since in actual practice there is a great deal more non-iconicity at play than such a statement might lead one to seek.

Before typographical illustrations can be considered, it will be necessary to clarify the relationship between graphic conventions and motivation within the sphere of painting. Historically, of course, such dynamic configurations cannot be appreciated without some reference to the Futurist concept of "force-lines" and the painters' thinking on this issue does help to illuminate the sign-object relationship in both painting and poetry of the time.

The major Futurist artists explained what was meant by "force-lines" in the catalogue-preface to the 1912 exhibition of their work at the Gallery Bernheim-Jeune in Paris. It seems, from what they say there, that "force-lines" are partly a matter of the property of objects as actually perceived and partly a matter of codification. "All objects," it is claimed, "stretch out towards infinity by means of their *force-lines*, whose continuity is measured by our intuition. It is these force-lines which we must draw, to lead the work of art back to true painting. We interpret nature by depicting on the canvas these lines as *the beginnings or continuations of rhythms which the objects themselves impress upon our sensibility*."[74] Inasmuch as force-lines coincide with the "rhythms which the objects themselves impress upon our sensibility," they are iconic; i.e., in the simple sense of involving shared characteristics (although a Gestalt approach to iconicity would seem to be appropriate to many aspects of the Futurist concern with dynamism). In his book on art and sculpture, Boccioni calls them the "*representation* of the movements of matter along the trajectory determined by the structure of the object and its actions."[75] But it is with the manner of representation that certain complications set in. For inasmuch as they are also "continuations" creatively stylized as extensions of these rhythms, they are conventionalized (or symbolic, in the everyday, non-semiotic sense of the word[76]). In Boccioni's various studies for the picture—*Dinamismo di un ciclista*

of 1913, for instance—one can in fact see the process of increasing stylization from study to study, as iconicity gradually becomes displaced by an emphasis on highly schematized force-lines.[77]

This is an aspect of signification which semiotics, in its overriding concern with taxonomy, has often underestimated. Yet the *kinetic* nature of sign-behaviour—in the continually changing relationship between iconic and conventional elements: in the act of creation itself, also within different phases of an artist's work or a historical movement—may be of crucial interest to those engaged in a semiotic approach to the arts (in a way that it may not be in other disciplines). Mieczysław Wallis has drawn attention to this factor: "By virtue of custom or convention," he writes, "iconic signs, especially schemata, may function in a certain context as conventional signs. . . . There takes place a process of 'deiconization' and 'conventionalization.' Many conventional signs of various systems of script—for example, Chinese ideograms—originate in this way. We also meet (although more rarely) the reverse process, the transformation of a conventional sign into an iconic sign, or 'iconization'."[78] And since terms like "conventional sign" and "icon" are ideal classes, not mutually exclusive real categories, one is bound to encounter different degrees of conventionalization and iconization within the sign-spectrum, it should be added.

Compared with conventional printing, much Futurist poetry obviously involves a process of what Wallis would call the "iconization" of the word: through "auto-illustrations" and "designed analogies." But within the lifespan of the movement, in the gradual transference to typography of organizational principles, of iconic signification (through, for instance, force-lines) one can detect a shift towards conventionalization. Things more iconic and innovatory in painting can become conventionalized as certain tokens of a style become established. This is part of the dynamics of the movement's development: a sort of streamlining of effects. Thus, acute angles, first presented as properties of objects in motion, are gradually abstracted from detailed contexts to function as largely symbolic signs of movement (which contemporaries would have no difficulty in interpreting). The fact that within the period itself what began as iconicity began to acquire the characteristics of a conventional sign is one factor which a semiotic

exploration of the influence of Futurist painting on typography would have to take into account. Another is the way in which the geometry of dynamism to be found in painting (itself already an amalgam of iconic elements and graphic codes) becomes further modified by having to be accommodated to both the materiality of the different medium and the need for a different kind of reading process.

What this may mean in respect of the materiality of the printed sign is perhaps best suggested by Guiraud's conclusion that "the poorer the mode of representation is, the greater the codification of the signs."[79] For various reasons, this would be a challenging proposition to test in the context of Futurist free-word composition. Clearly, shaped writing marks an attempt to enrich language, and yet it is a poorer mode of iconization than painting, so that in this sense words-in-freedom are likely to be more highly coded than Futurist pictures. (One aspect of this has already been considered in the case of Marinetti's "balloon.") Over and above this, however, there is the point that increased stylization seems to have taken place anyway in the translation of methods from one medium to the other, as part of the general conventionalization of the movement's iconic techniques. Added to which is the fact that some of the more schematic poems were primarily influenced by *Zang tumb tuum*, and Marinetti was a poet only—not a painter. Still, the real point at issue here is that semiotics offers a more differentiated method of solving such complex problems than the mimetic framework supplies; not because of its perhaps off-puttingly elaborate system of sign-types, but because it distinguishes between different elements within the individual sign.

The second major readjustment, to readability, can be witnessed in even simple examples, such as the title of the 1914 edition of *Zang tumb tuum* (Fig. 9).

This well-known cover is iconic in a number of different ways. Acoustically, it is so by dint of being onomatopoeic, expressing certain sounds of war. Typographically, it shares with the noises signified certain characteristics of centrifugality and diminution of size. On the other hand, only three lines of print actually denote the sounds (this is part of the poverty of the medium: not only of print in general, but the limited number of words likely to be

T. MARINETTI FUTURISTA

ZANG TUMB TUMB

ADRIANOPOLI OTTOBRE 1912

TUUUMB IN LIBERTÀ

PAROLE TUUUUM TUUUUM TUUUUM

EDIZIONI FUTURISTE
DI "POESIA"
Corso Venezia, 61 - MILANO
1914

effective on something like a title-page). The pattern is therefore near-minimal, even though it is reinforced by having the author's name and the place of the battle in question also printed so as to fit in with the general configuration. Within certain strict limitations, however, the arrangement might be considered to exploit and stylize the graphic conventions already well developed by the Futurist painters. The "typographical revolution" may have allowed a poet like Marinetti to "impress on . . . words [the] velocity of airplanes, trains, . . . molecules, and atoms"[80] but this could only be done within the framework of certain inviolable conventions.

In *Art and Visual Perception,* Rudolf Arnheim refers to our "general tendency to read visual patterns from left to right,"[81] a habit which is exploited in different ways by Futurist painting and poetry. A study of any representative collection of Futurist paintings or any volume on the art of the period would reveal that many of the dynamic objects pictured are shown to be moving towards the left of the painting (e.g., in Luigi Russolo's *Treno in velocità, Automobile in corsa,* and *La rivolta;* or in Boccioni's *Dinamismo di un ciclista).* The movement of the viewer's eyes from left to right thus appears to endow the signified object with a sense of impetus in the opposite direction. On the other hand, the sounds of *Zang tumb tuuum* radiate outwards from left to right: the reading-direction remains the same for both painting and poetry, but the direction of the sign-motion has been reversed. There are good reasons for this inherent in the difference between the two kinds of reading process. As Jan Tschichold has observed, "our writing runs from left to right" and "our eyes naturally return at the end of each line to the place where they started."[82] Thus, whilst the contrast between converging and radiating lines may be appropriate to the difference between an object in motion and sound waves emanating from a particular source, the two configurations are also appropriate to two different kinds of reading. Since more than one line of writing is likely to be needed—both to give title-

Figure 9. F. T. Marinetti. Cover of *Zang tumb tuuum,* 1914.

page information and to create a pictogram—and because we are expected to take in each line separately to understand it (and Marinetti is here reluctant to depart too boldly from the kind of reading conditions we are used to, or the process would be slower), certain inferences naturally follow. The arrangement will still have to relate to, if not actually conform to, the traditional horizontal layout; it will not involve a single sweep of the eyes from left to right, as in painting (if one accepts Arnheim's generalization for the sake of the argument), but a number of repeated motions of this kind.[83] In fact, there is a sense here in which the relative poverty of the medium is converted to good advantage. For, as Tschichold has pointed out: "In special cases [lines] may be set obliquely, which is more eye-catching. . . . It can be very effective but only when done sparingly. If it is used, single lines are more effective than short words or groups of short lines, because then the oblique position is not so easily noticed."[84] In designing the cover for *Zang tumb tuuum,* Marinetti would appear to have shown a feeling for these factors.

With an example of the order of simplicity to be found in the cover-design for *Zang tumb tuuum,* it is relatively easy to distinguish between the iconic elements, the movement's private codes of signified dynamism (gradually shifting from iconicity into convention) and specific graphic conventions appropriate to the printed page. With a more elaborate piece of typography, such as one finds in Gino Severini's *Danza serpentina,*[85] the differentiation of sign-characteristics would be much more difficult to accomplish (indeed, the subject would require a paper to itself). Yet only a semiotic approach which separated iconic from other components would be able to extend the analysis of words-in-freedom in this direction.

Conclusions and Perspectives

This paper's argument for a semiotic approach to shaped writing has so far rested on two main factors: the advantages of the concept of iconicity, in contrast to the mimetic model, and the ability of semiotics to differentiate various aspects within any given sign-vehicle. But semiotics is a rapidly developing discipline, at present substantially refining its techniques of analysis, and it would be a

misrepresentation of its methodological merits not to take account of these new perspectives and indicate their fruitfulness for a semiotic analysis of typography. Of particular interest in this connexion are certain current attempts at quantifying the iconic element of the sign, and at bringing about a greater degree of cross-fertilization between the psychology of perception and the concept of the interpretant.

"Auto-illustrations" and "designed analogies" have been treated in the present paper as single signs (to some considerable extent iconically motivated signs). However, it is possible to view them as iconic "supersigns"; i.e., as *collections* or *configurations* of symbolic signs (viz. words).[86] Whether iconicity occurs at the sign or supersign level would be something which semiotic analyses would have to consider. And so, too, is the question of just how much iconicity is present in such (super)signs. Certain starts have already been made in this direction at evolving a more precise way of formulating iconicity.

In "Iconic Signs, Supersigns, and Models" Martin Krampen has indicated a number of fruitful perspectives from which the iconicity of supersigns (be they typographical or otherwise) can be investigated. In general, he argues, work on the theory of models (to some extent one of Peirce's own starting-points) is at present far more advanced than any semiotic taxonomy of iconic signs. Since "supersigns" and "models" are in many ways comparable, there are good grounds for contemplating a "mapping of supersigns into the domain of models."[87] Leaving aside certain misgivings about whether the mapping should not be taking place in the other direction, one should perhaps note that one of the difficulties here is that the terminology—as in much related structuralist thinking—tends to operate with sets of binary oppositions which may seem somewhat over-generalized, albeit quantifiable, for the aesthetic context. (The dominant model of information theory is to be witnessed in this.) Thus Krampen proposes a number of two-part distinctions (between isomorphic and heteromorphic, structural and qualitative, isohylic and analogical models) which he suggests could be employed in a taxonomy of iconic signs. Wallis has similarly proposed a bipartite approach, distinguishing between two extreme forms of iconic sign. On the

one hand, the "extremely simplified" ones, "devoid of details," to which he gives the name "schemata." On the other, iconic signs "rich in details"—or "pleromata," as he calls them.[88] Clearly within such a system, most Futurist typographical effects would be assigned to the "schemata" group. And because the theory of models offers a means of speaking with more precision about the degree of iconicity, it should prove useful to commentators on the printed word.

Since Eco has shown some of the ways in which an account of iconic motivation needs to make use of the psychology of perception, the semantic and pragmatic[89] dimensions of semiotics have come closer together. A description of sign-object relationships is thus likely to move more readily into a consideration of the interpretant and the act of perception as well. And the work carried out by Arnheim on the general theory of visual perception in art and by Marcus on concrete poetry in this respect, in particular, is likely to be integrated more easily into an overall semiotics of typography.

1. London: privately published, 1971, p. 2.
2. *Pagina*, III (October 1963), 4-47.
3. "Framed and Shaped Writing," *Studio International: Studiographic Supplement* (September 1968), 110.
4. Introduction to the catalogue of the Exhibition of Concrete Poetry held by the Zürcher Kunstgesellschaft at the Helmhaus (Zürich: Helmhaus, 1970), pp. 5-16.
5. *Visible Language*, VIII, 4 (Autumn 1974), 334.
6. Sub-titled *Grundlegung und Anwendung in der Texttheorie* (Reinbek bei Hamburg: Rowohlt, 1969). See also: *muster möglicher welten: eine anthologie für max bense*, ed. Elisabeth Walther & Ludwig Harig (Wiesbaden: Limes Verlag, 1970); and Paul de Vree, *Poëzie in fusie, visuel, konkreet, fonetisch* (Liège: De Bladen voor de poëzie, 1968). A critical assessment of the achievements of the Stuttgart school in this area is given in my review-article "The Aesthetic Sliderule," *Times Literary Supplement* (12 October 1973), 1255f.
7. The author wishes to record with gratitude the help received from Jeremy Adler, Peter Mayer, and Mieczysław Wallis in the writing of this paper.
8. "Lo splendore geometrico e meccanico e la sensibilità numerica," in F.T.M., *Teoria e invenzione futurista*, ed. Luciano De Maria (Rome: Mondadori, 1968), p. 85. Unless otherwise indicated, translations from works not written in English are my own.
9. Many examples of these have now been conveniently brought together by L. Caruso and S. M. Martini in *Tavole parolibere futuriste (1912-1944)* (Naples: Liguori, 1975).

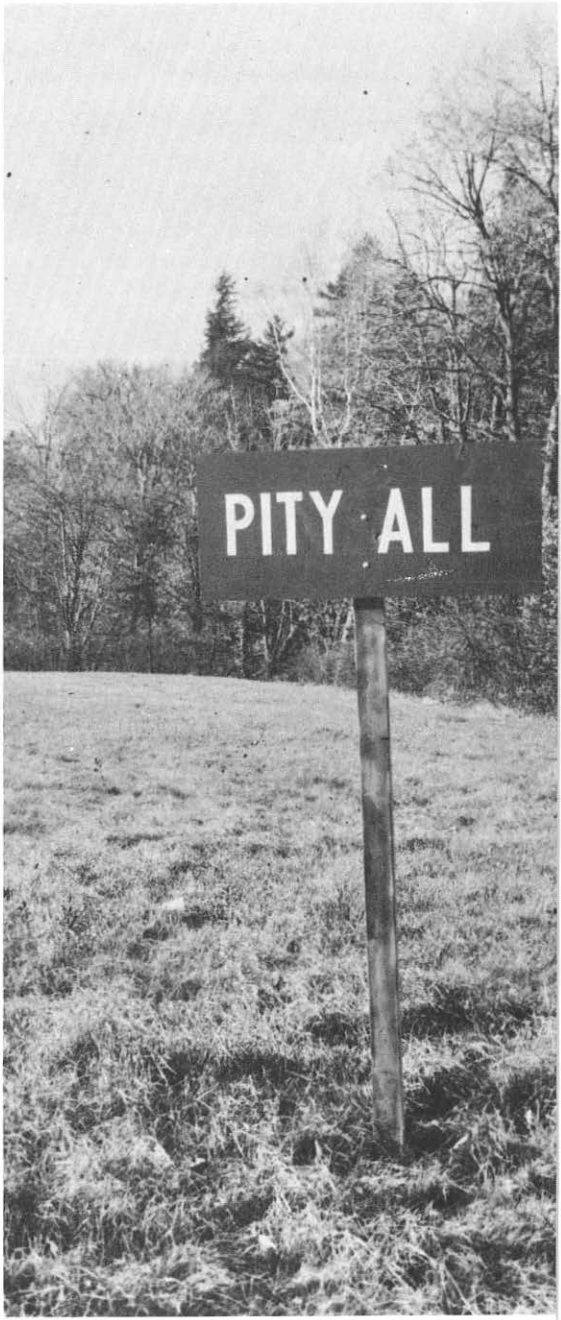
10. *Zang tumb tuuum* (Milan: Edizioni futuriste di "Poesia," 1914), p. 120.
11. Paolo Buzzi. *L'Ellisse e la Spirale* (Milan: Edizioni futuriste di "Poesia," 1915), p. 223.
12. Buzzi, p. 222.
13. Corrado Govoni. *Rarefazioni e Parole in Libertà* (Milan: Edizioni futuriste di "Poesia," 1915), p. 48.
14. Francesco Cangiullo. "Fumatori.ll." *Lacerba,* II, 1 (1914), 10.
15. M. Bétuda. "Looping the Loop. Parole in Libertà," *Lacerba,* II, 7 (1914), 104.
16. "La cinematografia futurista," manifesto signed by F. T. Marinetti, Bruno Corra, Emilio Settimelli, Arnaldo Ginna, Giacomo Balla, and Remo Chiti, quoted from *Archivi del futurismo,* ed. Maria Drudi Gambillo and Teresa Fiori, I (Rome: De Luca, 1958), 97.
17. Giovanni Papini. "Il cerchio si chiude," *Lacerba,* II, 4 (1914), 49.
18. "La 'distruzione del modello lineare' e la letteratura d'avanguardia," *Lingua e stile,* III (1970), 450.
19. *"Modernolatria" et "Simultaneità": Recherches sur deux tendences dans l'avantgarde littéraire en Italie et en France à la veille de la première guerre mondiale* (Uppsala: Bonniers, 1962), p. 200.
20. "Histoire sommaire du tableau-poème," *XXe siècle,* nouvelle série 3 (June 1952), 22.
21. *Futurism: The Story of a Modern Art Movement. A New Appraisal* (New York: Greenwood Press, 1969), p. 48.
22. *Per conoscere Marinetti e il futurismo: Un'antologia,* ed. L.D.M. (Milan: Mondadori, 1973), xxxiv.
23. Lack of differentiation is the strongest charge to be laid against the theory of imitation here, not simply, as Stefan Themerson argues, that "imitation" is "too humourless a word to use," *Apollinaire's Lyrical Ideograms* (London: Gaberbocchus, 1966), p. 26.
24. "Chimismo lirico," *Primi principî di una estetica futurista,* [Florence, 1920] quoted from *Archivi del futurismo,* I, p. 586. My italics.
25. The phrase is Carlo Carrà's in the poem "1900-1913. Bilancio. Parole in Libertà," *Lacerba,* II, 3 (1914), 39.
26. Point 2 of the "Manifesto dei pittori futuristi" of 1910 reads: "disprezzare profondamente ogni forma di imitazione," *Archivi del futurismo,* I, p. 64.
27. Cf. the word-picture of Mahadeva or Shiva begging rice from Parvati or Annapurna, now housed at the Victoria & Albert Museum, London (reproduced in B. B. Bowler, *The Word as Image* [London: Studio Vista, 1970], p. 21) and the almost photographic portrait of Churchill made up of repeated typewritten versions of his name (unattributed, reproduced in the catalog *Typewriter Art: Half a Century of Experiment* [London: Polytechnic of Central London, 1974], p. 17).
28. "Addiooooo. Parole in Libertà," *Lacerba,* I, 22 (1913), 256.
29. "Correzione di Bozze + Desideri in Velocità," *Lacerba,* I, 23 (1913), 269.
30. "Marcia del coraggio," *Lacerba,* I, 21 (1913), 237.
31. "1900-1913. Bilancio. Parole in Libertà," *Lacerba,* II, 3 (1914), 38.
32. "Messina," *Lacerba,* II, 4 (1914), 60.
33. F. T. Marinetti. "Lo splendore geometrico e meccanico e la sensibilità numerica," *Teoria e invenzione futurista,* p. 89. As can be seen from Figure 2, Marinetti's depiction of this "designed analogy" is not quite accurate.
34. *Semiology* (London & Boston: Routledge & Kegan Paul, 1975), p. 30.

35. *Reviews, Correspondence, and Bibliography*, ed. Arthur Burks *(Collected Works,* VIII) (Cambridge: Harvard University Press, 1958), p. 232.
36. John J. Fitzgerald. *Peirce's Theory of Signs as Foundation for Pragmatism* (The Hague-Paris: Mouton, 1966), p. 40.
37. Fitzgerald, p. 35.
38. *Collected Papers*, vol. 1, ed. Charles Hartshorne & Paul Weiss (Cambridge: Harvard University Press, 1931), p. 196.
39. Again there is a tripartite division: "A *Quali-sign* is a Quality which is a Sign . . . A *Sin-sign* (where the syllable *sin* is taken as meaning 'being only once,' as in *single* . . .) is an actual existent thing or event which is a sign. . . . A *Legisign* is a law that is a Sign" (*Elements of Logic, Collected Works*, II, ed. Hartshorne & Weiss [Cambridge: Harvard University Press, 1932], p. 142).
40. For an account of the types of sign here—rheme, dicent, argument—see Peirce's *Reviews, Correspondence, and Bibliography*, p. 229.
41. *Elements of Logic*, p. 165.
42. In both contexts, as A. A. Roback has shown, the style of printing can be a highly effective form of motivation. See the chapter on "Simulates" in his *Destiny and Motivation in Language: Studies in Psycholinguistics and Glossodynamics* (Cambridge, Mass.: Sci-Art Publishers, 1954), pp. 414-422.
43. *Cours de linguistique générale*, ed. Charles Bally & Albert Sechehaye (Paris: Bibliothèque scientifique, 1949), pp. 102-5 and 186-90.
44. Clearly, words are neither "arbitrarily" selected at *each* use nor are they always "unmotivated." Stephen Ullmann has therefore suggested that the difficulty which arises from Saussure's idiosyncratic use of "arbitrary" "can be reduced . . . if 'arbitrary' is replaced by 'conventional' . . . [since] all [it] means is the absence of any intrinsic motivation or justification, any natural connection between the name and the sense" (*Principles of Semantics* [Glasgow: Jackson; Oxford: Blackwell, 1957], p. 83). Ullmann in fact also proposes "three principal types of motivation" that *can* exist in language: phonetic (e.g., onomatopoeia), morphological (involving word-formation by analogy with existent words), and semantic (metaphor). A further kind of motivation—connecting the shape and meaning of what is spoken with the physical act of speaking—is explored in Heinz Werner, *Grundfragen der Sprachphysiognomik* (Leipzig: Verlag J. A. Barth, 1932); but, of course, both of these investigations are limited, like Saussure's, by the fact that they are concerned with the spoken word, not typography, and with normal language, not poetic or advertising idiolects.
45. See Frédéric François, "Caractères généraux du langage," *Le Langage*, ed. André Martinet (Paris: Gallimard, 1968), pp. 20-25; and Stephen Heath, "Towards Textual Semiotics," *Signs of the Times: Introductory Readings in Textual Semiotics*, ed. S.H., Colin MacCabe & Christopher Prendergast (London: Instantprint, n.d.), p. 18.
46. *Elements of Logic*, p. 143.
47. *Foundations of the Theory of Signs, International Encyclopedia of Unified Sciences*, vol. 1, no. 2 (Chicago: University of Chicago Press, 1938), p. 24. A. J. Ayer has observed that "the conditions which a sign must satisfy to be iconic are not very strict," an icon "does not have to bear any sensory resemblance to its object: it is enough that there should be some likeness between the relations of their respective parts" ("Peirce's Categories and his Theory of Signs," *The Origins of Pragmatism: Studies in the Philosophy of Charles Sanders Peirce and William James* [London: Macmillan, 1968], p. 151).

48. *Foundations of the Theory of Signs,* p. 24.
49. "Aesthetics and Theory of Signs," *Creation and Discovery: Essays in Criticism and Aesthetics* (Chicago: Gateway Editions, 1955), pp. 390 & 405.
50. See Martin Krampen, "The Role of Signs in Different Sign Processes—Towards a Basis of Generative Semiotics: Report on a Semiotics Workshop (Ulm, October 1972)," *VS,* IV, 3 (1973), 116.
51. *La struttura assente: Introduzione alla ricerca semiologica* (Milan: Bompiani, 1968), pp. 113f. The same observation about the absence of a dividing line is made in a different context by Wolfgang Köhler in his *Gestalt Psychology* (New York: The New American Library, 1959), p. 106.
52. *Elements of Logic,* p. 168.
53. *"Modernolatria" et "Simultaneità,"* p. 200. My italics.
54. Ewa Siemińska, for instance, concludes that "the material reality of these signifiants is a metonymic reality, whereby we mean the quantitative variety of *metonymy,* called *synecdoche,* which is based on the rule *pars pro toto*" ("Connotatior and Denotation in Film Art," *Sign—Language—Culture,* ed. A. J. Greimas, et al. [The Hague-Paris: Mouton, 1970], p. 416).
55. Sandro Briosi (*Marinetti* [Florence: Il castoro, 1969], p. 32) has commented on the iconic aspect of Marinetti's interest in onomatopoeia without seeing the extent to which it is also typographically one of his dominant concerns.
56. Burks here seems to mistake "interpretant" for "interpreter."
57. "Icon, Index, and Symbol," *Philosophy and Phenomenological Research,* IX (1948-9), 575f.
58. See Fitzgerald's critique of Burks' argument (*op. cit.,* p. 51).
59. Samuel Levin, *Linguistic Structures in Poetry* (The Hague-Paris: Mouton, 1966), p. 51.
60. Milan: Edizioni futuriste di "Poesia," 1919, p. 103.
61. *The Word as Image,* p. 132.
62. "Pioniere der Grafik in Italien/Italian Pioneers of Graphic Design/Pionniers du Graphisme en Italie," *Neue Grafik—New Graphic Design—Graphisme Actuel,* III (October 1959), 9.
63. *Semiology,* p. 9.
64. *Peirce's Theory of Signs as Foundation for Pragmatism,* p. 53.
65. *The Simplest Mathematics, Collected Works,* IV, 1933, p. 341.
66. *Semiology,* p. 26.
67. *Teoria e invenzione futurista,* p. 60.
68. *Teoria e invenzione futurista,* p. 68.
69. Giovanni Paolo Lomazzo, for instance, in his *Trattato dell'arte della pittura* (Milan, 1584), praises the dynamic shape of the flame which "has a cone or sharp point with which it seems to divide the air." See: *Literary Sources of Art History: An Anthology of Texts from Theophilus to Goethe* (Princeton: Princeton University Press, 1947), p. 261. Many of the Gestalt implications of such structures are investigaged in Rudolf Arnheim's *Art and Visual Perception: A Psychology of the Creative Eye* (London: Faber & Faber, 1954), pp. 18, 74, 401-409.
70. Milan: Edizioni futuriste di "Poesia," 1914, p. 319. My italics.
71. "Piani plastici come espansione sferica nello spazio," *Lacerba,* I, 6 (1913), 53f.
72. "La pittura dei suoni, rumori e odori," *Archivi del futurismo,* I, pp. 74f.
73. *Teoria e invenzione futurista,* p. 60.
74. "Les exposants au public," *Archivi del futurismo,* I, p. 105. My italics.

75. *Pittura scultura futuriste,* p. 211. My italics.
76. Franco Russoli recently referred with some justification to "le symbolisme des lignes-forces" in his "Diffusion et héritage culturel de l'art futuriste," *Futurisme. 1909-1916,* catalog of the 1973 exhibition held at the Musée National d'Art Moderne (Paris: Editions des Musées Nationaux, 1973), p. 38.
77. The studies are reproduced in Marianne W. Martin, *Futurist Art and Theory: 1909-1915* (Oxford: Clarendon Press, 1968), figs. 129-131.
78. "On Iconic Signs," *Recherches sur les Systèmes signifiants: Symposium de Varsovie 1968,* ed. J. Rey-Debove (The Hague-Paris: Mouton, 1973), pp. 487f.
79. *Semiology,* p. 40.
80. *Teoria e invenzione futurista,* p. 67.
81. *Op. cit.,* p. 18.
82. *Asymmetrical Typography* (London: Faber & Faber, 1967), p. 44.
83. Nevertheless, the layout's compromise between linearity and synoptic effect led to a great deal of confusion about how the title actually should be read. For details, see De Maria's introduction to Marinetti's *Teoria e invenzione futurista,* CXVI.
84. *Asymmetrical Typography,* p. 62.
85. Printed in *Lacerba,* II, 13 (1914), 202.
86. Bense adumbrates the process of "superisation" into "sign-shapes and sign-structures or supersigns" in his *Einführung in die informations theroretische Ästhetik* (p. 11).
87. *VS,* IV, 3 (1973), 106. In particular, Krampen points to the findings in H. Stachowiak, "Gedanken zu einer allgemeinen Theorie der Modelle," *Studium generale,* XVIII (1965), 432-463; G. Klaus & M. Buhr, *Philosophisches Wörterbuch* (Berlin: Das europäische Buch, 1970); and A. A. Moles, "Théorie informationelle du schéma," *Schéma et schématisation,* I (1968), 22-29.
88. "The History of Art as the History of Semantic Structures," *Sign—Language—Culture,* p. 524.
89. Morris writes: "By 'pragmatics' is designated the science of the relation of signs to their interpreters. . . . It is a sufficiently accurate characterization of pragmatics to say that it deals with the biotic aspects of semiotics, that is, with all the psychological, biological, and sociological phenomena which occur in the function of signs" (p. 30).

Book Review



Jan Tschichold on Typography

Jan Tschichold, *Ansgewählte Anfsätze über Fragen der Gestalt des Buches und der Typographie* (Selected Essays on Book Design and Typography). Basel: Birkhäuser Verlag, 1975; ISBN 3-7643-0711-0, 23 Swiss Francs.

Whatever may be our attitude towards the personality of Jan Tschichold—either from personal acquaintance or through familarity with his work and his writings—it is likely that anybody who practises typography, particularly book typography, and is not over sixty carries quite an amount of "Tschichold" in his tool bag. Whether we like it or not, most of us underwent, consciously or unconsciously, some of his considerable influence on twentieth-century typography.

Tschichold was among the first typographers in the modern sense of the word. He was younger than other pioneers—such as Bruce Rogers, Stanley Morison, or Francis Meynell—but unlike them he entered the craft, not from the printing industry or from publishing, but was trained to be a calligrapher and a designer at the now legendary Leipzig Academy. Hermann Delitsch and Walter Tiemann were his main tutors.

After having been a student first and then an assistant at Leipzig, he came into contact with the Bauhaus in 1923. He was deeply impressed by their first exhibition.

He published his manifesto "Elementare Typographie" in 1925 in which he first stated his ideas about a strictly functional design of the printed word with a strong emphasis against "historic," "romantic," or "nationalistic" typefaces. Consequently, sans serif to him was the best, if not the only kind of type suitable for the modern world. Still, his work in these days for several publishing houses (among these the famous Insel Verlag at Leipzig) was not particularly "modernistic"; it shows a very high degree of craftsmanship, both in the handling of type and in the calligraphy.

In 1926 Paul Renner called Tschichold to Munich to become a teacher at the newly established "Meisterschule" (Master Printers' School). For nearly seven years Tschichold taught at Munich: thirty hours weekly, for classes of some 25 students. Gradually his ideas about "the new typography" crystallized during his Munich years and were finally laid down in 1928 in his book *Die neue Typographie* (The New Typography). Its influence on German and, in a wider sense, Continental typographic design can hardly be overestimated: in my country most teachers in printing schools still swore by it and its successor, *Typographische Gestaltung* (Typographic Design; Basel, 1935)[1] in the late forties. In it we find a systematic and consistent elaboration of the principles of asymmetrical typography. As a second theme Tschichold condemns conventional symmetrical typography in terms such as "dead," "finished," "decadent." The book

As early as March 1933, barely two months after the Nazis took power in Germany, Tschichold was arrested and shortly afterwords fired on the grounds of *Kulturbolschewismus* (cultural bolshevism—one of the worst crimes to be guilty of in Nazi Germany). Tschichold and his family fled to nearby Basel where he found an ever increasing amount of book design to be done for several prominent publishers: Benno Schwabe, Birkhäuser, and Holbein Verlag. In 1942 he became a citizen of the City of Basel and so a Swiss national.

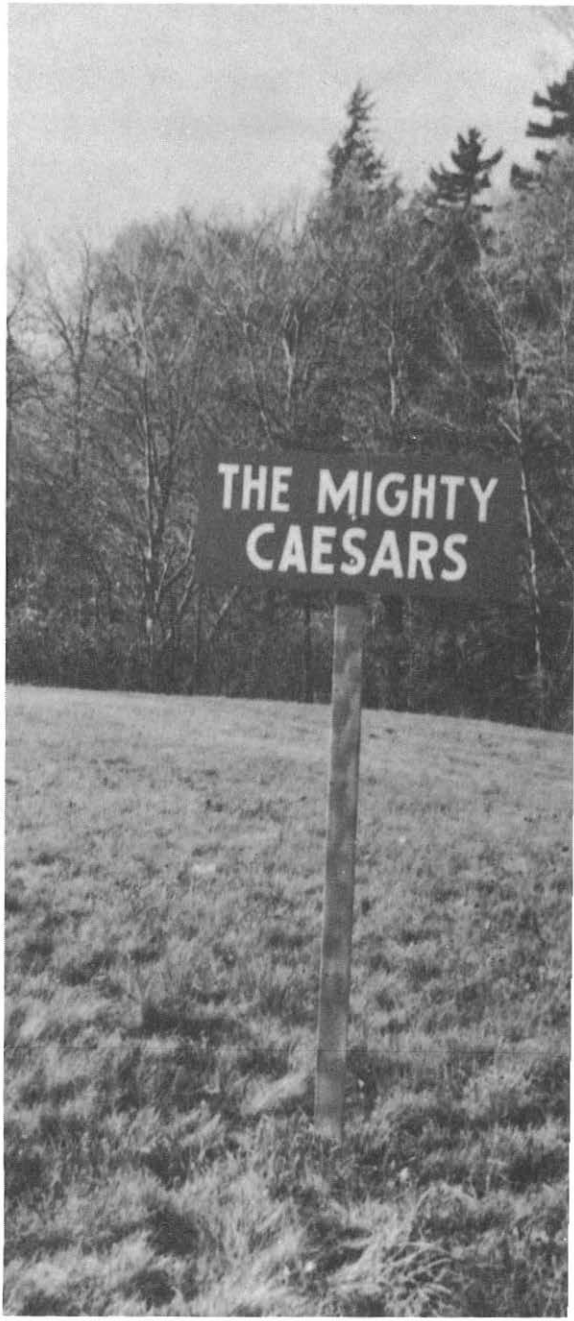
Gradually Tschichold's ideas on typography underwent a subtle change: around 1940 he no longer rejected symmetrical typography as he had done before, nor did he declare himself altogether wrong about his earlier points of view on asymmetrical typography. Many of his original followers found themselves in a considerable quandary about this change of heart in their master—not a few felt it to be a betrayal of his original beliefs and never fully forgave him.

1. A revised edition in English appeared as late as 1967, translated by Ruari McLean: *Asymmetric Typography* (London: Lund Humphries).

Tschichold, always a zealous author, published a great many articles on book design and the printing craft, mainly in the leading Swiss reviews *Typographische Monatsblätter* and *Schweizer Graphische Mitteilungen*—many of them too good to be buried in back volumes and so to become unfindable. It is a happy circumstance that shortly before his death (Tschichold died in 1974, aged 72) he collected 25 of these, now published in an elegant volume (impeccably set and printed in Monotype Van Dijck) according to his own design.

Many of these 25 essays are extremely short—three or four pages—and deal with one small detail of book design. Among them, for instance: "Axial or Asymmetrical Typography?"; "Publishers' Rules for Printers"; "How Specimen Pages Should Look"; "Signature Titles on Front of Spine of Sheet?"; "On Wide, Too Big, and Square Books"; "White or Off-white Paper." These short pieces are to my mind the best in the book and among the best to be found in contemporary typographic literature. They are concise formulations of Tschichold's great craftsmanship and his meticulous care for detail. They should be read and reread by anybody engaged in book design today, with more attention than ever, since quality, in both composition and presswork, seems to be going down the drain with the advance of modern technologies.

The longer pieces, however, are different, particularly the ones on "Un-arbitrary Proportions of Book



Page and Type Area" (pp. 45-76) or "On Typography" (pp. 18-30). In such longer essays Tschichold's dogmatic way of thinking, completely devoid of humour or irony, becomes annoyingly apparent and is reflected in his harsh and jerky use of the German language. Quite apart from the disputability of many of his theories, it took an uncommon amount of energy to persevere in my reading. But this is, after all, a minor objection to a book that contains a lasting treasure of typographic common sense, with a strong emphasis on detail. It is the care for detail that determines the difference between good and indifferent typography.

The above biographical particulars about Tschichold were taken mostly from another book, published by coincidence about the same time: *Jan Tschichold: Typographer* by Ruari McLean (London: Lund Humphries, 1975; £ 7.50). Apart from a warmly written critical biography McLean was Tschichold's personal assistant for a number of years and his friend forever after—it contains a number of Tschichold's essays in English. Amazingly enough not one of these is to be found in the German collection. This is a pity, since these pieces add another dimension to Tschichold's personality as a typographer. Moreover, they seem to have lost a great part of their dogmatism in translation, which is all to the good. McLean reproduces in full Tschichold's general instructions for the composition of Penguin Books, written when, in 1947, he was appointed chief designer of Penguin by Allan Lane (on the recommendation of, among others, Stanley Morison). The "Penguin Rules" are particularly useful, a miracle of succinctness, and they contain a wealth of sound advice. Their influence on British book typography was considerable and it lasted far beyond Tschichold's relatively short activity for Penguin (just over two and a half years).

There is much reason to be glad that within a year after his death Tschichold got such an excellent "life," containing a very fair and complete assessment of his significance as a book designer, and that at the same time a representative collection of his shorter writings was published. Unfortunately only those who are able to read both English and German may fully profit by these two books. I did hear about the possibility of a German edition of McLean's book, but nothing about the more urgent need of an English edition of the *Ausgewählte Aufsätze*, preferably augmented with the articles already published by McLean in his Appendix.

Tschichold merits all this: he was one of the giants of twentieth-century typography.

Huib van Krimpen

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Résumé des Articles

Traduction: Fernand Baudin

Un manifeste en faveur de Visible Language *par Merald E. Wrolstad*

Les résultats des recherches qui vont s'accumulant dans les sciences, les humanités et les arts visuels inspirent cet appel en faveur de la ré-évaluation de quelques-uns des principes fondamentaux qui régissent l'étude du langage. La linguistique n'a pas explicité de manière satisfaisante les liens qui relient les trois composantes que sont: notre organisation interne du langage (comlang), son expression sous forme de langage visuel et sous forme de langage auditif. Le visuel et l'auditif sont des systèmes totalement distincts: l'un ne asurait être interprété dans les termes de l'autre, et ce n'est pas l'ajustement de ces systèmes qui est le plus important, mais bien le point de savoir comment ils fonctionnent indépendamment l'un de l'autre. Langage et développement complet de l'être humain ne font qu'un. L'auteur rapporte des résultats de recherches qui font apparaître une relation étroite chez l'homme entre son réseau interne d'information et le langage visuel—et cela dans la manière dont nous utilisons le langage aujourd'hui aussi bien que dans la manière dont notre comportement a été formé à l'origine et dans les premiers développement du langage. L'auteur lance un appel en faveur de nouvelles recherches et de nouveaux travaux théoriques qui porteraient sur des points importants.

La nomenclature des caractères romains *par Philip Gaskell*

La nomenclature des éléments des caractères a une longue histoire. Pourtant il n'existe encore aucun système cohérent. Cet article s'efforce de définir et d'ordonner systématiquement tous les mots requis pour nommer les diverses parties de l'image imprimée des

Kurzfassung der Beiträge

Übersetzung: Dirk Wendt

caractères romain; il en illustre aussi l'utilisation.

Plaidoyer en faveur d'une étude sémiotique des messages visuels, tels que la typographie futuriste italienne, *par John J. White*

A partir des expériences poétiques des Futuristes, l'auteur montre les avantages d'une étude sémiotique appliquée aux messages graphiques. Les examples appartiennent clairement aux signes du type iconique, et illustrent de manière convaincante le fait que le concept d'icone permet effectivement une analyse plus systématique et plus révélatrice que le modèle mimétique traditionnel. L'article fait voir comment la psychologie de la Gestalt a modifié la définition même de l'iconicité pour aborder les codes d'identification et les conventions graphiques. Quelques exemples de ces derniers sont étudiés en vue, notamment, de faire ressortir comment de nouveaux codes sont introduits dans les travaux originaux. Enfin il compare le dynamisme dans la peinture et dans la poésie futuristes, afin de mieux démontrer comment l'approche sémiotique permet de faire une nette distinction entre icone, convention, code. L'accent est naturellement mis sur l'iconisation de la typographie..

Ein Manifest für Visible Language (sichbare Sprache) *von Merald E. Wrolstad*

Wachsende Mengen von Forschungsergebnissen aus Natur- und Geisteswissenschaft sowie aus der graphischen Kunst haben diesen Ruf nach einer Neuorientierung für einige der grundlegenden Vorgehensweisen sprachlicher Untersuchungen ausgelöst. Die linguistische Forschung hat die Beziehung zwischen den drei Komponenten—innere Organisation der Sprache (comlang), ihrem Ausdruck als sichtbare Sprache und als hörbare Sprache—nicht befriedigend geklärt. Die sichtbare und die hörbare Sprache sind verschieden; ein System kann nicht in Begriffen des anderen interpretiert werden, und von erster Wichtigkeit ist nicht die Anpassung der beiden Systeme aneinander, sondern wie jedes von ihnen unabhängig funktioniert. Sprache ist ein Stück mit vollständiger menschlicher Entwicklung. Es wird über Forschungsergebnisse berichtet, die darauf hindeuten, daß ein engerer Zusammenhang zwischen dem inneren Informationsverarbeitungsystem des Menschen und der *sichtbaren* Sprache—sowohl hinsichtlich der Art, wie wir heute Sprache verarbeiten als auch in Bezug darauf, wie sich unsere Verhaltensmuster beim Entstehen und in der frühen Entwicklung der Sprache aufgebaut haben. Es wird zu weiterer Forschung und Theorienbildung über die entscheidenden Fragen angeregt.

Eine Normenklatur für Antiqua *von Philip Gaskell*

Obwohl der Aufbau einer Normenklatur für die Elemente der Buchstabenformen eine lange Geschichte hat, gibt es heute noch kein voll kodifiziertes System. Dieser Aufsatz versucht, alle notwendigen Begriffe zu definieren, um die Teile des Druckbildes von

Antiqua-Schriften in einem in sich selbst abgeschlossenen System zu definieren, und ihren Gebruach zu demonstrieren.

Für einen semiotişchen Ansatz zur geformten Schrift: Der Fall der italienischen futuristischen Typographie *von John J. White*

In diesem Aufsatz werden futuristische poetische Experimente als Demonstrationsobjekt benutzt, um zu zeigen, welche Vorteile ein semotischer Ansatz in der Erforschung der geformten Schrift hat. Die betrachteten Beispiele scheinen zu einer Klasse von ikonischen Zeichen zu gehören, und der Begriff der Ikonenhaftigkeit erlaubt eine sowohl systematischere als auch differenziertere Methode zur Analyse der Bestandteile als das traditionelle abbildende Modell. Es wird auch betrachtet, in welcher Weise die Gestaltpsychologie die Definition der Ikonenhaftigkeit modifiziert hat, um die Verschlüsselungen der Zeichenerkennung und graphische Konventionen zu berücksichtigen. Beispiele solcher Verschlüsselungen und Konventionen werden untersucht, und die Aufmerksamkeit wird auf die Einführung neuer Kodierungen in innovativen Arbeiten gelenkt. Schließlich wird die Beziehung zwischen der Bedeutung des Dynanismus in der futuristischen Malerei verglichen mit der in der Dichtkunst, um zu zeigen, auf welche Weise ein semiotisches Modell zwischen ikonischen, konventionalisierten und kodifizierten Elementen zu unterscheiden vermag; dabei wird die Anpassung ikonischer Effekte an das Medium der Druckkunst besonders hervorgehoben.

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John J. White is a member of the German Department of Westfield College (University of London, Kidderpore Avenue, London NW3 7ST, England). Before coming to London, he studied modern literature and linguistics at the Universities of Leicester, Alberta, and the Free University of West Berlin. He has written a study of expectation-patterning in modern fiction, *Mythology in the Modern Novel: A Study of Prefigurative Techniques* (Princeton University Press, 1971), as well as various essays on modern literature and semiotics. Dr. White, who is co-editor of *German Life and Letters*, is at present writing a comparative study of literary Futurism.

Beginning in 1925 with a dozen sets of signs on two roads leading out of Minneapolis—to Albert Lea and to Red Wing, Minnesota—the Burma-Shave highway signs and rhymes grew into a national institution numbering over 7,000 sets in 43 states. The last ones were taken down in 1963. Reprinted with kind permission of The Stephen Greene Press (Brattleboro, Vermont 05310), publishers of *The Verse by the Side of the Road: The Story of the Burma-Shave Signs and Jingles* by Frank Rowsome, Jr.