VISIBLE LANGUAGE

The Journal for Research on the Visual Media of Language Expression

Volume VII, Number 1, Winter 1973

Cover: A Parthian drachm (reverse: Volagases IV, A.D. 147–192, class I), one of the coins discussed (see especially p. 36, Figure 8f) by Richard A. Olson in his article, "Greek Letterforms on the Parthian Drachms."

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Have we bitten off more than we can chew? A reappraisal of *Visible Language* for its 25th issue

This is the 25th issue of *Visible Language* (née *The Journal of Typographic Research*). Its publication at the beginning of the seventh annual volume seemed an appropriate time for a reassessment of the announced Journal policy (set forth in several Editor's Reports: January 1967, April 1969, Winter 1971, and Spring 1972) as well as the Journal's performance in light of that policy. A letter was circulated asking for comment on the question:

> *Have we bitten off more than we can chew?*
> In its attempt to integrate research from such diverse fields as linguistics, graphic design & typography, reading, and concrete poetry, has *Visible Language* taken on an impossible task?

To encourage constructive criticism, we further suggested the completion of one of these responses:

> Yes! But I would suggest. . . .
> No! But *Visible Language* should attempt to. . . .

Response was excellent, and the Journal thanks all respondents for their thoughtful comments and suggestions. Because of space limitations and a repetition of various points, the replies printed here have been edited fairly extensively. There were many kind and encouraging words on the Journal in general (always appreciated!); some respondents were worried that the question implied our concern about the Journal's survival (we have learned to live with that!); and a few lost sight of the Journal's intention of restricting itself to visible, *verbal* language.

The editing may have sharpened some writing styles to the point of brusqueness, not intended by the authors. Only one editor's note of explanation seemed necessary; your secondary response is invited.

* * * *

So many things are impossible, or nearly so–from a lasting symphony to hollandaise sauce—there is no reason not to try to do what *Visible Language* does.

As a graphic designer, I value it highly for what it gives me of immediate professional interest as well as what it gives of related, tangential areas whose scope and complexity can only cause awe at the miracle of what we all work with everyday. As an artist, I rail at times at what seems to be overly esoteric or even pedantic: concerned with what brand of canvas instead of what is the picture. But I can also welcome that seriousness and thoroughness, even doggedness, as the integrity of scholarship which gives stature to the related design areas that are anything but "seat of the pants" occupations as popularly imagined.

Visible Language is truly of our times. With so much interest today in linguistics, or oral language, it is appropriate to have a publication devoted to its visual counterpart. The interest in linguistics is welcome as a sign of new "people" concerns in the sense of the old concept that "the proper study of man is man." The potential is for surprising and powerful news of man and his mind that is bound to influence many fields, not the last of which would be graphics.

I heartily encourage *Visible Language* with just the single caution to keep it more visible, less language. Or as it might be expressed in the time-honored fashion: VISIBLE Language. John Morning, John Morning Design, New York

The task taken on by *Visible Language* is no more impossible than most major intellectual tasks. Someone has to shoulder such a task if we are to understand both mankind's history and our present selves. Historically and psychologically, guided insight into the media must replace slogans. The range of diverse fields covered in *Visible Language* is not too great; these fields are all contiguous, and they interact. Rev. Walter J. Ong, St. Louis University

Unless somebody reaches out, we aren't going to arrive at any new understandings, and it is a most important thing that we understand the subtle influence of visible language on our civilisation. Richard J. Wakefield, Tring, England

While *Visible Language* is a vague name compared to *The Journal of Typographic Research*, its nebulous quality allows you to publish almost anything. . . . Bite off anything you wish. You are chewing very well. Al Gowan, Boston University

Yes! *Visible Language* has taken on an impossible task in trying to integrate research from such a diversity of fields. But I am certain that the journal's continuing contributions of significant analysis and integration of research within—and across—these areas will bring that impossible task more nearly within our grasp.

Setting yourself the task of integrating research across various fields is a magnificent service to many areas of creating, inquiring, and understanding. This effort will enable us to move beyond the concepts, methodologies, and forms of evidence that—for reasons of history, ritual, or politics internal to a field—have limited that field.

Those of us concerned with the extraction of meaning from written language benefit a great deal from sharing an interdisciplinary workshop for the intellect where theories, methodologies, and products from these various fields can be created, displayed, pieced together, torn apart, hammered, polished, brought into sharper focus, and seen in perspective.

To provide us with such a workshop is an important service not to one field, but to many fields. Its extraordinary high quality promises that *Visible Language* will continue to be both an exciting monitor of progress within these fields, as well as a thoughtful shaper of interdisciplinary developments across these diverse but related areas. Stanley F. Wanat, International Reading Association

There is no other journal in this country that approaches language from your standpoint. I think it is important to continue. The *lingua*-linguists can protest forever that *lingua* is *lingua* and nothing else, but this argument is already defeated by the *lingua* itself, when it contains such expressions as "the written language." And where does one class such phenomena as lip reading and braille? The working together of those who have been traditionally concerned with graphic expression of language and those who have focused more specifically on the audible character of language has been fruitful, and will continue to be so. Marvin A. Powell, Jr., Northern Illinois University

Yes, *Visible Language* probably has taken on an impossible task, and that is precisely why it should continue. There must be a common ground for the diverse fields of linguistics, typography, graphic design, and poetry since they are gradually acknowledging their common interests. Coming to typography through literature, I appreciate *Visible Language* as an accessible and readable source of information about an area in which I lack technical training. I hope that designers find the presentation of the literary side equally enlightening. David W. Seaman, Davis and Elkins College

In spite of the fact my interests concentrate on linguistics, there should be a journal that is concerned with every aspect of script. *Visible Language* is the only journal that does this. Any limitation of the scope of this journal would be a loss for the field. I definitely would be in favor of continuing along the present lines, possibly adding short notes, surveys, and reviews. John Lotz, Center for Applied Linguistics

Visible Language attempts an impossible cross-discipline sampling which cannot easily be equitable over a single issue but can achieve parity and depth over a year or longer, clarifying important and essential pre-occupations in linguistics, graphic design, etc. There exist many specialized magazines talking to specialized audiences. There exist many general magazines trying to talk to everyone. *Visible Language*'s primary asset is its success in having professionals address not a "lay" audience but a professional audience of differing experience, an audience capable of recognizing the value of criticism and analysis in another field and of translating the discoveries to its own endeavors. I base my judgment on the general observation that one or two articles from a variety of disciplines in each issue engage my interest enough to make me read them entirely and that others are looked at in part—a very good record in comparison to most magazines and journals that cross my desk and drawing table.

An addendum: the page size of *Visible Language* reflects its desire to have the status of "scholarly journal" (not an undesirable goal), but this causes problems with visual presentation of material. Aaron Marcus, Princeton University

The Journal's only weakness seems to be in the area of "applied typography," but the format is not really conducive to that. Carl F. Zahn, Boston Museum of Fine Arts

I had reservations at first; being a librarian I looked with jaundiced eyes upon the proliferation of new journals. However, the mixture achieved is what makes the magazine an interesting one. I won't pretend that I read every article in every issue, but I find that I do read several articles in each issue. And I suspect that the ones that are in subjects which theoretically are outside my range of interest are the ones that I find most valuable. I don't often come across articles on concrete poetry which combine graphic and literary judgments. . . . Anonymous

A rapid review of articles in *Visible Language* will show the methodology of comparative studies at work, e.g., Professors Seaman and Solt on the

topic of concrete poetry in recent issues. *Their* appetites and techniques are vigorous enough to respond to an international literary phenomenon so contemporary as to be considered—at first glance—quite raw, and a threat to the strongest digestion. Yet notice that their response is sustained by the presence of other disciplines implicitly acknowledged and still others assumed to function actively in this journal's broad readership: the typographers, the graphic designers, the students of the phenomenology and psychology of reading, to name only a few.

I would invite those interested to provide us with much-needed reflection and criticism of a literature syntactically and semantically liberated to the point of near impossibility. Obfuscation, as far as I know, is not a fundamental principle of the better concrete poem. One might help us come to terms with the still unresolved matter of how the *physicality* of a concrete poem tends in most cases to dissolve the old barrier of translation, or at least put it in a new light. I take it that the reason that concretism has found a welcome in *Visible Language* should be clear; now let us have further, detailed confirmation of that intellectual hospitality. And if that hospitality is qualified in some quarters, let us hear that as well. Frederick G. Rodgers, Valparaiso University

It's important to keep pressing for the integrating theories. Randall Harrison, Michigan State University

No, but *Visible Language* should attempt to preserve the integrity of "such diverse fields as linguistics, graphic design and typography, reading, and concrete poetry." For example, it would be regrettable if readers were to receive the impression that art typography and concrete poetry are the same thing, related as they are. What is most important is to make clear the general relatedness of all language made visible, and at the same time to emphasize the separate status of each discipline—not that the boundaries are always that distinct! Mary Ellen Solt, Indiana University

Yes! *Visible Language* probably has taken on an impossible task. But I would suggest that it is a viable form for interdisciplinary understanding. Ideas for exploration and research frequently reside in the foggy edges or areas of overlap between disciplines. *Visible Language* with its multitude of perspectives enhances both the process of interdisciplinary understanding and the generation of new ideas. Sharon Poggenpohl, Illinois Institute of Technology

Your chief virtue is your great diversity. Journals (and scholars) that specialize too much suffer from "tunnel vision." Your interdisciplinary

approach encourages scholars to ask and answer new questions rather than to supply old answers to old questions. Thomas H. Ohlgren, Purdue University

You have probably taken on an impossible task of trying to integrate linguistics, graphic design, reading, and concrete poetry, except that this and much more is what most elementary children do every day. How a five-year-old can so successfully learn such complicated syntax is beyond me; he is just plain lucky that he didn't have a Ph.D. trying to teach it to him. If you ask him the meaning of something he has put on a piece of paper, you often get a quite sophisticated and abstract answer. If your journal can help explain to big boys what little boys know intuitively, it will accomplish a great deal. Edward Fry (Ph.D.), Rutgers University

Graphic design and typography are the key subjects; various uses of those means of communication are a sub-division—and with a variety which would defy limitation! Since active communication is the purpose of graphic design and typography, clearly the passive concomitant of reading—and indeed also of understanding—is inescapably a part of that greater whole. . . . It is the wooliness of our terms in the educational world which causes the confusion. Would that we had two words to convey succinctly the two obverses of the coin of communication—*communicating to*, the active; and *being communicated with*, the passive, but a passive with no little activity required in the conception. If so, we could differentiate between a telegraphist "reading" Morse and all that George Steiner is writing about. Sir James Pitman, The Initial Teaching Alphabet Foundation

Visible Language seems to be neither fish nor fowl as it is now. Its previous title, *The Journal of Typographic Research*, I understand. "Visible language" or "the visual media of language expression" seems to cover a huge field—too wide for most of us in these days of specialization. The difficulty may work two ways: specialized readers may not find anything to read in some issues and writers may not think to submit articles because of the journal's wide scope. . . . Arthur E. Gordon, University of California at Berkeley

Visible Language is so vast a subject that possibly only a small part of each issue is relevant to the individual reader. He is in the position of a Seventh Day Adventist who subscribes to a quarterly called *Religion*. . . . My only suggestion, really, is emphasize *visible* a little more than *language*. A. S. Osley, The Society for Italic Handwriting

It is more than I can chew. I don't read the bits about linguistics or the concrete poetry. If your base is typography and design of things using letters, you are not likely to get first-rate articles on other subjects. It does seem best to contract towards the centre of balance. . . . What I chiefly want is something about lettering and printing that is neither technical nor bibliographical, but rather artistic. That, I should think, you can provide. Harry Carter, Oxford University Press

I can't answer the question. I am a book designer and I find about one-third of your articles interesting; the rest are either pointless (to me) or unfathomable. . . . David Ford, Harvard University Press

I don't like to put it in either extreme form. Your present articles I see nowhere else. I am interested in knowing what the trends and experiments are, even if beyond my grasp. Harriet Dyer Adams

I am afraid: "Yes." Why? Those who work and do some "visible" work, do not write. Those who write, do not write to be read; they write to get something "out of their system," in the best case. Those who work-and-do are willing to look intensely at things that have been done by others, but not to read other people's brain-gymnastics. . . . Henri Friedlaender, Jerusalem

Yes! But *Visible Language* should attempt to go on, because there is no other magazine that can devote itself to design research through trial and error, however wasteful it seems to be. Hiromu Hara, Nippon Design Center, Tokyo

Your idea to open doors to other connected fields to language must be pursued. From the point of view of a designer, I like to read about other experiences, but my problem is this: there are so many articles to read in my own speciality that I do not wish to scatter too much of my reading time in too many directions. Henri-Paul Bronsard, St. Leonard, Canada

I am probably one of the very few who preferred the title, *The Journal of Typographic Research.* I am less interested in linguistics and concrete poetry and more pleased to see more scholarly articles on the subjects of type design, quality in book production, studies of the basic problems of graphics. Marshall McLuhan and his followers have stirred things up a bit, but I hope to live long enough to see a return to more traditional concepts of design and book-making! H. Richard Archer, Williams College

Leave the "poetry" to its proper media. You attempt to cover too wide a field. I would like to see more calligraphy with an emphasis on present-day writing; the schools are turning out typists. The average student can't write a legible hand. Robert L. Leslie, The Typophiles, Inc.

Yes, *Visible Language* has taken on more than is possible. I would suggest a return to the central concern of *The Journal of Typographic Research.* We need more than ever serious inquiries into graphic arts education, design psychology, aesthetics and its applications to mass communication. Leave semantics and language and dig deeper into the past, present, and future of our alphanumeric symbols. Eugene M. Ettenberg, Southby, Conn.

No! But *Visible Language* could perhaps get more material in the areas of legibility of print and perception that is related to reading—and still keep the variety of subject matter. Miles A. Tinker, Santa Barbara, California

In attempting to cover the diverse areas relating to written and printed work, the Journal's value is greatly diluted in the minds of those who have interest in only one area. For example, I have very little interest in efforts to design a new, more relevant alphabet; I'm too hung up on the nuts and bolts of using the alphabet we have now. . . . Richard L. Hopkins, West Virginia University

It is desirable to widen the scope. This will not prevent you from treating the matters of typography seriously, but it will give you a reach into other fields which are certainly of great interest to all those who have communication as their métier. Bror Zachrisson, Stockholm

Rather than having bitten off more than you can chew, it may be that the difficulty is finding important chewing. . . . Research has brought forth a new technology, and this technology is responsible for a new visible language design format for all printed communication. A critical examination of printed communication today will give you plenty to chew on. Many of us are waiting for the malady to go away, but it will not go away —it will get worse. The economic emphasis of the new technology is so extensive that design is almost a lost cause. When reputable typesetters tell their customers to be sure to state whether they want normal, close, extra-close, or overlapping spacing in text material, then technology has found a way to turn off the light on visible language. R. Hunter Middleton, Chicago

The Journal has succeeded in bringing together all kinds of people who have something to say on visible language. It has failed, however, to establish communication. . . . Past articles reveal a gap between research and its subject: design. We will have to agree on some basic notions; first of all, that visible language is the result of design only. There is nothing else (scholarship, for instance) besides design. The opinions of *Visible Language* authors suggest the existence of two kinds of forms: forms which come from learned reflection and forms which have their origin in design. This is a mental error; we can only discriminate good design and bad design. I am inclined to expect good design from designers rather than scholars, but that is another question.

There will always be discussion about what is essential in an actual design situation, but if laymen want to contribute to this discussion, they should at least understand something of the nature of design. Research which neglects this will continue to provide us with good answers to wrong questions. The bulk of legibility research is a case in point. . . . Gerrit Noordzij, Holland

To a scientific contributor, journals which combine art with science have a disadvantage. When a paper has been published in most scientific journals, it means that it has been fairly rigorously reviewed. Referencing such a paper with its journal implies that the paper has a scientific status; it has been accepted and published in the journal. A scientific paper published in *Visible Language* does not have this connotation. Unless the reader has actually read the paper, he may be unsure whether the statements attributed to it in a reference are supported by scientific evidence, or are simply descriptions as in the papers on art. This may be a disincentive to scientific contributors. . . .* And this is likely to happen with any journal which combines art and science. The art frightens away the science. E. C. Poulton, Medical Research Council, Cambridge, England

**Editor's Note:* Scientific articles which appear in *Visible Language*—as well as "papers on art"—are properly reviewed.

No! But *Visible Language* should attempt to examine the flood of print and electronic communication which is altering our consciousness. No one has really studied how Saul Steinberg combines words and images, how a Doyle Dane Bernbach ad is assembled, how a screenplay is made visible. A new visible language is already in use. It should be examined from all points of view because it contains metaphors for our changing lives. Milton Zolotow, Los Angeles

Visible Language—this magic title makes us hope for some hidden opening to the mystery of visible forms as message-bearers. On a concrete level, researches into visible language must implicate a perpetual redefinition of the ultimate aim of written communication or typography, in terms of the development of graphic requirements on one hand, and development of technical procedures and diffusion on the other. These two aspects of the problem cannot be dissociated. . . .

Technology is subordinated to economy, and the complexity and scope of technological effects is so considerable that typography, through the action of some specific gravity, seems to slip from the hands of typographers into those of technicians. Will the typographer who conceives visible language give up the fight, thus confining himself in a "feeling of inferiority"? Despite numerous, very brilliant, but isolated demonstrations, this is the impression which emerges from reading *Visible Language*. Following up the intricacies of linguistics, of a digital autopsy of the letterform, of Munduruku orthography, and of concrete poetry, typography seems to have gone astray somewhere between two more or less sophisticated graphics.

In this Journal, we witness the seizure of the printed page by technology, the gradual elimination of typographic thought from the very field of creation. To justify its title, *Visible Language* must tackle these problems and their ultimate consequences: How are we to use present technology to find satisfactory solutions to our growing needs for communication, without diminishing the quality of the substance?

We continue our nostalgic talk of typography, while mechanical composing machines, which roused violent protest from typographers a hundred years ago, are built according to the old ones and are made to copy even their defects. Can one really wonder that typography appears to be a dead language? Ladislas Mandel, Paris

"There ought to be a law"—against the barbarous abuses of letterforms we see around us every day. This phrase mirrors the frustration caused by one's inability to exert any influence on national and international practices in the manipulation of our visible language heritage. This is precisely what the Journal should attempt to do. After an issue such as the distinction between the letter oh and zero or the use of diacritics has been threshed out in its columns, it should try to arrive at an editorial position and then propagate that position with every means at its command. This calls for the use of larger forums such as *The New Yorker* and eventually *The New York Times* and its magazine. We ought to strive for a situation in which *VL* and "Cleveland" come to be known as a national clearing house for the better management of print, whose opinions will get an automatic

hearing in the mass media. The ultimate goal would be the establishment of an international committee under the aegis of the U.N. All this does not preclude the precise historical, technical, psychological, and artistic scholarship reflected in various contributions so far. But rather than try for a mystical and elusive "integration" of these manifold approaches, the Journal should use them as a reservoir from which to draw concrete suggestions and recommendations, and these it should "campaign" for. The test of the marketplace, whether successful or not, will ultimately redound to the benefit of even the most "esoteric" research and scholarship. Louis Marck, Polytechnic Institute of Brooklyn

The important thing is not what can we do, but how does the manner of work affect people and the degree of quality inherent in the output of their labor. *Visible Language* can probably help people more at this point of time by being a more critical review of the output from all of the diverse fields of concern. To counteract the de-personalization that is encroaching upon all of us, we must return to asking and seeking answers to fundamental questions. Constructive criticism may hurt our pride, but it seems necessary to our maturation. John Schappler, Chicago

It would be valuable to have more frequent articles on "work-in-progress" among *people*: graphic comprehension conflicts within "second language" adult-education courses; the typography employed by the untrained in inner-city "self-help" projects (cultural areas where linguistic-visual crises exist); re-design of legal printed forms for easier visual comprehension, i.e., tax returns, applications for permits and licenses, etc.; changes in newspaper, periodical, and "print" media design in former colonial areas, now independent. . . .

There is a substantial amount of work being done in the "laboratory" of the immediate and changing present—in the streets and in the cauldrons of social change—not just within the library, university, and research complexes. *Visible Language* can be a most salutary avenue for the exposure of well-documented, socially-grounded contemporary studies. The fabric of the Journal must be woven on today's warp and woof, as well as that of the past. Ephraim Gleichenhaus, New York

The very birth of *Visible Language* was proof that the task was not impossible. But the translating and transmitting of ideas through language is still an area which often leaves us with a large communications gap. An attempt should be made to show how better communication is promoted in educational centers and those places in commerce and government

which are concerned with intelligent transmission of the "spoken and written word." Bert Benkendorf, Cleveland

"Education of vision" has so far played a very insignificant part in the Journal. Also ignored is the visual language as related to the developing countries. We all know that in a country like India only 20% of the people can read and write; and they speak fourteen different languages. Any communication, whether informative (and it is *the* most important means of survival in developing countries) or persuasive, will therefore have to be well thought into. . . . Trilokesh Mukherjee, London College of Printing

For the teacher at a design school *Visible Language* constitutes an important source of information. Therefore, the aim of the Journal is not a difficult one. The complicated part is to cover research projects carried out all over the world, and which are not available to all interested people. Strengthen your publicity so that the existence of the Journal will be known to all professionals—in all universities, design schools, research centers, agencies, studios. . . .

In addition, I suggest grouping the various articles according to their subjects. This could be done by category titles or specially-designed symbols. Design schools could have an international competition for the design of these symbols.

The scope of your journal is excellent, but a few areas could be better represented; e.g., cultural and social-psychological studies where graphic design and typography are applied. André Gürtler, Basel, Switzerland

The task *Visible Language* has taken on is urgently needed. Our efficiency civilization seems to require only *one* thing from letter shapes whether they are handwritten, mechanically or electronically produced—SPEED. Never is any consideration given to establishing which shapes would be the prime shapes for the many different applications. There is a constant fall-back on historical shapes; e.g., capitals for clearness—although everybody knows they cannot be read speedily and make an awful visual mess when appearing without proper spacing. . . . We should find out what are the basic letter shapes.

Visible language is more custom than sense. *Visible Language* should establish the sense in the presentation of language. Alf K. Ebsen, Willowdale, Canada

More attention to the problems of printing production would be in keeping with your purpose. Moving from an industry centered upon lead to one

now revolving around electronics, is aptly described as a revolution. *Visible Language* should be in the forefront of the parade leading into the new era. Frank Cremonesi, International Typographical Union

No! But *Visible Language* should attempt to provide a more equal balance between the contributions of the different fields included in the attempted integration. If not enough contributions are being received voluntarily, the editor should commission articles from appropriate people within each discipline. John Downing, University of Victoria

The attempt to integrate research in the diverse fields mentioned may be an impossible dream, but there's nothing quixotic about it. It's a dream that can be dreamt with profit by good teachers and by the editor of *Visible Language*. A great step was made with the change of the title to *Visible Language*, for it helped to correct a false image. (In the University of Rochester Library, the Journal is classified under the single title PRINTING.) A second step would be to encourage the continuation of integrative and basic articles such as those by Kenneth Goodman, Walter Ong, John Mountford, John Lotz, and Donald Cleland—all of which I thought helped toward the realization of your dream. . . . Colin M. Turbayne, University of Rochester

How about seeing if you can find one or two competent people to edit issues devoted to a particular theme? With luck you could obtain excellent coverage that could be very exciting. Cameron Poulter, University of Chicago Press

Distinguish between expression and communication in the visual media. Is anything expressed where nothing is communicated? Is anything communicated where nothing is expressed? What is the relationship between language content and language structure in the visual medium? Librarian, Atlanta School of Art

How about omitting the word "expression" from the subtitle? It raises the needless question of the difference between expression and communication. Emerson G. Wulling, La Crosse, Wis.

No! *Visible Language* should attempt to . . . discover precisely how the deaf learn to communicate and learn. This may give us a better understanding of visible language and what its basic characteristics are. Carl P. Palmer, E. I. DuPont de Nemours & Company

I wonder if it is not yet too early to make an evaluation of the shift in title (and in scope) of *The Journal of Typographic Research* to *Visible Language*. . . . If you want to have a more careful survey of reader opinions, maybe a printed, postage-prepaid postcard should be put into each issue, on which the reader can just tick off which articles he read and enjoyed reading, which ones he regretted reading, and which ones he did not look at at all. . . . Dirk Wendt, Hamburg

We may hope that interest in all of these fields of research will grow until *Visible Language* is overwhelmed with more contributions than it can publish. It could then be divided into two journals, each specializing in certain parts of the original journal's domain. . . . Earl M. Herrick, Texas A & I University

Greek Letterforms on the Parthian Drachms

Richard A. Olson

One of the most unusual coinages in antiquity was the coinage of the Parthian empire, largest of the later Hellenistic empires. The Parthians were a non-Greek people who used Greek as their first official language of state and as the predominant language on their coins. Their most common denomination, the silver drachm, bore Greek legends for almost half a millenium, and the letterforms underwent a significant transformation in the process. Since the coinage constitutes the largest body of primary source material extant concerning ancient Parthia, that transformation is of significant interest to the classical historian.

The seal of the American Numismatic Society is the image of a coin bearing the Latin inscription "parva ne pereant" ("Small, lest they perish"). The coinage of antiquity did not perish; indeed, it survives in great abundance. Coin hoards are still being discovered throughout the Mediterranean world, and on the floor of the Mediterranean itself. This numismatic abundance is certainly true of ancient Parthia, an empire which lasted *c.* 450 years and at its peak extended from the Euphrates River to China's frontier. Unfortunately the vast number of Parthian coins is matched by an equal dearth of Parthian literary sources. Only a handful of inscriptions and manuscripts written in Parthian Pahlavi are extant, necessitating a heavy reliance on a small number of cuneiform records, the Graeco-Roman authors, and the coins. The Parthian coinage constitutes the largest body of source material concerning the empire, making it invaluable to the historian. The coins describe the culture, political ambitions, and religious nature of the Parthian state; the regime often used the coinage as a form of public media. Everyone who counted politically and socially carried money, so what was placed on the coins was usually designed to communicate to them.

The Parthian coinage is fascinating for a variety of reasons, and one of them is that the Parthians were a non-Greek people who used

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Greek as their first official language of state. The Parthians' early and later drachms (the most common silver denomination) bear supplementary Aramaic letters and words inscribed in Pahlavi, but the common language on the coins is Greek. The Parthians adopted a bimetallic currency, based on silver and copper. The largest of the silver denominations, the tetradrachm, was minted almost exclusively at Seleucia-on-the-Tigris, northeast of Babylon. The predominant Hellenistic influence in that city is reflected by the almost constant nature of the Greek letterforms on the large silver.[1] The copper coinage bore Greek legends until the dwindling size of those coins precluded the continuing use of such. Legends on the copper were discontinued by A.D. 12. The drachm, the "dollar-bill" of ancient Parthia, was inscribed from beginning to end, and was minted in a number of cities throughout the realm, principally in Iran and Elymais. Because of the low degree of Hellenization in those regions, the drachm is most illustrative of changes in letterform development.

The Parthians seized control of the Seleucid satrapy of Parthia (hence their most common name in the West), and merely assumed the language of the Seleucid government for their own. The Parthians emanated from the region east of the Caspian Sea.[2] The Greek geographer Strabo called their dynastic founder, Arsaces I, a "Scythian" (*Geography*, xi, 8, 2), but the term is not ethnically proper. "Scythic" denotes a way of life, not a descent. When speaking of "Scythians" one normally refers to nomads of Iranian origin who migrated to Russia. Many of the Parthian nobles are known to have been able to speak Greek; it was the common language of their coinage, of their correspondence with the principal cities of the empire, and of their rock-cut inscriptions on the Bisitun Rock. Monarchs Mithradates II (*c.* 123–88/87 B.C.) and Gotarzes II (A.D. 43/44–51/52) placed reliefs and short Greek inscriptions beneath the monumental frieze of Persian king Darius II. An epigraphical study of the Hellenistic Age reveals that squared letterforms came into use for Greek inscriptions long before Roman engravers adopted them, and the Parthian coinage exemplifies that.

In our age of machine-stamped, mass-produced coins with standardized types and letterforms, it is easy to forget that in the preindustrial world coins were expressions of individual craftsmanship and artistry. In the mints of the Graeco-Roman civilizations every

obverse and reverse die had to be engraved by hand, and as a result no two die impressions were exactly alike. The great variation of representations within similar coin groups attests to the relatively short life-span of the dies, especially the punch dies, which bore the reverse impressions. Hoards often reveal die-linked coins, but usually in limited numbers (Fig. 1). The Parthians minted drachms from the advent of their power *c.* 250 B.C. until their overthrow by the Sasanian Persians in the A.D. 220's.[3] Since the Parthians were non-Greeks, the letterforms on the drachms underwent a significant transformation in that near half-millenium, and the nature and importance of that transformation is our subject here.[4] The major catalogs of the Parthian coinage are not concerned with letterform development; most of them print the coin inscriptions as they *ought* to appear in standard Attic Greek.[5] However, most of them *never* appeared in that form, and this is of interest to the historian using the coinage as primary source material.

The basic nature of the letterform transformation on the drachms was a process of simplification. At the end of Parthian numismatic history six Greek letters were engraved as simple vertical lines. The question is why? The early cataloguers dismissed this apparent degeneration of form as a result of ignorance in the mints. It is true that most of the mints which issued the drachms were on the Iranian plateau, and a "de-Hellenization" of the empire did occur, but other factors are involved. The progressive simplification of the Greek letterforms was accompanied by an increase in the number of titles and epithets placed on the drachms. The size of the drachm was limited by its very denomination; only so many letters could be squeezed onto the coin. The letterforms had to be cut down. The later portraits of the monarchs also became simplified in form as the Parthian engravers gradually re-discovered form simplification in style and epigraphy.

One of the principal reasons letterform development is of interest to the historian is that the most significant changes on the Parthian drachms reflect major political alterations, as will be seen. Also, the Parthians were invaders, usurpers of power; they had to justify their authority, and the continuing presence of Greek on the coinage demonstrates their special need to cater to the Greek business interests in the West, primarily at Seleucia. The Parthians did not occupy

Seleucia, but rather built Ctesiphon on the opposite bank of the Tigris. In fact, Seleucia received a degree of autonomy under the Parthians that became one of the outstanding examples of civic liberty in antiquity. The Arsacid ruling class did not want to disrupt the existing order, but rather establish a working relationship with the Graeco-Semitic commercial aristocracy.[6] Seleucia became the only Greek city under Parthian domination permitted to mint an autonomous copper coinage (until A.D. 24), indicating her favored position.[7]

The inscriptions on the Parthian drachms also interest the classical historian for their unusual numismatic hapax-legomena. The epithet *ΘΕΟΠΑΤΟΡΟΣ* ("of divine birth"), used to describe certain Arsacid monarchs, appears *only* on Parthian coinage. One of the most common words to appear on the drachms is *ΦΙΛΕΛΛΗΝΟΣ* ("Friend of the Greeks"), a carefully chosen expression indicative of the propaganda the dynasty found necessary to appease its sometimes dissident Hellenistic populace. The Parthians excelled at using their coinage as a means of communication. Parthia's arch-rival Rome even adopted certain motifs from the Arsacid coinage for its own numismatic propaganda effort. The Roman emperor Augustus, for example, minted a bronze issue depicting him being crowned by Nike, in imitation of an earlier coinage of Parthian king Orodes II (*c.* 57–38 B.C.).

The initial Parthian drachms were struck by Arsaces I, the dynastic founder, in a modified adaptation of their Seleucid counterparts. The single legend reads *ΑΡΣΑΚΟΥ*, the founder's name in the genitive case (Fig. 2a). The genitive case was normal for all of the drachm legends; it probably indicates that the coinage was minted in the name of the Arsacids, but not as their property. The name "Arsaces" subsequently became a throne name, like the Roman "Caesar," compounding the problem of attribution. The Parthians normally placed neither the monarchs' personal names nor the date on the drachms. Past cataloguers relied heavily on style in making their identifications (comparing drachm portraits with those on the dated tetradrachms). In recent years studies of the epigraphical changes on the drachms have provided a sounder chronological arrangement, which makes the letterform development so critical to the historian.[8] Stylistic comparisons between dies engraved in Seleucia and in the Iranian mints is too elusive an approach to the problem.

Figure 1. Three drachms of Parthian monarch Phraates III, *c.* 70–57 B.C. The obverses are from the same die, but the reverses all vary. The anchor behind the obverse portrait is a symbol of Elymais, where Phraates apparently served as sub-king prior to his ascension to the Arsacid throne.

NOTE: All of the coins illustrated with this article have been enlarged to approximately twice actual size.

Figure 2. Ten Parthian drachm reverses, illustrating the increasing number of titles and adjunct symbols and the problem of fitting these all onto the flan. Left to right from the top: (a) Arsaces II?, 211–191 B.C. (b) Priapatius?, 191–176 B.C. (c) Mithradates I, 171–138/37 B.C. (d) Mithradates I. (e) Artabanus I, 128/27–123 B.C. (f) Mithradates II, 123–88/87 B.C. (g) Sinatruces, 77–70 B.C. (h) Gotarzes I, 91–80 B.C. (i) Orodes I, 80–77 B.C. (j) Orodes II, 57–38 B.C.; note the adjunct anchor behind the archer.

a & b

c & d

e & f

The letterforms on the early Parthian drachms are standard Attic representations and compare with contemporary Seleucid ones. The early die-engravers for the Arsacid dynasty had been in the service of the Seleucids themselves. The first drachm legends are parallel with the axis of the coin, behind and before the seated archer, who is probably Arsaces I himself, seated in the guise of the Seleucid Apollo. The Parthians used imagery and titulary familiar to the Greeks. Certain early drachms even bear the epithet *ΘΕΟΥ* ("the Divine")! A slightly later drachm issue (perhaps that of Arsaces' brother Tiridates I) added to *ΑΡΣΑΚΟΥ* the remarkable title *ΑΥΤΟΚΡΑΤΟΡΟΣ* ("Autocrat"), which then disappeared forever from the Arsacid coinage.[9] The most common of the second titles to be added to the drachms was *ΒΑΣΙΛΕΩΣ* ("King") (Fig. 2b). The title "King" was very much in vogue during the Hellenistic Age (as well as the title "Queen"). Later a third title, *ΜΕΓΑΛΟΥ* ("Great"), was added, and in two different

g & h

i & j

arrangements (Figs. 2c & 2d): one places the new line parallel with the other two and the second places it above the archer. Then a fourth title was added, also placed in two differing arrangements (Figs. 2e & 2f), one the parallel placement, and the other beneath the archer, creating a "box-like" arrangement that became the standard pattern, with the legends inscribed at right-angles to each other. Eventually a fifth, sixth, and finally a seventh legend became part of the normal drachm titulary (Figs. 2g, 2h, & 2i). The result was that the corners of the arrangement became too crowded for the size of the flan. Later die-engravers, personally ignorant of Greek, could not always tell where words ended and began at the corners, as some of their divisions reveal, and for the most part the letters could not all fit onto the coin. Many of the drachms then received adjunct symbols as well, pushing the legends out even further (note Fig. 2j with the adjunct anchor). There were various legend arrangements throughout the Parthian period, but the standard one was that seen in Figure 3. The most common of the seven legends read: (1a) *ΒΑΣΙΛΕΩΣ*, (1b) *ΒΑΣΙΛΕΩΝ*, (2) *ΑΡΣΑΚΟΥ*, (3a) *ΕΥΕΡΓΕΤΟΥ*, (3b) *ΔΙΚΑΙΟΥ*, (4a) *ΕΠΙΦΑΝΟΥΣ*, and (4b) *ΦΙΛΕΛΛΗΝΟΣ* ("King of Kings, Arsaces, the Beneficient, the Just, the Manifest, Friend of the Greeks").

The problem of crowding all of the letters onto the drachms was compounded even further by engravers who cut excessively large letters (Fig. 4). The ruling dynasts seemed unperturbed by this un-

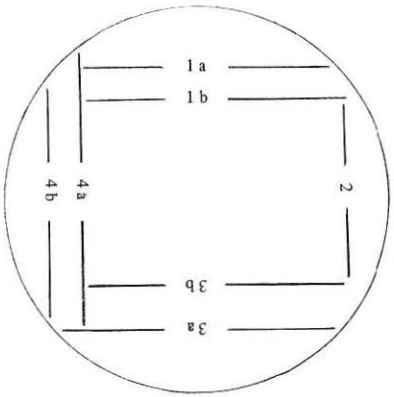

Figure 3. The normal word arrangement on the seven-legend drachms.

Figure 4. A Parthian drachm reverse (Vardanes I, A.D. 39–48) illustrating the engraving of excessively large letters for the size of the flan. Line 3a can barely be seen and the corners are all crowded. The letterforms in line 2 have already been greatly simplified.

tidy situation; with rare exceptions no apparent orders were given to reduce the titulary or to abbreviate it, as the seven-line arrangement remained standard. Two other options remained open: (1) issue square drachms, as the Bactrians, Parthia's Greek-using neighbors to the East, occasionally did. The square shape conveniently lent itself to legends meeting at a 45-degree angle. Or: (2) arrange the legends in an arc, following the curvature of the drachm, as the Bactrians also did on certain issues. The second option was adopted for the Parthian drachms, but only on two very unusual issues (Figs. 5a & 5b). The first drachm is of king Phraataces and his queen-mother Musa. Musa had been an Italian slave-girl given to Parthian monarch Phraates IV by the emperor Augustus as a gesture of good will in the late first century B.C. The gift proved to be deadly, however, as Musa poisoned her consort and seized the throne for herself and their young son. A

Figure 5. Two Parthian drachms, obverses and reverses. (a) Phraataces and Musa, 2 B.C.–A.D. 4, *left*. (b) Vonones I, A.D. 7/8–12.

few years later mother and son were married—a custom acceptable in Magian tradition—and the act was commemorated by the issuance of a remarkable series of drachms (Fig. 5a). On the obverse, Phraataces is seen, with *no* titles, and on the reverse the tiaraed Musa, and the curved, abbreviated legend to read: *ΘΕΑΣ ΟΥΡΑΝΙΑΣ ΜΟΥΣΗΣ ΒΑΣΙΛΙΣΣΗΣ* ("The Divine and Heavenly Queen Musa").[10] The second drachm (Fig. 5b) was issued by another son of Phraates IV, Vonones I, who had grown up and was educated in Rome. He acquired distinctive Roman mannerisms, and this caused the more conservative Arsacid nobles to support a rival claimant to the throne named Artabanus (II). An arced legend appears on the obverse of Vonones' drachms, curving around his portrait, in the *Roman* manner. The Romans arced all of their legends on all of their denominations, and generally abbreviated them; e.g., the title IMPERATOR usually appears as IMP. on the Roman coinage. The only drachm issues of the Parthians to utilize curved or abbreviated legends during the classical period were minted under the authority of two monarchs who had grown up in Italy, where both were the fashion.[11] After Vonones' passage from power, the traditional seven-line, "box-like" arrangement once again became the rule. As a result, for the balance of their history the Arsacid die-engravers had to virtually "pound a square peg into a round hole." The only solution available now was to simplify the letterforms, and this is progressively what happened.

In the period 250–123 B.C., when the Parthian empire made its greatest territorial expansion, the Greek letterforms on the drachms remained almost constant. The drachms from this period in the Quam collection show variations only on alpha, with the crossbar within the alpha variously angled, lowered, and sometimes omitted altogether (Fig. 6, column 1). This constancy attests to the dominant Greek influence in the mints during a period of growth and solidification. The following period, from 123 to 91 B.C.,[12] a time of great Parthian power, displayed allusions to the supposed Achaemenid Persian heritage of the Arsacid dynasty. King Mithradates II, "the Great," had himself proclaimed *ΒΑΣΙΛΕΩΣ ΒΑΣΙΛΕΩΝ* ("King of Kings") on his drachms, the Greek translation of the Achaemenid title *Shahanshāh*.[13] The Seleucid omphalos beneath the archer on the reverse of his drachms was also replaced by the "golden throne" of the royal Arsacid house (Fig. 2g). Nevertheless, in spite of this

Figure 6. Letterform development on the drachms in the Maurice Quam Collection.

apparent Iranian "nationalism," the Hellenistic influence in the mints remained strong. The letterforms on the drachms from this period show only a few more variants (Fig. 6, column 2). Alpha offers the same, earlier variations; omicron is now also engraved as a dot or pellet; rho is occasionally seen as a single vertical line, without the hook; and phi becomes characteristically two intersecting lines, flairing slightly at the ends. The simplification process had begun.

In the period 91–57 B.C., variations become more common and more significant. In addition to the previous variants, theta, mu, and upsilon join the list, upsilon gradually losing its "tail" (Fig. 6, column 3). But more important are the changes in the letter sigma. The end of the reign of Mithradates II was accompanied by rebellion in the western states. One of the successful rebels was Gotarzes I (*c.* 91–80 B.C.), hailed as "Satrap of Satraps" on Mithradates' Bisitun relief, but only as "Great King" on his drachms, and not "King of Kings" (Fig. 2h). The latter title had been ceded to Mithradates' friend and ally, king Tigranes of Armenia. The traditional epithets on Gotarzes' drachms retain the older form of sigma, but a series of military drachms, publicizing his victories in the East, bear a number of novel inscriptions with a different sigma. One of those novelties is *KATACTPATEIA* ("on campaign"), added to the other titulary on certain drachms (Fig. 2h, line 2a). Such novel communications utilize the newer, cursive sigma, C, while Σ is still seen in the traditional legends. Toward the end of this period sigma assumed yet another form, two horizontal lines and one connecting vertical line, anticipating a later era of rather block-like letterforms.

Greek letters and combinations of letters also came to be used as monograms on the drachms. Numismatists and historians have long speculated as to the identity of these symbols. The most common monogram of all—and the *only* one to appear on the later drachms—represents several variations on the letter alpha. This mark is now generally accepted as being the identifying symbol of Ecbatana, the capital of Media, after the initial alpha in Agamatana, the Hellenized Persian name. The alpha monogram assumed a number of experimental forms on the drachms before its standard representation was decided upon (Fig. 7, column 1). Two other contemporary monograms combine the letters rho-sigma and rho-gamma (Fig. 7, columns 2 & 3). The rho-sigma monogram, like the Ecbatana mark,

is also seen in variant, experimental forms. These monograms suggest the twin-cities of Rhagae-Arsacia. Rho and sigma are the first two consonants in Arsacia, while rho and gamma are the only two consonants in Rhagae.[14] One has to assume that the variant forms of the monograms precede the standard ones chronologically, although some overlapping would appear to have occurred. Another common monogram found on the drachms from this period combines the letters mu, iota, and theta, spelling out the first part of the name Mithradates, the name of two of the early great Parthian kings (Fig. 7, column 4). This particular monogram, apparently not of a city, perhaps denotes a mint officina mark.

The letterforms on the drachms minted in the period 57–2 B.C. (Fig. 6, column 4) vary little from the previous age, with the addition of a now rather frequent error: the reversal of the letter nu. Other than that no significant transformations occurred. However, as was mentioned earlier, there was a brief and dramatic exception to the rule during the brief reigns of Phraataces and Vonones I (period 2 B.C.–A.D. 12, note Figure 6, column 5, for the prominent exceptions in the letterforms). The "marriage" drachm of Phraataces and Musa in the Quam collection bears an almost totally blundered Greek legend, preventing its letters from being included in Figure 6. It does bear a legible monogram, however, the rho-gamma mark—but *reversed*—raising the question of where these dies were executed and by whom (Fig. 5a); the monogram is beneath Musa's chin on the reverse side). The Greek on Vonones' drachm (Fig. 5b) is well engraved, and as on the drachms of Musa, his personal name appears, on *both* obverse and reverse, and in the *nominative* case, not the usual

Figure 7. Greek letters and combinations of letters used as monograms on drachm reverses, arranged in the apparent order of development. The bottom monograms are the standard, most common ones. These date from the time of Phraates III, *c.* 70–57 B.C.

Figure 8. Seven Parthian drachms from the second half of the Parthian epoch; b is an obverse, the others are reverses. These drachms illustrate later letterform development and simplification of form. Left to right from the top: (a) Artabanus II, A.D. 12–38. (b) Volagases I, A.D. 50–77; note pahlavi letters behind head. (c) Volagases III, A.D. 111–147. (d) Mithradates IV, A.D. 130–147; note line 1a, pahlavi name and title. (e) "unknown king," *c.* A.D. 140. (f) Volagases IV, A.D. 147–192, class 1; engraved by same man who executed d. (g) Volagases IV, class 2.

genitive. Another of the several unique features of his drachms is the fact that neither the traditional imagery nor the title "Arsaces" appear. He is not called "King Arsaces," but rather "King Vonones" on the obverse, and "King Vonones, Victor over Artabanus," on the reverse, with the archer replaced by Nike. His legends are all novel and utilize novel letterforms. The eta and sigma are cursive, rather than squared, and the omega appears in its only significantly different form on the drachms, also cursive in nature. The nu is reversed, and the beta assumes the form of a square, with the engraver's punch-marks at all four corners. As on the drachms of Gotarzes I the novel legends were used to innovate the newer letterforms. The cursive forms, however, did not persist, yielding to simple combinations of straight lines.

The coins of Vonones' rival and ultimate successor Artabanus II revert to the imagery and titulary of the pre-Roman intrusion. On his final tetradrachms Artabanus is depicted *on horseback*, receiving a palm branch from the Tyche of Seleucia. Vonones had no love of riding or the hunt, traditional Arsacid pastimes. Artabanus' late tetradrachms also conspicuously lack the epithet *ΦΙΛΕΛΛΗΝΟΣ*, revealing the anti-western sympathies of the new regime and the restoration of the earlier ideology. The traditional seven legends were returned to the drachms under Artabanus (Fig. 8a) and the degenerate nature of the Greek also reflects a break with the earlier philhellenic tradition. The beta in lines 1a and 1b is engraved as a square, the kappa in 2 appears as a nu, the rho in 3a is seen as either two connecting

lines or as a vertical line, and the nu in 4b appears as a chi. The engravers were now only imitating what they saw on earlier drachms, and in the process they progressively simplified the letterforms and began gradually to reduce the length and number of the legends as well. The government, obviously concerned about imagery and occasionally about titulary, lacked concern about the quality of the Greek, leaving the engravers to their own devices. The Greeks were not being catered to as in the past, but as will be seen, the words on the drachms retained their *meaning* if not their correct spelling. It should be noted, too, that the quality of engraving on the tetradrachms remained relatively good, indicating the persistent Hellenistic influence in Seleucia, a city that would soon become restive and openly rebellious. Early in his reign King Vardanes I laid siege to Seleucia, and in A.D. 40/41 the royalists in that city overthrew the popular party and welcomed the Arsacid monarch.[15] After the reign of Vardanes the alpha, or "Ecbatana" monogram, became the sole emblem to appear as an identifying mark on the drachms. It certainly does not signify a single mint city; it apparently became a symbol of state, after Parthia's major Iranian city.

If one were to speak of a turning-point in the history of Parthian civilization, it would have to be the reign of Volagases I (A.D. 50–77). This was a period which witnessed a genuine re-birth of elements of Iranian nationalism. Allusions to Hellenism virtually disappeared from the coinage, and for the first time the fire altar of Zoroastrianism was used as a reverse type on the copper. Volagasias, a new city, was founded in Babylonia to rival Seleucia as a commercial center, and other cities were now known by their native names and not their Seleucid ones, such as Susa in Elymais, which had been known since the early Hellenistic age as "Seleucia-on-the-Eulaeus." Apparently all of the scattered remains of the manuscript or oral traditions of the *Avesta* were ordered collected under Volagases, and for the first time since the reign of founder Arsaces I, Aramaic letters supplemented the Greek on the drachms (Fig. 8b). The letters waw-lamed, *wl*, for "Vol"—"Volagases," appear behind his portrait on the obverse. In the past the appearance of personal names in Greek on the drachms indicated a joint rule or a contended throne, when the claimants found it necessary to specify which "Arsaces" was issuing the coinage. Perhaps the "Vol" on these drachms serves a similar purpose. Tacitus mentions a son of Volagases named Vardanes rebelling

against his father early in his reign (*Annals*, xiii, 7, 2). In any event, the Greeks had had their day, as the coins indicate.

The following period, A.D. 77–147 (Fig. 6, column 7), was characterized by internal strife, dynastic rivalries and renewed efforts by Rome to conquer Parthia. The coinage bears witness to this confused age. For 25 years after A.D. 97 no tetradrachms were struck at Seleucia and a number of pretenders to the throne minted drachms of varying quality. In addition to a further simplification of the Greek letterforms, two major epigraphical innovations appeared during this period, one logical and one inexplicable. The latter was the appearance of a *dot* beneath the gamma in line 3a (Fig. 8c), which became a regular addition on all subsequent drachms. Its purpose cannot be explained. The former was the placement of the full name and title of the king, *in Pahlavi*, on the reverse of the drachms. Beginning *c.* A.D. 130 a series of drachms appeared with the legend MTRDT MLK', "King Mithradates," replacing line 1a of the titulary (Fig. 8d). Previously only abbreviations of monarchic names had been engraved in Pahlavi on the drachms. This mysterious king is known *only* from his coins; no literary sources mention him, making these coins invaluable to the historian. Since he issued no tetradrachms, his rule was apparently effective only in the eastern reaches of the empire. His name and portrait alone survive as his legacy to posterity. Because of the similarity in portraiture and style, Wroth assigned two other classes of drachms, *without* Pahlavi, to Mithradates (IV).[16] All depict a king with a long, pointed beard on the obverse, but there are prominent epigraphical discrepancies on the reverses which distinctly separate the three classes chronologically. The spelling on one of the classes (Fig. 8c) is still fairly accurate, far more so than on the drachms of Mithradates IV (in addition to the conspicuous absence of Pahlavi). It is clearly an earlier issue and assigned by Sellwood to Volagases III (A.D. 111–147).[17] The other class (Fig. 8e) is much cruder in style and execution, and not only lacks Pahlavi, but the throne name "Arsaces" as well. The issuer can only be labelled as "unknown king," living late in the reign of Mithradates IV. Legends 4a and 5a on these three classes of drachms illustrate the epigraphical differences most clearly (Fig. 9).

Letterform analysis reveals that the final drachms of Mithradates IV were engraved by the same man who executed the initial drachm dies for Volagases IV, fixing the death or passage from power of

Mithradates in A.D. 147, the year Volagases ascended the Arsacid throne (his tetradrachms are dated). Only the personal names in Pahlavi differ on these drachms (Figs. 8d & 8f). The execution of the Greek is identical, including the unusual representation of lines 4a and 4b, identifying the distinct craftsmanship of this anonymous engraver. The reign of Volagases IV commenced the final period in the Parthian epoch, according to our chronological arrangement, and it marked the conclusion of the process of letterform simplification. The drachms of Volagases can be divided into two classes on the basis of epigraphical derivations: contrast his early drachms (Fig. 8f) and later drachms (Fig. 8g). On his later drachms legends 2, 3a and 3b cannot be seen at all; the beta appears as a single vertical line and the gamma in 3b is reversed. Six Greek letters in this period were often represented as vertical lines, only one of the reasons why word division is problematic in dealing with the late drachms. Simplified letterforms and crowding at the corners make easy formulae in dividing the words almost impossible. However, carefully tracing the pattern of letterform development provides a key aid in making the divisions. To illustrate: Figure 10a represents the normal appearance of legends 1b and 2 on the drachms of Mithradates IV. Wroth made the division as shown in Figure 10b, terminating 1b with the epsilon.[18] However, note Figure 10c which depicts the same lines on the drachms of the "unknown king" (Fig. 8e); the termination of 1b is not in doubt since there is *no* 2 legend. It has been replaced by an

Figure 9. Lines 4a and 4b on drachms of Volagases III, A.D. 111–147; Mithradates IV, *c.* A.D. 130–147; and an Unknown King, *c.* A.D. 140.

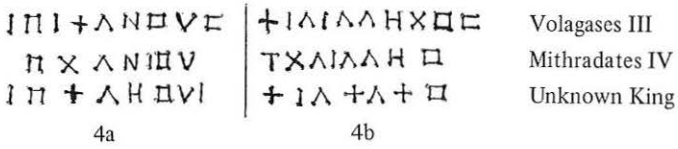

Figure 10. Lines 1b and 2 on the drachms of the mid-second century A.D.

horizontal line. The engraver obviously intended the division shown in Figure 10d as the correct reading, ending with the letter omega (now appearing as a lambda). Nevertheless, Wroth terminated 1b on all successive drachms in his catalog with the epsilon, and placed the omega as the first "letter" in line 2. Wroth and other early cataloguers paid more attention to portrait style and stylistic differences than to letterform development, which helps account for the fact that their attributions differ so greatly.

The drachms of the "unknown king" were apparently struck in the same mint or mints which issued the drachms of Volagases III, also lacking Pahlavi inscriptions. Western Iran was no doubt the region of origin. All of the late kings, from Volagases IV to the end, had their full names engraved in Pahlavi on the drachms, a precious aid to the identification of these men!

Figure 11. Four Parthian drachms from the final period (all reverses), illustrating the final simplification of the letterforms. Left to right: (a) Volagases V, A.D. 191–207/08. (b) Osroes II, *c.* A.D. 190; note lack of line 2, replaced by horizontal line as on Figure 8e. (c) Volagases VI, A.D. 208–222/23. (d) Artabanus IV, 213–277(?).

The most degenerate of all the late Greek letterforms are contained on the drachms of Volagases V, who acceded the Arsacid throne via revolution in A.D. 192. He apparently was from Elymais, where the anti-Hellenistic reaction began. His hair style on the obverse is Elymaid, and only vestiges of earlier legends remain (Fig. 11a). However, clear evidence that the legends still possessed meaning can be seen on the drachms of a pretender to the throne who minted coins *c.* A.D. 190, at approximately the same time Volagases V was struggling for the throne. As on the drachms of the "unknown king" the dynastic name "Arsaces" is deleted on the silver of Osroes II, having been replaced by an horizontal line (Fig. 11b). The omission of the most common title to have appeared in the history of the Parthian drachms cannot have been accidental. The name Osroes is South-Iranian, the area where the revolution which eventually swept the Arsacids from power began. As in the case of the "unknown king," Osroes was a non-Arsacid who issued no tetradrachms and is known to history only from his coins.

Two issues of drachms remain, and they represent the ultimate simplification of the letterforms and the legends. On the drachms of Volagases VI and Artabanus IV (Figs. 11c & 11d) most of what remains of the legends can be seen. The Greek portion has been reduced to four lines, as on the earlier drachms of Vonones I and the initial Parthian kings. However, the only word that still looks familiar is 1b;[19] the others have been greatly simplified in form. On Volagases' drachm the beta in 1b is engraved as a vertical line, as are the sigma

Figure 12. Variant letterforms in the words *ΒΑΣΙΛΕΩΣ* and *ΒΑΣΙΛΕΩΝ* between *c.* 250 B.C.–*c.* A.D. 227 on the Parthian drachms. The word *ΒΑΣΙΛΕΩΣ* ceased to be placed on the drachms *c.* A.D. 140.

and of course the iota, and the terminating letter is now eta, which appears as L. The drachm of Artabanus IV is similar, although the quality of execution is somewhat more striking than that seen on its immediate predecessors. It is somewhat ironic that on the eve of their overthrow by the Sasanians the Arsacid engravers re-discovered simplification of form and design, a legacy they bequeathed to their successors. One may not marvel at the artistry of the final Parthian drachms, but assuming that the Greek legends still possessed meaning, the engravers were certainly on the right track.

1. Seleucia was excavated by the University of Michigan and the coins from the site are now in the Kelsey Museum of Archaeology in Ann Arbor; R. H. McDowell, *Coins from Seleucia on the Tigris* (Ann Arbor, 1935). A more recent analysis of the Seleucia coinage is contained in Georges Le Rider's *Suse sous les Séleucides at les Parthes. Mémoires de la mission archeologique en Iran*, Vol. 38 (Paris, 1965).
2. The Russians have done extensive archaeological work in that area; see I. M. Dyakonov and V. A. Livšits, *Dokumenty iz Nisy*, for a discussion of early Parthian epigraphy.
3. The early date for the beginning of the Parthian coinage has been revived only since 1968, with the discovery of a major drachm hoard in Iran; M. T. Abgarians and D. G. Sellwood, "A Hoard of Early Parthian Drachms," *Numismatic Chronicle*, 7th Series, XI (1971), 103–119. Prior to the appearance of the hoard most had assumed, following E. T. Newell, that the Parthians had neither the means nor the resources to mint coins before the second quarter of the second century B.C. Newell's study is still an excellent one, however, and most of his personal collection was bequeathed to the American Numismatic Society in New York City; E. T. Newell, "The Coinage of the Parthians," *A Survey of Persian Art*, A. U. Pope, ed., I (Oxford, 1938), 475–492. Newell also reviewed McDowell's book on the coins from Seleucia in the *American Journal of Archaeology*, XLI (1937), 515–516.
4. The drachms used to illustrate this article are all from the Maurice Quam collection. Appreciation is here expressed to Joel L. Malter, editor of the *Journal of Numismatic Fine Arts*, for permission to use the photographs. Mr. Quam assembled the collection while living in Iran, and this writer catalogued it as part of his doctoral dissertation. There are certain rare drachms not in the collection, but it is most representative of the Parthian series as a whole.
5. This was true as late as 1965, when the collection of the Danish National Museum was published using modern Greek miniscules and a frequent reference to "barbarian letterforms" for the legends; *Sylloge Nummorum Graecorum: Parthia and India*, compiled by Anne Jacobsen and Otto Mørkholm (Copenhagen, 1965). Warwick Wroth, who catalogued the massive British Museum collection, noted variations on the standard letterforms, but did not discuss their significance; W. Wroth, *Catalog of the Coins of Parthia in the British Museum* (London, 1903). The earliest study of the letterforms themselves was Jacques de Morgan's "Étude sur la décadence de l'écriture grecque dans l'empire Perse sous les Arsacides," in the *Revue Archeologique* (1912), pp. 1–31. De Morgan did not have the benefit of photo-

graphs to illustrate his article. In recent years a splendid study on late letterform development was published by D. G. Sellwood, who has worked extensively with the British Museum collection: "A Die-engraver Sequence for Later Parthian Drachms," *Numismatic Chronicle*, 7th Series, VII (1967), 13–28.

6. Jacob Neusner, *A History of the Jews in Babylonia, Part I: the Parthian Period* (Leiden, 1965). The Jews looked upon the tolerant Parthians as protectors against the hated Romans.

7. A. H. M. Jones contends that the Parthians distrusted the Greek cities and chose to replace them with their own fortresses; he adds that the Greeks welcomed the Romans as protectors of Hellenism. A. H. M. Jones, *Cities of the Eastern Roman Provinces* (Oxford, 1937), p. 219.

8. See the reference to Sellwood's article in footnote 5. In addition to his numerous articles on Parthian numismatics, Sellwood has also compiled on a single sheet a chronological arrangement of all the principal drachms and tetradrachms in the Parthian series, published by Joel L. Malter and Co., Encino, California, 1972. With certain exceptions, Sellwood's arrangement has been followed here.

9. Abgarians and Sellwood, p. 104. There are no examples of the 1968 hoard drachms in the Quam collection.

10. Chinese sources say concerning the Parthian coinage: "They also make coins of silver, which have the king's face on the obverse, and the face of his consort on the reverse. When the king dies, they cast new coins" (*Ch'ien-han-shu*, ch. 96a. Written *c.* A.D.90). Perhaps these were the coins seen. Recent studies indicate that the Chinese knew much more about the Parthians than did the Romans. See B. P. Lozinski, *The Original Homeland of the Parthians* (S'Gravenhage, 1959).

11. The reverse legends on Vonones' drachms retain the "box-like" arrangement, but have been reduced to *four* and are completely visible.

12. The chronological divisions on the chart in Figure 6 are based on breaks in the Arsacid regnal history. Rather than place *circa* in front of most of them, it should be noted that these dates are still largely tentative.

13. Russian excavations reveal that a royal vineyard at Nisa, burial place of the early Parthian kings southeast of the Caspian Sea, was called *Artaxšarakan*, substantiating the belief in later generations that Arsaces I was a descendant of Persian monarch Artaxerxes II. Dyakonov and Livšits, p. 20.

14. Sellwood originally suggested Rhagae-Arsacia, but his assignations are the opposite of those offered here; i.e., he assigns rho-sigma to Rhagae and rho-gamma to Arsacia. D. G. Sellwood, "The Parthian Coins of Gotarzes I, Orodes I, and Sinatruces," *Numismatic Chronicle*, 7th Series, II (1962), 86 ff.; and D. G. Sellwood, "Wroth's Unknown Parthian King," *Numismatic Chronicle*, 7th Series, V (1965), 126.

15. The numismatic evidence describes the nature of the revolt: in its early years the popular party minted a series of low quality coppers bearing the *name* of the city, and a bull as the reverse type. In 40/41 a new series appeared, of fine quality, *without* the city name and with Nike as the reverse type. Obviously the royalists had gained control, and their coinage continued until the new issues of Vardanes appeared in 42. McDowell, pp. 225–226.

16. Wroth, pp. 217–223, plate XXXIII.

17. Sellwood, "A Die-engraver Sequence . . .," pp. 21–24.

18. Wroth, p. 219, note 2.

19. Note Figure 12, an evolution of the words *ΒΑΣΙΛΕΩΣ* and *ΒΑΣΙΛΕΩΝ* from the Hellenistic Age to the end.

The Language of Capitalization in Shakespeare's First Folio

Carleton S. Tritt

The traditional approaches to Elizabethan capitalization—conventional noun groupings and contextual emphasis—fail to deal adequately with the many inconsistencies in the age's practice of capitalization. In addition they do not disclose the Elizabethan use of the capital letter as a linguistic indicator of the various emotional connotations of words. By using a representative sample of 11 of the 36 plays in Shakespeare's first folio, it is possible to show through patterns of capitalization frequency how the compositors of the folio used the capital letter to indicate connotations of emotional charge, elevation, uniqueness, and poetic respectability in a variety of words and word groupings.

> When Letters are in vulgar Shapes,
> 'Tis ten to one the Wit escapes;
> But when in Capitals exprest,
> The dullest Reader smoaks the Jest:
> Or else perhaps he may invent
> A better than the Poet meant,
> As learned Commentators view
> In *Homer* more than *Homer* knew.
>
> Jonathan Swift, "On Poetry: A Rhapsody"

By the eighteenth century, when Swift was jesting about the linguistic effects of capitalization, compositors and poets had a reasonably firm idea of the conventions governing the use of the capital letter. The early seventeenth century, on the other hand, was a transitional and experimental period of English orthography. Late Elizabethan capitalization occupies a gray area between an author's punctuation that clarifies or adds meaning and the subjective whimsey or arcane typographical conventions of compositors who were sometimes short of type. Compositors had great latitude in capitalizing within a somewhat unregulated system that was rapidly changing. The increased use of capitals from Shakespeare's quartos around 1600 to

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the first folio in 1623 indicates the growth of a system that culminated with the eighteenth century's practice of capitalizing almost every noun of importance. Working with only some limited conventions to guide them, the compositors of the first folio frequently drew upon their own subjective devices to expand the capital letter into a viable form of visible language.

From the sparse commentary that does exist on Elizabethan capitalization two approaches to the subject, the conventional and the emphatic, emerge. The conventional approach was taken in 1640 by Simon Daines.[1] He attempted to establish an orderly system by listing standard practices which had little linguistic value, such as capitalizing the first letter in a sentence, and by compiling categories of words that must be capitalized, such as titles, particular animals, and religious references. Ironically, the actual printing of Daines's specific rules on capitalization illustrates with a vengeance his subject's chaotic state and the elusive criteria that any analyst of the subject must face. Even with the rules under his nose, the compositor (or Daines) produced many obvious inconsistencies between the theory and practice of seventeenth-century capitalization (Fig. 1). Daines's noun categories have been expanded by A. C. Partridge into a list of twelve general groups of substantives that were normally capitalized in Shakespeare's quartos.[2]

The emphatic approach, partly dismissed by Partridge, was foreshadowed by Elisha Coles in 1674. Coles, who sometimes viewed orthography from the perspective of the printer rather than the writer, says in concluding his section on capitalization:

> Whatsoever words the Author laies any kind of stress of force upon, these he either writes in a different character, or else prefixes a Capital before them, or both. Hence those that think they write nothing but strength of wit and thunderbolts, will scarce vouchsafe you two words together without a Capital. They are indeed so much in fashion, that I reckon this a good Rule to go by, *viz.* Whensoever you are in doubt, whether you had best write a little letter or a great one, be sure you write a great one. For this is the safest hand to erre on.[3]

In 1911 Percy Simpson, without mentioning Coles, put forward three types of contextual emphasis in which the capital letter was used in Shakespeare's first folio: (1) where emphasis is due to contrast; (2)

where a word has special contextual significance ("But Brutus says, he was Ambitious"); and (3) where there is the "employment of a technical term or the heightened meaning conveyed by a metaphor."[4]

Although contextual emphasis can explain some unconventional capitalizations, it is a very unreliable guide. Most of Simpson's illustrations of his principles, for example, can be more easily explained by using Partridge's more conventional noun groupings. Partridge's classifications, on the other hand, are of necessity quite general and do not explain why so many of the words which fall into his categories often go uncapitalized in Shakespearean texts. Obviously Elizabethan compositors were either using many other conventions which we have not discovered or, more likely, were simply unsure, as we are today, about whether a specific word merited the connotations that accompanied the capital. Sometimes their decision to capitalize must have been based upon context, but often their feelings about the meaning of a word itself must have directed their actions. If their feelings about a word were compatible with their idea of the emotional significance of the capital letter, they may have capitalized the word. Since the capital letter conveyed feelings—as it still does—of reverence, respect, and the extraordinary, words that corresponded to that idea, often regardless of noun groups or context, were capitalized. As shall be demonstrated in the following pages, a compositor's decision to use the language of capitalization was often based on the extent to which a word was emotionally charged, whether a word carried extraordinary feelings of elevation, uniqueness, or particularity, or whether it appeared in a high or a low literary genre.

Emotional Charge. An analysis of different capitalization rates of words within a single group can minimize contextual variables while indicating the degree of emotional charge which compositors attributed to them. Thus in a grouping of emotions themselves (emotions are not a class of capitalized substantives) the following frequency of capitalization occurs in eleven plays representatively selected from the first folio:[5] Remorse (8 occurrences)—0% capitalized, Shame (41)—5%, Pity (25)—12%, Sorrow (39)—13%, Anger (21)—30%, Revenge (19)—37%, Rage (30)—37%, Ambition (20)—65%, Lust (14)—85%. When the comedies are not included, the

forth as our knowledge extends) have firſt laid in our Engliſh Tongue. But now to returne. Concerning the uſe of the Capitall Letters, therefore take theſe along with you.

1 Every Treatiſe, or written ſpeech whatſoever, is to begin with a great letter, that is, to have the firſt letter of the firſt word of the Treatiſe, written or printed, with a Capitall, or great Character, in what hand or impreſſion ſoever the diſcourſe is to be delivered.

2 The ſame is to be obſerved in the beginning of every diſtinct ſentence, or clauſe. For (as I ſaid before) after every period point muſt enſue a great letter.

3 The pronoune, or word (*I*) muſt alwayes be written with a great letter; ſo muſt every proper name, or peculiar denomination of every individuall: as all the Attributes of God Almighty, the names of Angels, Saints, and evill ſpirits; the titles given by the Heathens to their faigned Gods and Goddeſſes; the names of men and women of all ſorts whatſoever; the names of moneths, winds, rivers, Cities, townes, Iſlands and Kingdoms: the particular name of any peculiar dog, horſe, or beaſt of any kind ſoever: The firſt word of every verſe, at leaſt Heroique: any letter ſet for a number, as you had in the beginning of our Orthoepie: Any letter ſtanding for any ſuch, or the abbreviation as we there mentioned.

Laſtly, all names or Titles of Magiſtrates, Arts, Offices, and Dignities, in what reſpect ſoever taken. In theſe, I ſay, altogether conſiſts the uſe of Capitall Letters, in all other we uſe onely the ſmaller.

Where you may take notice, That in the abbreviations

Figure 1. Examples of inconsistent capitalization from Simon Daines's rules on capitalization in his *Orthoepia Anglicana* (London, 1640).

ations I spake of to be written with great letters, I included not any such Charactericall abbreviation of a word, as *&* for *and*, ỹ for *the*, ẏ for *that*; and a thousand more commonly occurring, besides what every man hath peculiar to himselfe, which onely experience and practice must make familiar to you: but those which are thus to bee distinguished; to wit, when you would abbreviate any word, whether proper name, or other word usuall in such abbreviations, which is to bee expressed by the first letter of the word, then are ye to use a great Letter in all those Abbreviations, otherwise not. For examples, I referre you to our treatise of Letters *in genere*, in the first part of the *Orthoepie* here specified, in this little book.

The next caution after the great Letters is for *E* finall, or when it fals in the end of a word, that you never omit it, where it ought to be inserted: whether for distinction sake, as in *win*, the verbe, and *wine*, the substantive: or onely to make the precedent vowell long, as in *shrine*: or after *v*, to make it a consonant, which otherwise seeming to be combined with the former vowell in the nature of a dipthong; might so alter the pronunciation, as in *love*, which without the *E* would be sounded like *lou*, in *loud*, so *move*, *live*, and a great many more of the like kinde: or for difference of diverse words ending in *G*, aswell substantives as verbs, as in *ring*, and *range*, &c. which I instanced before.

Or lastly, when in *es*, terminating either verbe or substantive, it ought of right to bee put for any of the uses above rehearsed. Because many times as it makes a difference in pronunciation, so

capitalization rates are: Remorse—0%, Shame—6%, Pity—13%, Sorrow—17%, Anger—35%, Revenge—47%, Rage—50%, Ambition—81%, Lust—100%. An obvious pattern of high and low emotions emerges regardless of poetic contexts. The more highly charged emotions are more frequently capitalized. Not until the rise of sentimentalism around 1700 do the softer emotions gain equally heightened status with the heroic emotions. Another example of emotional charge is "murther" and "murtherer." Unless we cynically stretch the category of professional terms to include them, they fall outside normal capitalized noun groups. Yet their capitalization rate is 65% (20 occurrences) in the eleven plays and 93% when the comedies are excluded.

Particularity. The effect on a compositor's feelings that a word is unique or particular is a much more subtle matter than emotional charge. Though "barke" and "barge" have a higher capitalization rate than "ship," "mutton" higher than "meat," and "cottage" higher than "house," the "particular" words appear so infrequently in the text that their samples are too small to have statistical value. In the previous section we have seen that the capitalization rates of the particular emotions of anger, revenge, rage, ambition, and lust are high. Generic emotional terms are rarely capitalized: Affection(s) (25)—24%, Passion(s) (39)—5%, Humour (8)—0%. Although "passion" is highly charged today and the other two now have very particular meanings, the compositors of the first folio felt them more in the general senses of emotion, feeling, or psychological faculty.

Elevation. The effect of the feeling of heightening cannot be discussed without also considering emotional charge and particularity. An examination of specific words often reveals an interrelationship between these factors. For example, one general category of capitalization encompasses words relating to natural phenomena and geographical terms. In the eleven plays "river" and "stream" occur nineteen times. Their capitalization rates are: River—100%, Stream—7%. River is not only grander or more elevated than stream, but river also has particular associations in Shakespeare with proper names of specific geographical reference. Relative to elevation and emotional charge in the area of natural phenomena, it is interesting

that "rain" is more frequently capitalized than "shower" and "thunder" more frequently than "rain". Finally, associations with nobility have a heightening influence on the capitalization of objects: Knife (13)—38%, Sword (123)—68%.

Literary Genre. The most striking deviations from the supposed conventions of Shakespearean capitalization appear when the first folio's capitalization patterns in the comedies are compared with the patterns in the serious plays (the tragedies, the history plays, and the heroic romances of *The Winter's Tale* and *Cymbeline*). The examples that Partridge used to illustrate his twelve groups of capitalized nouns in the quartos were drawn exclusively from Shakespeare's tragic literature. If he had used only the comedies of the first folio, his list might have been shorter. A comparison of the rates of capitalization in the comedies and serious plays for words in the class of familial relationships reveals the following: "Brother" in comedies (73)—12%, in serious plays (73)—97%; "Mother" in comedies (9)—33%, in serious plays (62)—95%; "Sister" in comedies (45)—11%, in serious plays (21)—100%. The sharp difference in capitalization of family relationships between the two types of plays may be partly attributable to the fact that the serious plays have many royal relationships. Yet most of the main characters in the comedies are also nobles. Likewise it is not clear whether "gate" has a heightened association with fortification in the serious plays but not in the comedies. In the sample plays "Gate" breaks down: comedies (19)—0%, serious plays (55)—67%. In the category of precious objects "Gold" divides: comedies (27)—11%, serious plays (53)—95%. In the category of religion and reverence "Prayer(s)" breaks down: comedies (7)—0%, serious plays (33)—60%. Yet gold is not less valuable or prayer less reverent in comedy than in tragedy. Although emotional charge and heightening may have an effect on the higher proportion of capitalization in serious plays, there may have developed the following convention in the first folio: When in doubt, capitalize in high genres and don't capitalize in low genres.[6] Thus the capital letter became an indicator of heightened poetic value (Fig. 2).

The addition of this broad convention will not, of course, reduce the remaining chaos of Shakespearean capitalization to comfortable order. Some conventions can help clarify textual problems, such as

Merch. Oh had the gods done ſo, I had not now
Worthily tearm'd them mercileſſe to vs:
For ere the ſhips could meet by twice fiue leagues,
We were encountred by a mighty rocke,
Which being violently borne vp,
Our helpefull ſhip was ſplitted in the midſt;
So that in this vniuſt diuorce of vs,
Fortune had left to both of vs alike,
What to delight in, what to ſorrow for,
Her part, poore ſoule, ſeeming as burdened
With leſſer waight, but not with leſſer woe,
Was carried with more ſpeed before the winde,
And in our ſight they three were taken vp
By Fiſhermen of *Corinth*, as we thought.
At length another ſhip had ſeiz'd on vs,
And knowing whom it was their hap to ſaue,
Gaue healthfull welcome to their ſhip-wracke gueſts,
And would haue reft the Fiſhers of their prey,
Had not their backe beene very ſlow of ſaile;
And therefore homeward did they bend their courſe.
Thus haue you heard me ſeuer'd from my bliſſe,
That by misfortunes was my life prolong'd,
To tell ſad ſtories of my owne miſhaps.

Duke. And for the ſake of them thou ſorroweſt for,
Doe me the fauour to dilate at full,
What haue befalne of them and they till now.

Merch. My yongeſt boy, and yet my eldeſt care,
At eighteene yeeres became inquiſitiue
After his brother; and importun'd me
That his attendant, ſo his caſe was like,
Reft of his brother, but retain'd his name,
Might beare him company in the queſt of him:
Whom whil'ſt I laboured of a loue to ſee,
I hazarded the loſſe of whom I lou'd.
Fiue Sommers haue I ſpent in fartheſt *Greece*,
Roming cleane through the bounds of *Aſia*,
And coaſting homeward, came to *Epheſus*:
Hopeleſſe to finde, yet loth to leaue vnſought
Or that, or any place that harbours men:
But heere muſt end the ſtory of my life,
And happy were I in my timelie death,
Could all my trauells warrant me they liue.

Caſſi. I know that vertue to be in you *Brutus*,
As well as I do know your outward fauour.
Well, Honor is the ſubiect of my Story:
I cannot tell, what you and other men
Thinke of this life: But for my ſingle ſelfe,
I had as liefe not be, as liue to be
In awe of ſuch a Thing, as I my ſelfe.
I was borne free as *Cæſar*, ſo were you,
We both haue fed as well, and we can both
Endure the Winters cold, as well as hee.
For once, vpon a Rawe and Guſtie day,
The troubled Tyber, chafing with her Shores,
Cæſar ſaide to me, Dar'ſt thou *Caſſius* now
Leape in with me into this angry Flood,
And ſwim to yonder Point? Vpon the word,
Accoutred as I was, I plunged in,
And bad him follow: ſo indeed he did.
The Torrent roar'd, and we did buffet it
With luſty Sinewes, throwing it aſide,
And ſtemming it with hearts of Controuerſie.
But ere we could arriue the Point propos'd,
Cæſar cride, Helpe me *Caſſius*, or I ſinke.
I (as *Æneas*, our great Anceſtor,
Did from the Flames of Troy, vpon his ſhoulder
The old *Anchyſes* beare) ſo, from the waues of Tyber
Did I the tyred *Cæſar*: And this Man,
Is now become a God, and *Caſſius* is
A wretched Creature, and muſt bend his body,
If *Cæſar* carelefly but nod on him.
He had a Feauer when he was in Spaine,
And when the Fit was on him, I did marke
How he did ſhake: Tis true, this God did ſhake,
His Coward lippes did from their colour flye,
And that ſame Eye, whoſe bend doth awe the World,
Did looſe his Luſtre: I did heare him grone:
I, and that Tongue of his, that bad the Romans
Marke him, and write his Speeches in their Bookes,
Alas, it cried, Giue me ſome drinke *Titinius*,

Figure 2. A comparison of these two similar passages from Shakespeare's first folio illustrates the different approaches to capitalization in the comedies and the tragedies. Both passages contain serious narratives involving elevated characters with troubles at sea, yet the one from *The Comedy of Errors* (page H1^{v}), left, has a much smaller number of capitals than the one from *The Tragedy of Julius Caesar* (page kk1^{v}). Note especially the differences in "gods" and "story."

choosing between two homonyms or identifying the technical use of a term. Yet capitalization may also provide us with a different type of information about Elizabethan literature. It may reveal not only what a compositor did but how, as a literate *homme moyen sensual*, he reflected contemporary feelings about the connotations of different words and ideas.

1. *Orthoepia Anglicana*, ed. R. C. Alston, English Linguistics 1500–1800, XXXI (1640; facsimile rpt. Menston, Eng.: The Scholar Press, 1967), 76–77.
2. *Orthography in Shakespeare and Elizabethan Drama* (Lincoln: Univ. of Nebraska, 1964), pp. 75–78. His list in brief is: personifications and images, names of animals, precious substances, arts and sciences, religions and their institutions, diseases, terms of cosmology and geography, terms of kingship and statecraft, professions and occupations, technical terms, family relationships, and foreign terms.
3. *The Compleat English Schoolmaster*, ed. R. C. Alston, English Linguistics 1500–1800, XXVI (1674; facsimile rpt. Menston, Eng.: The Scholar Press, 1967), 107.
4. *Shakespearean Punctuation* (Oxford, 1911), pp. 103–107.
5. All percentages in this paper are derived from a sample of eleven plays in the first folio and are meant to indicate trends and not close approximations of overall percentages for specific words in the whole first folio. The eleven plays (four comedies, four tragedies, and three histories) are: *The Tempest*, *The Comedy of Errors*, *As You Like It*, *Twelfth Night*, *I Henry VI*, *III Henry VI*, *Henry VIII*, *Coriolanus*, *Timon of Athens*, *Macbeth*, and *Antony and Cleopatra*. For my statistics I have used the old-spelling, first folio *Oxford Shakespeare Concordances* (Oxford: Clarendon Press) still in production. I have not included in my statistics stage directions, items which are not true substantives, some exclamations, and items which are normally capitalized under fixed conventions such as the first word in a sentence.
6. Two of the thirty-six plays in the First Folio do not follow this pattern. An explanation of these exceptions involves a developmental view of the capitalization practices of the different Folio compositors. I am involved in such a study. In relation to the capitalization patterns relevant to this paper, it is clear to me that although the compositors of the Folio differed in their capitalization habits, they all capitalized with greater frequency in the serious plays than in the comedies.

Visible Language: An Experimental Course

Sharon H. Poggenpohl

An experimental course, Visible Language, at the Institute of Design in Chicago is discussed. The course consists of five problems which are presented in terms of the problem statement and intention, together with examples of solutions from first-year students. The problems range from spontaneous visual language response to perceptual experience, through content-form explorations, ending with a co-operative venture in communication.

The following problem descriptions and example solutions comprise a new, experimental course for first-year design students at the Institute of Design, Chicago. The purpose of the course is to encourage sensibility and creativity with regard to language and its visible presentation. The intention is not to provide a course in typographic history or style, but to provide experiences based on language as communication of a perceptual/cognitive idea or event, language as presented visually—enhancing perceptual meaning, and language as invention or systematic structure.

All the illustrative material is the product of first-year students during the first semester that the course was offered.[1] The course consisted of five problems. The first one focused on perceptual/cognitive experience as represented by a visible language response. The next three problems dealt with an exploration of the relation between form and content, while the last problem was a co-operative effort in communication.

Problem 1: Visible Language Responses

The first series of experiments was geared to honing a finer perception of the world through the use of a specific sensory sequence which directed and focused experience on one perceptual/cognitive attitude at a time. This was represented by appropriate visible language

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response. The purpose was to allow students to develop a more flexible and creative attitude toward language, and encourage a dynamic sensibility regarding perceptual experience. The emphasis was on direct experience (unself-conscious, if possible) with no special skills being necessary. The experimental writing sequence presented in this journal, "Vertical Group Exercises in Graphic Design,"[2] was adopted for this purpose. The first experimental sequence dealt with an object of the student's choice. Then each student did his "self" as object. This was followed by a series of four environmental objects such as the lanyard, penholder, knife, and glass ornament in the example (Fig. 1). Later, the basic idea was adapted to enlarge experience through a structure which encouraged less dependence on the tangible world and more on associations and invention (relate objects: 1. as symbols of larger ideas, 2. in terms of spatial and form relationships, 3. in terms of their relative or potential power, 4. examine each object in terms of the "personality" of one of the other objects, 5. describe each in terms of a diagram, and 6. synthesize the four objects into an invention).

Problem 2: Figurative Words

The first formal exploration of content-form relations was in terms of figurative words (Fig. 2). Words were selected on the basis of having a strong perceptual base, as well as for their infrequent use in common language. Every attempt was made to avoid words which would easily lend themselves to preconceived solutions. Words such as fragment or erase were avoided, as well as words commonly manipulated in a trite manner, such as thin, hairy, or old-fashioned. Unusual words provided a richer experience. Basic visual and/or typographic manipulations such as repetition, change of scale, fragmentation, distortion, spacing, and type style were reviewed as possible solution directions. The goal was to unite content and form through an appropriate or revealing word presentation. The word-image reinforced meaning. Technically, ideas were typographically executed with "found" type or transfer type.

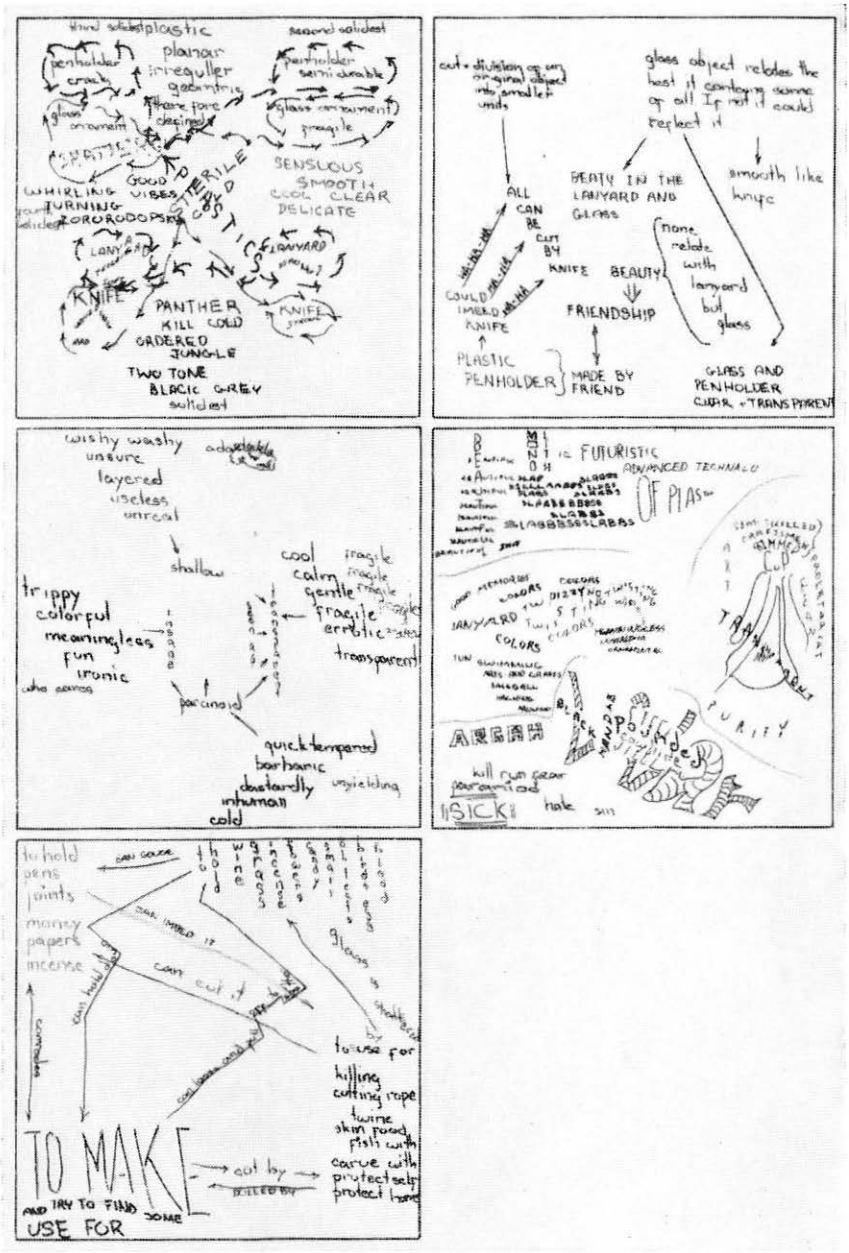
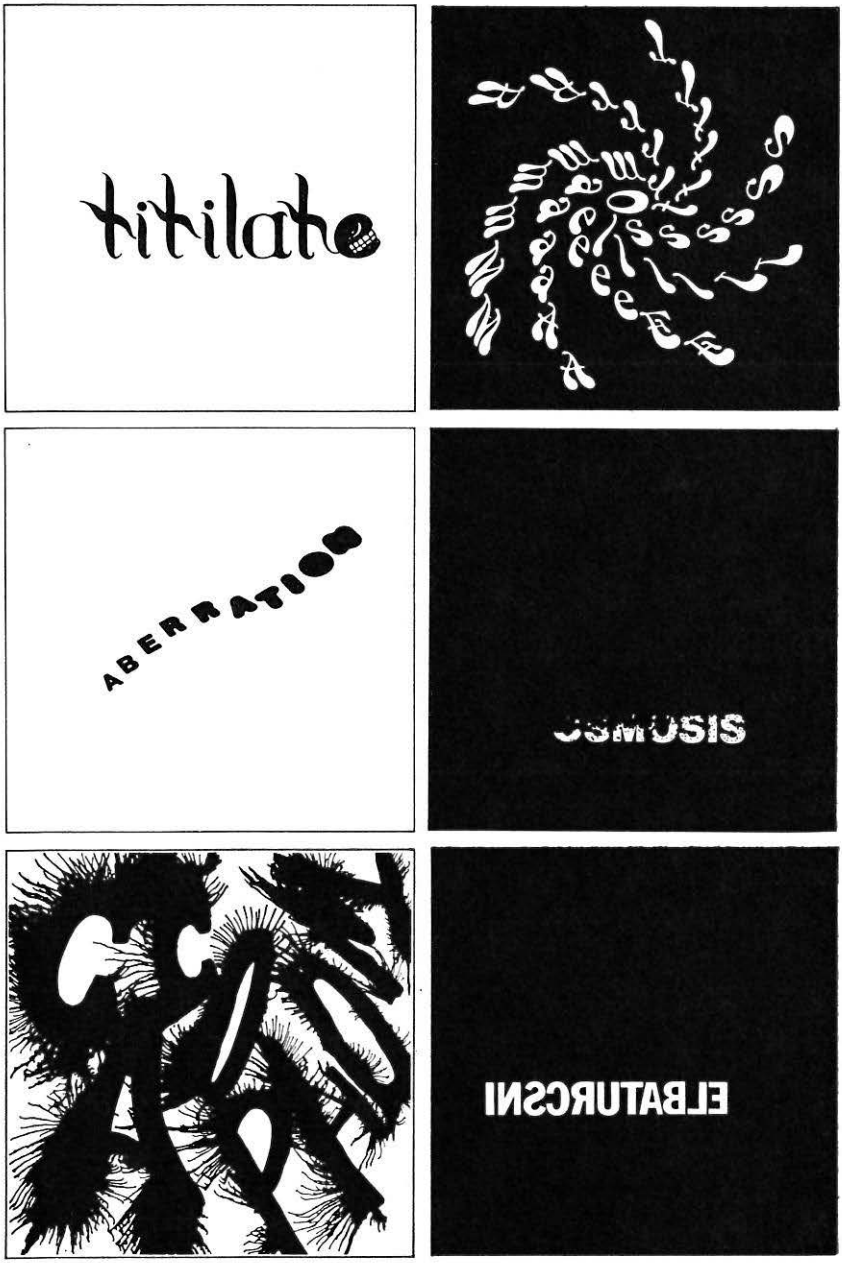


Figure 1. Visible Language Responses.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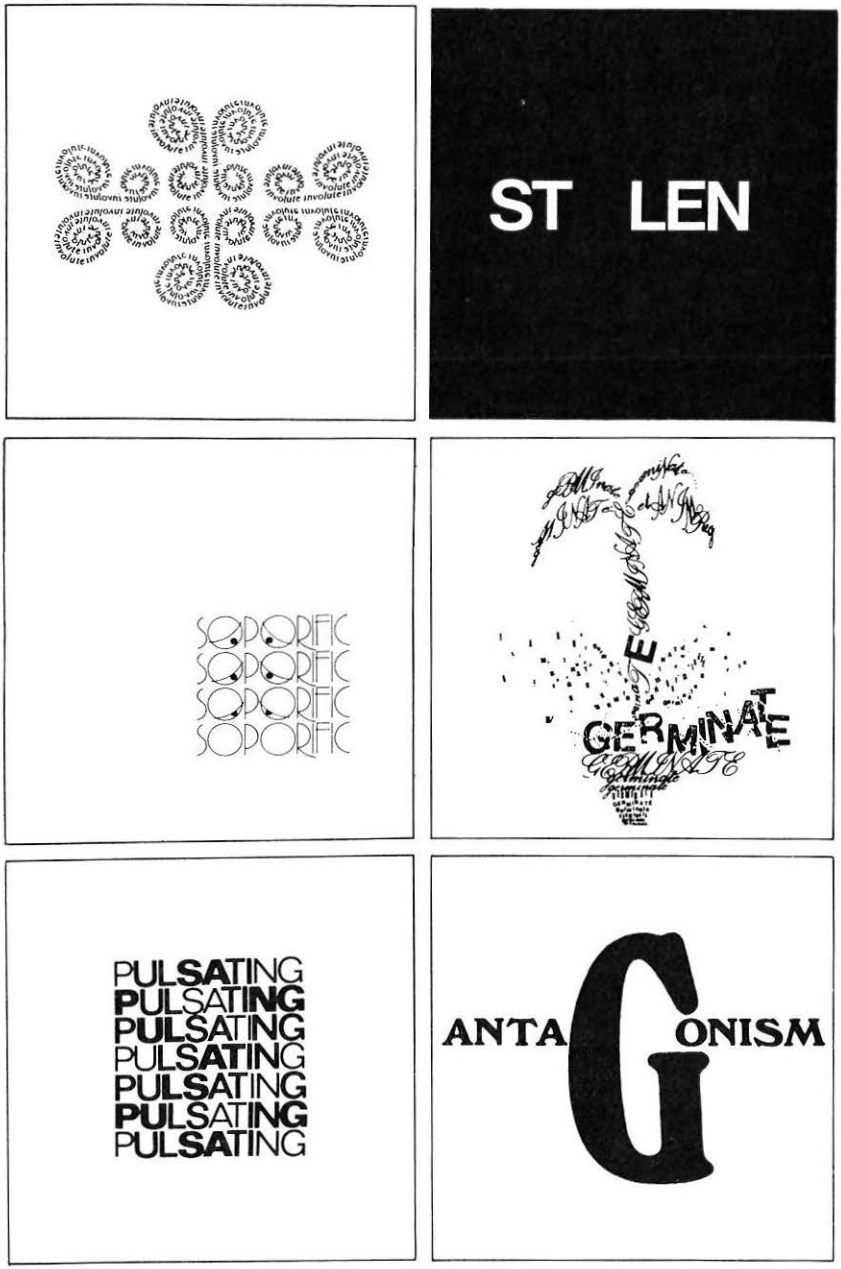

Figure 2. Figurative Words.

Problem 3: Invent-a-word

Invent-a-word was a highly abstract exercise. Each student drew at random a specific situation such as "It is a solemn occasion, but you can't stop laughing." The task was to invent a phonetic (based on the English language) and visible language presentation for the feeling response evoked by the situation. Alphabetic characters were designed and typographic style developed appropriate for the expressive dimension of the evoked feeling. The process of dealing with the problem was as rewarding as the solutions. Thinking and solution development varied, ranging from introspective-philosophical to psychological-physiological analysis. Some students worked from phonetic to visual while others worked from visual to phonetic. This problem was designed to increase sensitivity to formal alphabetic conventions as well as provide the opportunity for sound-form=meaning exploration (Fig. 3). Invent-a-word further established the foundation for the next problem, concrete poetry.

Figure 3. Invent-a-word. Left to right, row by row:

Phonetic form	*Meaning*
GRAaaunnn	It has been a great day and you are drifting off to sleep.
[none]	You have just taught yourself to walk on water.
poopsation	It has been a great day and you are drifting off to sleep.
Kdum-el-te	You have just been canonized as the first living saint.
wulthum	This is the most boring class I've ever had.
foffle	Dazed, you answer the telephone at 3:00 am and no one is there.
[none]	After spending 16 hours making (designing, building) a large, handsome kite, the string snaps and the wind carries it away.
[none]	It is a solemn occasion, but you can't stop laughing.
[none]	You dream you are Superwoman.
op nil	Try to imagine you are dead.
TEPHPHABLEXEC	The computer made a slight mistake, you won't graduate until 1978.

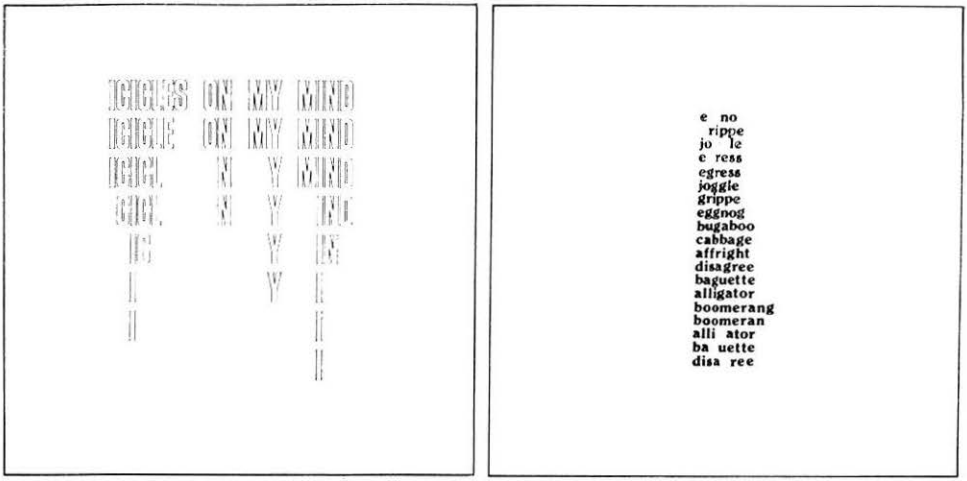

Figure 4. Concrete Poetry.

Problem 4: Concrete Poetry

The concrete poetry assignment provided the framework for synthesis of content-form relations at whatever level of sophistication the student was capable. Each was asked to explore the three basic orientations: optic, kinetic, and phonetic.[3] Typographic presentation was an important consideration as it enhanced or impeded the content-form idea. As the conclusion to the problem, the best idea was formally presented (Fig. 4). It was not expected that they would invent new concrete structure or form, but that they would be exposed to the sensory and structural qualities of language and would creatively use the existing vocabulary of concrete ideas. Innovation not invention was implicitly called for.


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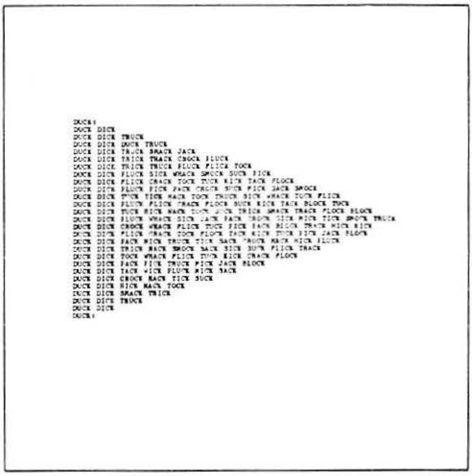
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DUCK DICK PACK PICK TRUCK PICK JACK BLOCK
DUCK DICK TACK WICK PLUCK NICK SACK
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DUCK DICK NICK HACK TOCK
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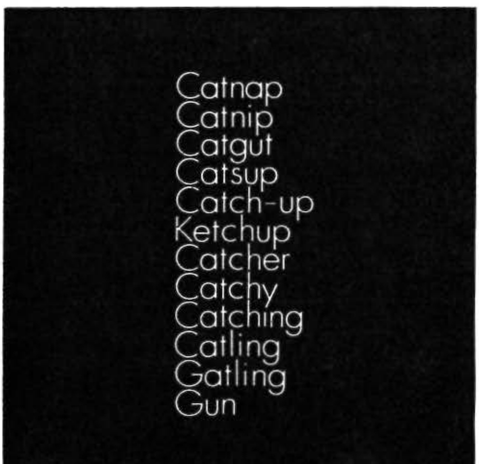
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Catcher
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Catching
Catling
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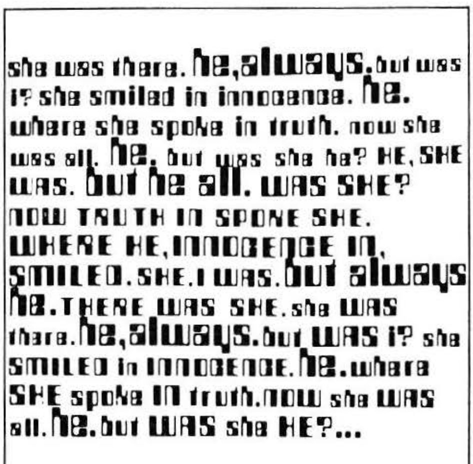
Gun


she was there. he,always.but was
i? she smiled in innocence. he.
where she spoke in truth. now she
was all. he. but was she he? HE, SHE
WAS. but he all. WAS SHE?
NOW TRUTH IN SPOKE SHE.
WHERE HE,INNOCENCE IN.
SMILED.SHE.I WAS.but always
he.THERE WAS SHE.she WAS
there.he,always.but WAS I? she
SMILED in INNOCENCE.he.where
SHE spoke IN truth.NOW she WAS
all.he.but WAS she HE?...

Problem 5: Poster Design Via Telephone

Verbal intercommunication as well as the issue of personal interpretation and influence were crucial to the last problem. The student addressed himself to the issue of communicating about the act of creating a communication. Each student wrote "unique and memorable" copy. Each randomly drew another student's telephone number. He called this number to receive the copy for the poster he was to design and was in turn called for his copy. Each student wrote copy and designed a poster (limited to typographic presentation) for the copy of another (Fig. 5). Copy critique and comments on presentation ideas could be shared and debated only via telephone. Each was actively engaged in working out the best solution for the communication: if the copy was poorly written, it was the province of the designer to suggest, rewrite, and influence the author concerning the verbal material; if, on the other hand, the presentation sounded off the mark, it was the province of the author to influence the designer by reiterating his position or by clarifying his intended meaning. At the conclusion, each student rated his partner's work in terms of power of statement (copy) or design and interpretation of content (design).

1. Ed Bedno, another teacher at the Institute of Design, taught a section of the course; we worked co-operatively on teaching techniques. Work shown is representative of both class sections.
2. Edward Wright and Jean Collins, "Vertical Group Exercises in Graphic Design," *Journal of Typographic Research* [now *Visible Language*], I (October 1967), 387–408.
3. Mike Weaver, "Concrete Poetry," *Journal of Typographic Research* [now *Visible Language*], I (July 1967), 293–326.

I would like to acknowledge financial assistance from the ID Press, covering the cost of reproducing the student's original work. The following student's work is presented to complement and clarify the experimental course discussed in this article: Ashmann, Champlin, DeLee, Dougherty, Eckert, Garland, Hornak, Humphreys, Kelly, Kitz, Lavicka, Maggio, Marchand, Martin, McDonald, Moy, Orahem, Peika, Sarao, Smith, Steinle, Strode, Stroud, Thys, Tinen, Wachter, Weber, Wilson, and Zabler.

igure 5. Poster Design Via Telephone.

"Reading, in its original essence . . ."

"You may tell me," adds Ruskin, "that if you like better to talk with living people, it is because you see their faces, etc.," and refuting this first objection, then a second one, he shows that reading is, to be exact, a conversation with men much wiser and more interesting than those around us we may have the opportunity to know. I have tried to show . . . that reading could not be thus made comparable to a conversation, were it with the wisest of men; that the essential difference between a book and 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. Had Ruskin drawn the consequences of other truths he enunciated a few pages further, it is probable that he would have come to a conclusion analogous to mine. But evidently he did not seek to go to the very heart of the idea of *reading*. To teach us the value of reading he simply wished to tell us a beautiful Platonic myth, with that simplicity of the Greeks who have shown us almost all the true ideas and have left our modern misgivings the task of fathoming them. But I believe that reading, in its original essence, in that fruitful miracle of a communication in the midst of solitude, is something more. . . .

From Marcel Proust, *On Reading* (translated and edited by Jean Autret and William Burford). New York: Macmillan, 1971; p. 31.

The Discrimination of Three Types of Graphic Stimuli

Henry G. Timko

Forty 4-year-olds and forty 6-year-olds were tested on a matching-to-sample discrimination task to determine the relationship between social class status and the visual perception of graphic stimuli which were matched according to critical feature transformations. English letters, letter-like forms, and line-drawings of faces with embedded letters were equally divided into two confusability levels and three task levels. Analysis of variance on error scores revealed differences between age groups, stimulus types, confusability levels, and task levels. Social class differences were observed on highly confusable English letters among 6-year-olds but not among the 4-year-olds. No significant age by social class differences were found on letter-like forms or faces.

Research on the relation between visual perception and reading ability has raised a significant issue. To what extent is the correlation between visual discrimination and reading performance dependent upon the types of stimuli employed? This question is of particular importance to the identification and remediation of potentially retarded readers. Most reading-readiness tests in present use, for example, include stimuli other than letters and words in their discrimination tasks. Underlying the inclusion of these stimuli is the implicit assumption that discrimination ability on these types of stimuli is related to later reading performance.

Although research findings by Ashlock (1), Gates (5), Goins (8), Katz, and Deutsch (9) consistently demonstrated a significant relationship between the discrimination of graphic stimuli such as letters and words and reading performance, studies employing stimuli other than letters have been equivocal. Gates (5), Phelan (11), and Riley (13) found negligible correlations between tests of the discrimination of stimuli such as numbers, geometrical forms, and pictures and reading performance. On the other hand, investigations by Ashlock (1), Barrett (2), and Goins (8) indicated a significant

Visible Language, VII 1 (Winter 1973), 63–72.

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relation between the discrimination of these types of stimuli and reading ability.

One possible cause of variance in the findings above may be the nature of the stimuli utilized. It seems that little attention has been given to isolating those stimulus dimensions which are mutually shared by letters and other types of two-dimensional stimuli. Studies employing sets of stimuli which differ along the same dimensions of transformation seem to incorporate the logical approach to this problem. The research question then becomes, "How well does the discrimination of stimuli other than letters relate to reading performance when transformational differences of the two types of stimuli are regulated?"

Such regulation was realized in a study by Gibson, Gibson, Pick, and Osser (7). As a result of their analysis of the distinctive feature differences of letters, these authors concluded that letters differ essentially along certain transformational dimensions. These are changes in straight line to curved line, broken to closed line, perspective, and reversals or rotations. In testing children who ranged in age from 4 to 8 years, these researchers found that the discrimination of letter-like forms which differed along the dimensional changes cited above is a direct function of age. However, the improvement in discrimination performance was variable across transformations. Although error attributable to changes in line to curve, break to close, and reversals and rotations dropped significantly, errors on perspective changes remained quite high at the 8-year age level.

A replication of the same study using English letters as stimuli indicated a correlation of ·87 between confusions of the same transformations in "real" letters and letter-like forms. The authors interpreted these findings in terms of a distinctive features hypothesis. The children learned to attend to those critical features of letter patterns which facilitate their discrimination.

The above finding is significantly related to the controversy over whether the discrimination of two-dimensional stimuli other than letters or words is related to reading performance. On the basis of the Gibson, et al. (7) results, the answer appears to be yes; if the stimuli in question resemble letters and if they contain the same critical feature differences as those found in letters.

Could there be circumstances, however, in which a beginning

reader performs at a normal level for his age on the discrimination of stimuli which possess the same number and kinds of transformations as those in letters and still have abnormal difficulty with the discrimination of letters? This was the major question investigated in the present study.

Attempts to determine what an effective reader learns are of particular importance to the study of children who are potentially retarded readers in our schools, i.e., lower-class children. Following Gibson's (6) analysis of the reading process, the logical place to begin a search for the factors causing reading problems in children is the prerequisite ability to discern subtle differences between two-dimensional visual stimuli. As a theoretical underpinning for the generation of hypotheses in this research, it was postulated that any inferiority on the part of lower-class children in the discrimination of letters is not the result of a maturational lag as Vernon's (5) review might suggest, nor is it caused by innate perceptual or cognitive incapacities. Instead, it is theorized that any social class differences in discrimination performance are simply the product of variable background experiences with the test stimuli used. This is based upon the contention that the relative scarcity of writing materials and reading matter in the lower-class home Deutsch (4), Bloom (3) adversely affects the discrimination learning of letters more so than the discrimination of other types of stimuli.

To test this theory as it relates to discrimination skills in early reading, the present investigation utilized not only letters and letter-like forms, but also line drawings of faces. The choice of the latter stimuli was based upon the assumption that these symbols have possessed equal familiarization value for both social class groups under consideration.

It was hypothesized that middle-class children will demonstrate superior discrimination performance on the letters and letter-like forms, but that there will be no significant social-class differences on the discrimination of line drawings of faces. It was also predicted that these differences will be significantly greater among the 6-year-olds than among the 4-year-olds.

Subsidiary hypotheses concerning the types of errors made were also stated. The sets of response alternatives in this study contained an equal number of stimuli designated as high confusability and low

confusability items. Based upon Gibson's (6) distinctive features hypothesis, those response alternatives which have elements containing one and only one transformational difference from the sample stimuli will be classified as highly confusable (HC) and those including two or more feature differences from the sample will be designated as low confusability (LC) items. It was hypothesized that there will be a significant difference between the error scores on HC and LC trials. In addition, since Marchbanks and Levin (10) found that the most salient cues in the word recognition of children who were just beginning to read are the terminal letters of words, it was predicted that response trigrams possessing first or last letters identical to the sample stimulus will produce significantly more errors than those trigrams which do not.

Subjects

The subjects were 80 children from the Champaign-Urbana, Illinois, area. They included an equal number of 4- and 6-year-olds from the lower and middle social classes. Socioeconomic status was determined by a weighting formula involving the educational attainment and occupational status of the parents of the children. The 6-year-old children were drawn from kindergarten classes in an elementary school. Of the 4-year-olds, 36 children came from homes in the same district as the 6-year-olds and four subjects were drawn from the Bereiter-Engleman preschool program at the University of Illinois. Seventy-eight children were Caucasian and two were Negro.

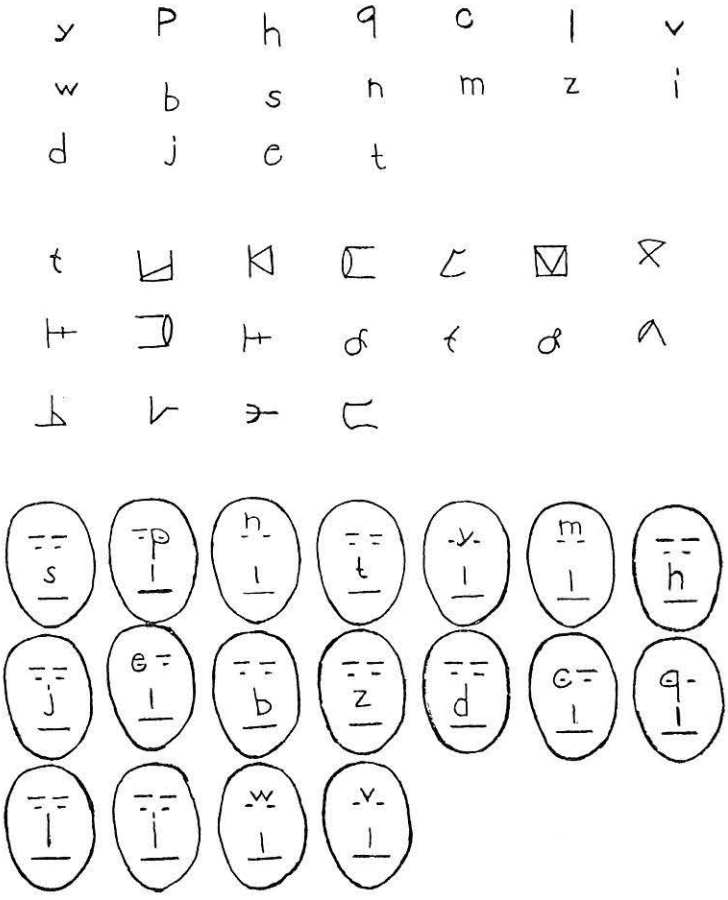
The stimuli were presented on 5 by 8 inch plain white cards enclosed in looseleaf notebooks. The study used a matching to sample technique involving simultaneous discriminations. The sample stimulus was presented on the left page and three response alternatives were observed simultaneously on the right page of the notebook. The sample stimulus always appeared in the center of the sample page and the responses were vertically positioned on the right page.

The stimuli included an equal number of printed lower-case English letters, letter-like forms, and line drawings of faces. The letters were drawn in a style comparable to that which is used on typewriters for partially-sighted readers. The letter-like forms were some of the same as those used in the Gibson, et al. (7) study. The faces used were devised by the author. Since the facial outline and mouth

were invariant across stimuli, critical feature differences of the faces involved the shapes of the eye-brows and noses. The latter features were composed by imbedding letters identical in number and kind to those used in the English letter stimulus set into the facial context. Thus, in one face, the nose may have been a "b", in another face the eyebrows an "m".

The letters and letter-like forms were one fourth inch in size. The number and types of transformational changes were constant across all three types of stimuli. The letters were drawn from the list of letter pairs which were most often confused and those which were least confused by prereading children in Popp's research (12). Figure 1 presents a list of each stimulus set which was used.

Figure 1. The three sets of stimuli.



Task Levels and Item Difficulty

To determine not only the extent to which various types of graphic symbols are confused, but also to investigate the degree of confusability when these symbols are combined in a sequence, three levels of task complexity were utilized. The first level included single element matching (SEM) trials in which the *S* compared a single element sample (one letter, one letter-like form, or one face) with three single element alternatives.

The second and third levels contained trials composed of sets of three stimuli combined in a horizontal sequence. The second level, triple element replacement (TER), possessed incorrect response alternatives in which either the first or the last element was replaced by a symbol other than that included in the sample. The third level, designated triple element sequencing (TES), was composed of alternatives which contained the same elements as in the sample, but which differed according to their sequencing.

There was a total of 36 trials with an equal number devoted to each task level. Within each task level there was an equal number of trials containing letters, letter-like forms, and faces which were sequenced in a randomly mixed order. This mixing of stimuli was incorporated to insure that order, learning-to-learn, or fatigue effects would not artificially inflate performance on any one stimulus type.

Expected item difficulty was assigned to each of the trials on the basis of Gibson's, et al. (7) and Popp's (12) findings and the results of a pilot study conducted by the present author. Since Popp found that confusions between letter pairs involved the same types of transformations which were related to error scores on Gibson's letter-like forms, and since the pilot study suggested the same relationship when facial features were transformed along the same dimensions, half the items possessed response alternatives which were unidimensional transformations of the sample stimulus and half did not. Thus the SEM and TER task levels were divided into an equal number of high confusability and low confusability trials. The low confusability trials (i.e., those trials containing incorrect response alternatives which differ multidimensionally from the sample) were included for only motivational purposes. Their inclusion was not intended to contribute materially to the confirmation of the hypotheses.

Expected difficulty levels for the TES level were determined by the

position of the first and last element in a response alternative. Those trials containing incorrect responses in which either the first or the third element in the sequence was located in an identical position to that in the sample were classified as high confusability trials. High confusability and low confusability trials following this rule were equally distributed across the triple element sequencing level.

Warm-up trials consisting of the line drawings of familiar objects such as bat, bird, shoe, etc., preceded performance on the test stimuli. On each test trial, the child was asked to put his finger on the response alternative that looked most like the sample stimulus. Plastic chips were used as token rewards for every correct response. These were traded for miniature Tootsie Rolls at the end of testing. Where multiple responses occurred, only the first was recorded.

Results

A factorial design employing chronological age, socioeconomic status (SES), confusability level, stimulus type, and task level was used. There were repeated measures on the last three factors. The analysis of variance and the Newman-Keuls method for multiple comparisons revealed the following significant differences:

1. Older children made fewer errors than younger children ($p < \cdot001$).
2. High confusability trials produced more errors than low confusability trials ($p < \cdot001$).
3. There were more errors made on triple element trials than on single element trials ($p < \cdot05$).
4. The errors made on English letters were significantly less than the errors made on line drawings of faces ($p < \cdot05$). No differences were found between Gibson letter-like forms and faces.
5. On high confusability single element (SEM) trials, there was a significant reduction in errors with an increase in age ($p < \cdot05$) for middle-class children but not for lower-class children (Figure 2).
6. At the 6-year-old age level, lower-class children made more errors than middle-class children on high confusability English letters ($p < \cdot05$). This SES difference was not found on letter-like forms or faces (Figure 3).
7. The significant difference between lower-class and middle-class children at the 6-year age level on high confusability English letters was attributable to differences on SEM trials only.

Discussion

The significant decrease in the number of discrimination errors as a function of age is an indication that children improve in their ability to discriminate letters, letter-like forms, and line drawings of faces (with imbedded letters) prior to formal reading instruction. As a result of certain preschool experiences and/or maturation, these children have learned to attend to and discriminate between some of the feature differences of these stimuli. The significant differences noted between high and low confusability items suggests that particular emphasis should be placed on unidimensional transformational differences between graphic stimuli in beginning reading programs.

Figure 2. The age by social class interaction on high confusability SEM trials.

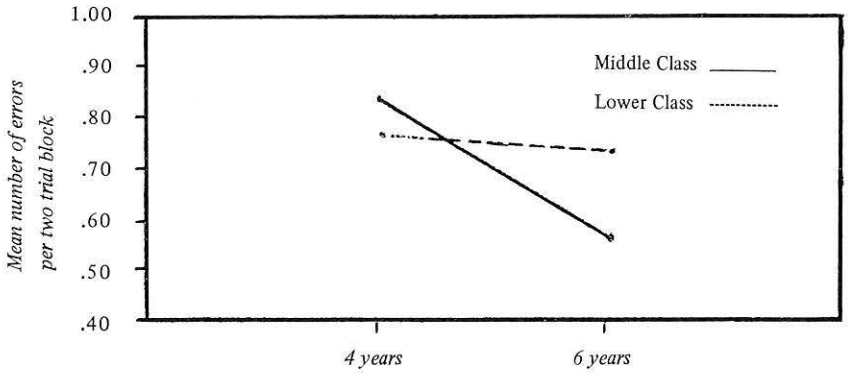
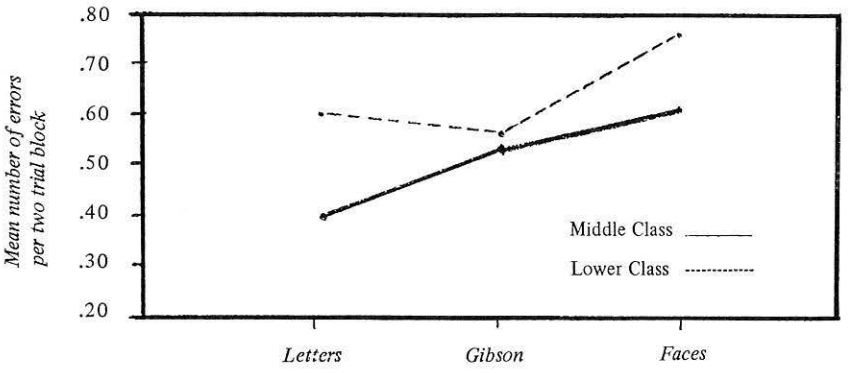


Figure 3. Mean number of errors of lower-class and middle-class 6-year-old children on three sets of high confusability stimuli.



The overall significant difference on the stimulus factor revealed that the children made fewer discrimination errors with English letters than they did with Gibson letter-like forms or faces. It may be argued that even prior to formal reading instruction, some degree of exposure to English letters is taking place which leads to better discrimination of these stimuli.

The results of this study indicate that social class differences at the age of four years are not significantly related to the discrimination of letters, letter-like forms, or line drawings of faces. At the 6-year age level, middle-class children made fewer errors on high confusability single element letters. However, social class differences were not found to be significantly related to the discrimination of high confusability single element letter-like forms or line drawings of faces at either age level. Finally, no social class differences appeared at either age level on the discrimination of triple element trials.

In relating these findings to the hypotheses of this study, it appears that the social class status of 6-year-olds is related to discrimination performance on letters at the single element matching task level. Why wasn't this superiority generalized to triple element replacement trials since these contained stimulus elements identical to those in the single element matching of letters? One possible explanation may be the effect created by the variant stimulis difficulty of these two task levels. The increased stimulus complexity of triple element trials may have been great enough to mask any effects due to social class differences on the discrimination of these elements as isolated stimuli.

The nonsignificant social class differences on the discrimination of line drawings of faces could also be interpreted in terms of differences in stimulus complexity. Even though the basic feature differences of the faces were the imbedded letters, discrimination performance could have been influenced by the increased item complexity of these stimuli relative to letters in isolation. A second argument could be that the inclusion of certain letters within the facial context inadvertently produced total stimulus complexes with emotive qualities. If the subjects responded to the items on the basis of this added dimension, the nonsignificant social class difference could have been due to this confounding effect.

A more interesting finding was the nonsignificant social class difference on high confusability single element letter-like forms at the

age of 6 years. Since the letters and letter-like forms were of equal item difficulty and since they contained identical types of transformation, it was expected that the confusion errors made by middle-class subjects would be significantly less than those made by lower-class children on both sets of these stimuli. That middle-class superiority was not significantly demonstrated on letter-like forms suggests that comparative discrimination performance of middle-class and lower-class children at the 6-year age level is dependent upon the types of graphic stimuli employed.

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Book Review

Edward M. Catich, *The Origin of the Serif*. Davenport, Iowa: The Catfish Press, St. Ambrose College, 1968. $8\frac{1}{2} \times 11\frac{1}{4}$ inches, xii + 310 pages. $24.00.

In this, the second part of a larger work, Edward Catich has provided us with much remarkable information not only on the origin of the serif, but also on other problems connected with inscriptions of the early Roman Empire. The first part of the trilogy (*Letters Redrawn from the Trajan Inscription in Rome*) came from the same press as long ago as 1961; the third, which is still to appear, will be entitled *The Imperial Alphabet*.

The author's aim in the work in hand is to show the priority of the written letter over lettering drawn or chiselled in stone, and in doing this his main concern is with the serif. He hopes, we read on page 3, "that the very smallness and apparent insignificance of the serif may act like the little edge of the wedge in splitting wide open the solid bulk of misinformation concerning our alphabet that has been growing since the days of the early Renaissance." For anyone familiar with the specialist literature in this field, Catich's book appears revolutionary in more than one respect, and his investigations convey an impression of great reliability.

The Author

The author is a priest and has been chairman of the Art Department at St. Ambrose College, Davenport, Iowa, since 1939. Having lost his parents at an early age, he was put into an orphanage at Illinois, where he was trained as a sign-writer. He later practiced this craft in Chicago while attending the Art Institute and later the university there. From 1935 to 1939 he was in Rome. It was a happy chance—and one which was to have a decisive influence on his later work—that while in Rome Father Catich was able to put his knowledge of lettering to good use and pursue the study of epigraphy, palaeography, and archaeology. But he was not content merely to study. In the course of time he became adept at cutting letters in stone and may safely be considered the most outstanding master in the art

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of producing monumental inscriptions by first painting them and then chiselling them in stone. This combination of scribe and lettercutter in one and the same person is a rare exception—if we disregard monumental lettercutters on the grounds that their inscriptional performance is usually a pathetic failure. In ancient Rome, however, in an age when specialization was not so far advanced as it is today, it was customary for one man to be able to write with a pen or a brush and, if required to do so, carve the letters thus produced in stone. Emil Hübner, in his *Exempla Scripturæ Epigraphicæ Latinæ*,[1] mentions an inscription in Greek and Latin, now in the museum at Palermo, which extols the work of a professional scribe in these words: "tituli hic ordinantur et sculpuntur"; i.e., "Here inscriptions are written and carved." And on a Roman stone we read: "titulos scribendos vel si quid marmorarii opus fuerit hic habes"; i.e., "Here you can have inscriptions written and work done in marble."

On the strength of his experience, Father Catich is adviser to a number of museums, institutes, and various architectural firms. In the case of the book under discussion, he has not only been responsible for the typographical layout and for drawing and writing the illustrations, but is also his own photographer, offset platemaker, printer, and publisher.

The Book (Summary)

The Romans have handed down no primers on writing, and only a few palaeo-calligraphic works are known to us. Almost all publications on this subject in recent decades have put forward roughly the same theories on the rise and development of the Roman alphabet, on the origin of the serif, and the priority of inscriptional writing.

Father Catich's book calls these theories into question. His conclusions are based on formal comparisons, on an exact knowledge of the tools and of the manner in which they were used, on reasonable assumptions and on the attempt to reconstruct the methods of work prevailing at the time. The main proofs for his new theory result from an analysis of the "intrinsic nature" of the *scriptura monumentalis*, in other words from the formulation, as far as it can be reconstructed, of the situation underlying the kinaesthetic dynamics peculiar to this script (kinaesthesia = the feeling of movement). Of all the relevant aspects of this problem, however, none is so likely to refute the existing theories on the Latin alphabet and inscriptional techniques—and to refute them so cogently—as the study of the serif.

The author takes as his starting-point the inscription at the base of the column in the Forum of Trajan in Rome (henceforth referred to simply as the "Trajan Inscription"), which was inscribed in 112 or 113 A.D. His reason for doing so is that it is well known to typographers, palaeographers,

and calligraphers alike and is generally taken to be the finest carved inscription of the best period—an opinion shared by practically all books on the subject.

Catich poses the following concrete questions at the outset: How did the serif arise? What purpose did it serve? Was it intended by the Roman scribe as an integral part of the letter as he conceived it in his mind, or was it merely a by-product of skilful use of tools? Is it an aesthetic refinement or the result of the technique of chiselling? Is it a deliberate indication of the end of a cross-bar of a letter, or a left-over from a guide-line previously scratched into the surface of the stone?

Catich tries to answer these questions from various points of view, whereby he shows a predilection for quoting other authors and refuting their statements point by point with penetrating proofs.

The views on the origin of the serif put forward by Oscar Ogg, Frederic W. Goudy, Graily Hewitt, Albert Kapr, Nicolette Gray, Egon Weiss, Eric Gill, Clarence P. Hornung, Thomas Wood Stevens, Russell Laker, Warren Chappell, and Raymond A. Ballinger—all of which rest on the argument that the chisel was the tool that determined the shape of the letter—are all found by Catich to be untenable on closer examination. (For example, Albert Kapr[2]: "The serif was born of the technique of the chisel," or Clarence P. Hornung[3]: "The serif . . . followed the guide lines . . . scratched across the face of the stone.") To start with, Catich makes the two following objections to all these theories:

1. The assumption that the lettercutter had to scratch guide-lines in the stone to prevent himself from "over-shooting his aim" when chiselling the stem of a letter (that is, to prevent himself from going beyond the upper and lower limits of a line of writing) is illogical. It overlooks the obvious fact that in order to scratch in the very guide-lines he had to keep his chisel under very accurate control, which he could therefore just as well have done when carving the actual letters. On this argument the guide-lines are superfluous. Many writing specialists obviously confuse the technique of working in stone with that of working in wood. In the case of wood it is, in fact, necessary to mark out in advance the beginning and end of any one bar of a letter so that a clear outline remains when the chip of wood is removed. But this is because wood has a grain. The quite different properties of stone render such precautions unnecessary.

2. The assumption that guide-lines led to serifs fails to take into account those inscriptions in which the ends of bars and the serifs themselves go beyond these guide-lines, often quite considerably.

In addition to these two objections, the following questions cannot be disregarded:

Some letters of the Trajan Inscription (A, C, E, F, G, L, M, R, S, T, V, X) have either no serif or only a very short one at one side of a stem or cross-bar. If the "chisel-stop" theory held good, these letters would have to look like those shown in Figure 1.

Even then it would still not be explicable why the lettercutter should have left this "stop-sign" out in the case of certain vertical and oblique lines of a letter (Fig. 2).

If the stop-sign had been made with a chisel, it would certainly not have been curved, nor would it be at an angle to the line it is intended to "stop," as in Figure 3.

If either of the two theories purporting to explain the origin of the serif from the guide-line or the stop sign were true, then it ought to be borne out by other formal details. The bows of B, D, P, and R would have to make a straight edge with the serif, whereas in reality these letters have a dent between the serif and the beginning of the bow, and the bows go beyond the upper guide-line in the case of P and R, and beyond the upper and lower guide-lines in the case of B and D (Fig. 4).

How, moreover, is the finely rounded transition from serif to stem to be explained? If the form of the serif were conditioned by the chisel—if, for example, it had evolved out of the stop sign—the Roman lettercutter could have solved the problem of connecting the serif to the stem or to the cross-bar in a different and much less time-consuming way, for instance as in Figure 5.

And finally there is the shape of the punctuation mark, which cannot be accounted for the grounds of chisel technique either. The quickest and easiest shape for the chisel to carve would be the triangle (Fig. 6). But in the fully evolved *scriptura monumentalis* the punctuation mark looks quite different (Fig. 7).

Alongside the theories so far referred to there are others—sometimes propounded by the same authors—which are concerned not so much with the stone-cutting tool as with the method of design or draft used by the lettercutter.

One such theory assumes that inscriptions were first written on the stone with a broad-reed pen, another that they were drawn with a double pencil. Frederic W. Goudy[4]: "The shapes they take in general and their proportions are, therefore, those of pen-drawn letters." Oscar Ogg[5]: "The double lines so produced [by the 2-pencil marker—Catich's addition] form the outside bounds of the letters which are completed by filling in with a pen or brush."

Neither the reed pen nor the double-pencil theory, however, explains the swelling out of the stem at the point where it runs into the serif, the

Figure 1.

Figure 2.

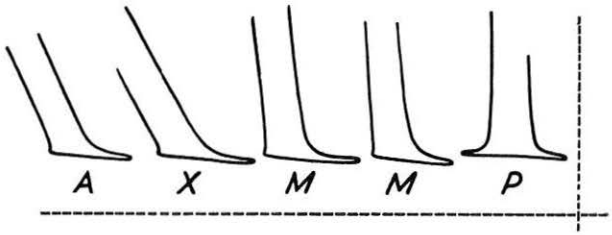


Figure 3.

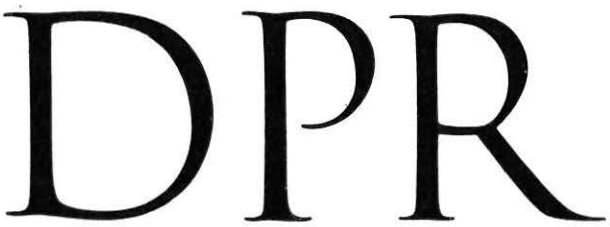


Figure 4.

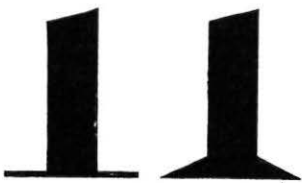


Figure 5.

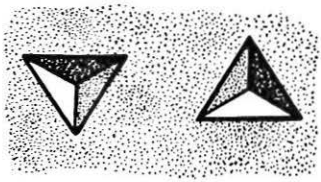


Figure 6.

Figure 7.

swelling in the lower part of the oblique line of the letter R and that of the letter S at the approach to the lower curve. The bows of B, D, P, and R can be comfortably executed in all their details with neither of the two implements. The upper lobe of B, sometimes also the lobes of P and R, are at their broadest points thinner than would be the case if they were written either with a reed pen or a double pencil, since both implements presuppose a more or less constant writing edge. The serifs and other formal details to be found in the Trajan Inscription could have been written with neither a reed pen nor a double pencil.

Käch's theory that the letters of the Trajan Inscription—unlike those of the noteworthy first-century inscriptions—were stencilled is not borne out by comparisons between letters occurring twice in the same line. If such letters are superimposed on one another (Fig. 8), the individual differences are immediately apparent. Likewise, the punctuation marks contradict the stencil theory, since none is identical with another.

It is assumed by some that the letters were first drawn in outline and then filled in. But this assumption overlooks the fact that the scribes, on the evidence of all the information we possess, worked rapidly, and would therefore have been unlikely to waste their time in employing such a slow method of work.

Before pursuing further the questions arising from a critical investigation of existing theories and attempting to answer these questions, Catich turns first to the lettercutter's craft and the use of the chisel.

From the outset he opposes the theory that marble ought not to be treated with color, calling this theory (a product of the Renaissance) the "clean marble" theory. Just as Greek and Roman temples and statues were polychrome or gilded, the Romans painted in their inscriptions with color (red lead or vermilion). Still today some letters of the Trajan Inscription show traces of orange-red paint. The inscriptions were thus intended to make a two-dimensional impression rather than a three-dimensional one through the effects of light and shade. One proof of this lies in the shallow profile of the letters, another in the fact that the angle of the V-profile is constant, so that the deepest point of a narrow section of a letter is not so deep as that of a wide section (Fig. 9).

If the Roman craftsman had been concerned to exploit the light-and-shade effect of the lettering to its utmost, he would have had to carve to the same depth at all points, thus changing the angle of his chisel according to the width.

Beginners and amateurs find it easier to chisel deep; shallow profiles require more skill and greater sensitivity. On the other hand, the edge of

the stone around the incision is less vulnerable if the angle made by the surface of the stone and the profile is not too acute.

Since three processes were involved in making an inscription—writing, carving, and painting—the purpose of the V-profile lay purely and simply in protecting the written letter from the effects of the weather, so that the lettercutter's work, so far from being an end in itself, had merely an ancillary function.

Father Catich demonstrates how great the difference is between painted and non-painted letters by taking a polyester cast of the Trajan Inscription (which he was commissioned to make by the Lakeside Press, Chicago) and painting in some of the letters, while leaving the rest unpainted. The difference is striking. Although for photographic purposes the cast was

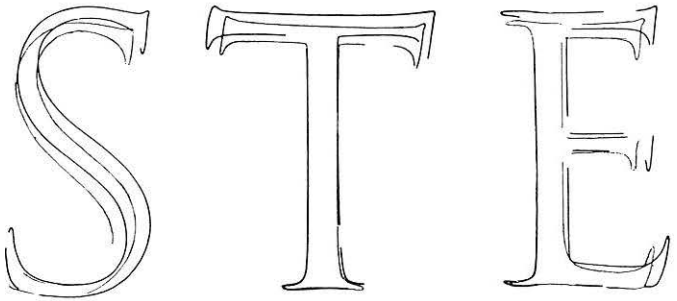
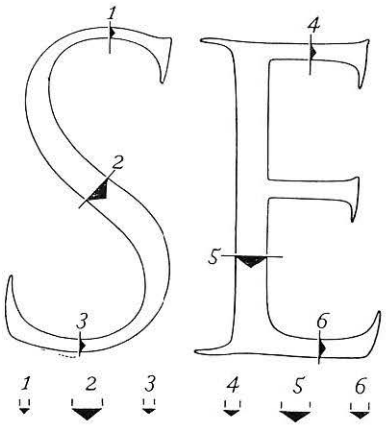


Figure 8.



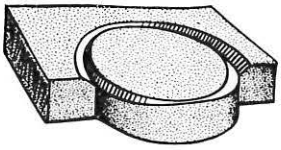


Figure 9.

can be held, the Roman scribe chose that which produced a horizontal stroke half as broad as a vertical one; i.e., an angle of 25° to 30°. If the pen is held at a more acute angle, the horizontals become too thin; at 45° they become geometrically the same thickness as the verticals (which means that they produce an optical effect of being thicker); at a more obtuse angle they are in fact thicker. The fact that the 2:1 proportion between vertical and horizontal strokes has dominated in all European scripts throughout the centuries is a pragmatic argument for its reasonableness.

A similar consistency is, incidentally, also observable in the proportion of stem-thickness to height of letter, which normally ranges from 1:8 to 1:10 in the case of capitals. Both these relationships (proportion between width of vertical strokes to width of horizontal strokes, proportion of stem thickness to letter height) are also present in the *scriptura monumentalis*, and this is basically all that links this script with reed-pen writing.

Imagine, then, a Roman scribe faced with the task of writing the text of an inscription on to stone or a plastered wall. What implement was he to use? The reed pen was impracticable because of the structure of the stone or wall surface, besides which it is not feasible to write very large letters with a reed pen. What was required was an implement which possessed, on the one hand, the greatest possible similarity in manipulation with the already familiar reed pen, but which, on the other hand, was more adaptable to rough surfaces, could absorb more color, and enabled the scribe to write large letters. There was—and is—only one implement fulfilling all these conditions and promising reasonable results to a practiced hand in a short space of time, and that is a brush with bristles cut flat and broad and relatively long. It is the angle at which the bristles are trimmed which gives the square brush its affinity with the reed pen; in its softness, suppleness, and pliancy lies its difference from the reed pen—its ability, namely, to write on rough surfaces.

The most suitable brush was one of red sable—the longer the hair the greater could be the variability of the writing surface. For the essential difference between a brush and a reed pen lies in the brush's ability to change its writing edge effortlessly, assuming always that it is held almost perpendicularly to the writing surface. The bigger the letters, the greater the participation of elbow and shoulder, not only of finger and wrist, in the action of writing.

The author mentions three methods of writing:

1. Small writing is executed on a horizontal or slightly sloping surface with the brush held almost vertically, the wrist resting on the surface.

2. For larger writing on walls or upright stones, the scribe either uses a hand-rest; or

3. He holds the brush by the end of the handle, using the whole sweep of the arm, the back of the hand facing right and downwards, the palm of the hand to the left and upwards. This is the most difficult position to master, but it is particularly suitable for large letters.

The practice of writing leaves corresponding kinaesthetic images in the mind of the writer, which then link up psychologically with the visible images left on the surface by the brush. Thus the brush acts as a physical link between the two kinds of image, the visible one and the kinaesthetic one. The movements of the writer are spontaneous and rapid and result from unceasing disciplined practice.

Two such visuo-kinaesthetic elements are the movements with which a brush stroke begins and ends—movements, sometimes small, sometimes larger, along the edge of the brush, whose purpose is merely to prevent the beginning and end of the stroke from appearing indistinct. Now in the case of vertical stems, the nature of the brush and the manner of its manipulation necessitate only a short initial and concluding movement. But not in the case of a horizontal line. Here the shortest possible concluding movement—of one of the upper cross-bars of an E, for example—is, by the very nature of brush technique, at least twice as long as the cross-bar itself is broad, and at least longer than the width of the stem at its broadest point (Fig. 12).

Since this concluding movement—this serif, in other words—cannot be made shorter, it determines the length of all the other serifs, for a mixture of short and long serifs would obviously be ugly. Hence this concluding movement is, in the author's opinion, the actual determining feature of the brush-written *scriptura monumentalis*, the key to the origin of the Roman serif.

As soon as it is assumed that a square brush was the implement used, all those formal details—inexplicable by the chisel and double-pencil theories—become immediately comprehensible: the dents between the left-hand and the right-hand serifs at the upper and lower end of an upright, between serif and horizontal in the case of E, F, and L, and between serif and curve in the case of B, D, P, and R; the transition from vertical to curve in the case of B and R (Fig. 13); the form of the hyphen; the slight backward slope of the stem in B, D, E, L, and the transitions at the foot of these stems into the curves and horizontals; the cross-bar of the T and the horizontal numeral sign; the serifs at the lower end of the broad strokes of A, M, X; the serifs at the upper end of the broad strokes of V and X; the pointed apexes of A, M, and N. which can only be drawn with a brush, etc. (Fig. 14).

The lettercutter, who was, as we have seen, most probably identical with the scribe, did not necessarily have to—indeed, could not—carve out all the vagaries and fine details of the brush strokes. Since the brush is a

mobile implement not always easy to manage, the hand of the scribe often slipped, and the lettercutter would correct such errors. On the other hand, the chisel has its limits as a tool, and the stone itself imposes its own conditions. Acute-angled connecting-points have to be rounded off to prevent the sharp edges of stone chipping off, and brush strokes accidentally protruding beyond the normal line are ignored. Figure 15 shows (on the left) the brush-painted shape and (on the right) the same letter as it occurs in the Trajan Inscription.[7]

Figure 12.

Figure 13.

Figure 14.

Figure 15.

Why has the theory put forward in Catich's book not been put forward earlier? The author himself sees the following reasons for this:

The art of writing with a square brush has practically fallen into desuetude since Roman times and was not revived until the turn of the century in America. The geometrical mechanical constructions introduced during the Renaissance by Felice Feliciano and his successors still largely dominate our thinking about letters even today. It is often claimed that classical Roman inscriptional techniques were reborn during the Renaissance. It is true that at that time Roman inscriptions were discovered and deciphered, and that important artists like Mantegna and Ghirlandaio copied Roman letters and used them in the most varied contexts. But since genuine free-hand writing with a brush was no longer practiced, any affinity with the *capitalis* was purely external, purely graphic. The features inevitably resulting from the use of the square brush could, therefore, not be comprehended. An additional factor was that the people most likely to be concerned with the history of writing were (and are) primarily palaeographers, calligraphers, typographers, and type designers—all categories unfamiliar with the brush and its decisive influence on form. A final point: an understanding of spontaneous writing as a source of all graphic activity has long since been lost.

To conclude this summary, here is how Catich characterizes the *scriptura monumentalis*, as opposed to the semi-formal and informal scripts (p. 162; italics as in the original): "One trait is *economy of parts*, in which only necessary letter parts are retained. Another trait is that these parts—whether vertical, horizontal, or curved—are crisply stated, and *clearly differentiated* from each other. Still another trait is *economy of function*, in which every part makes its contribution in the exact amount and place to the overall unity of the letter. Still other traits are uprightness, restraint, invisible traces, absence of ligatures, less spontaneity, and greater care in making the 2:1 proportion of thick and thin parts, more reliance on a standardized shape, and the exclusion of all romantic elements, swashes, decorative factors, and personal calligraphic whims."

Criticism and Appraisal

Father Catich's book is the most comprehensive analysis of the *scriptura monumentalis*, and it will be interesting to see how he will supplement and conclude it in the third part of his trilogy. To the best of my knowledge, only one other author has ever concerned himself so intensively and impartially with the script, the late Walter Käch.[8] Like Catich, he too had studied Roman monumental writing not merely in publications and photographs, but had striven to understand the secrets of its form by observing originals in epigraphic collections and had taken rubbings which

convey its authentic two-dimensional appearance. In his *Rhythmus und Proportion in der Schrift* (1956) he referred to the form of the *scriptura monumentalis* as determined by the brush-stroke. In the same work, however, he wrote the examples with a pen; I cannot help feeling that that was a mistake, for the two implements are—as we have seen—too different to be interchangeable. Because Käch was not familiar from practical observation with how to manipulate a long-bristled square brush, he considered the sharp apexes of A, M, and N to be decadent, "drawn" shapes. I have myself on more than one occasion pointed out to him the error of his claim that such pointed apexes were unknown in the first century A.D. by referring him to several inscriptions with this feature unquestionably dating from that period and sometimes of outstanding formal excellence in other respects.

Admittedly, the number of these inscriptions is exceedingly small compared with those in which A, M, and N have flat apexes. That this is so may be observed by visiting any more-or-less representative epigraphic collection. Two examples, both easily checked, may here be adduced in support of this statement:

In a generously conceived and typographically polished publication *Römische Kapitalis in Avenches*[9] (1970), only one of the twelve inscriptions illustrated which include the letters A, M, or N contains examples of pointed apexes. Arthur E. Gordon's three-volume *Album of Dated Latin Inscriptions*[10] includes in the two first volumes of plates, which cover the period from Augustus to the year 200, 134 inscriptions containing the letters A, M, or N and indisputably definable as *scriptura monumentalis*. Of these only five have pointed apexes. In this respect Käch, who pointed out how rare these forms are, was a better observer than our author. Admittedly Catich mentions the flat apexes, but leaves the reader in the erroneous belief that these, and not the pointed ones, are the exception. This is all the more astonishing in view of the care which marks the rest of his work.

Also, in answer to Father Catich's convincing demonstration that a pointed apex is more economical to carve in that it has only one corner instead of two—to which he adds that the pointed apex might be an attempt to achieve uniformity with the lower connecting-points of G, M, N and V —it may be retorted firstly that economy of form, while admittedly an essential factor of the *scriptura monumentalis*, is by no means the decisive one (many forms could be written even more economically without losing their significance); and secondly, that uniformity of the whole (and not of individual parts) is better achieved by flat apexes. It is to Catich's credit that he has drawn attention to the objective errors in Käch's interpretation, but it is difficult to understand why he should quote in the wrong context a remark of Käch's (p. 54) which refers only to the Trajan Inscription. Käch

believed, it is true, that this inscription gives evidence of the use of stencils, but he did not infer from this—as Catich imputes to him—that Roman inscriptions were as a general rule drawn in outline and then filled in in color. Independently of Catich, and pursuing his researches with much less intellectual equipment, Käch too recognized in the brush the implement which gave Roman lettering its characteristic shape and was the *first in Europe* to urge this theory *emphatically*, even if, as I have already indicated, he failed to urge it to its ultimate conclusion.[11]

In another respect Käch was on the same track as Catich, although again the latter pursued it to its end with greater shrewdness, namely in the respect that he recognized the essentially two-dimensional nature of the *scriptura monumentalis*. His rubbings always meant more to him than any photographs, for which he was subjected to much criticism, particularly from English writers.

The extent to which the serif owes its origins to writing techniques should by now have been adequately explained. Catich points out that the serifs of the upper and middle cross-bars of the letter E have determined all other serifs. To quote him verbatim (p. 180): "Indeed one could emphasize the 'basic absolute' nature of the brush-written, arm-fillet-serif stroke of letter E by stating that, once learned, this is the most satisfyingly natural stroke the brush makes, and is apt therefore as the characteristic determinant Roman brush-written *scriptura monumentalis*. Moreover, *this use of the brush is the key to the origin of the Roman serif.*"

Convincing as this theory is, it still to my mind leaves one ultimately decisive question open: Why did the Romans find precisely this, of all possible finishing strokes of the brush, the "most satisfying" (Fig. 16)?

Figure 16.

But this question leads beyond writing techniques and kinaesthesia into realms which will probably never be charted. Let us be grateful for the fact that we have been vouchsafed such extensive information on the craftsmanship and technique behind writing!

The first part of Catich's trilogy was concerned—and indeed exclusively—with the inscription on the base of Trajan's column, and the work in hand centers largely around observations and investigations of this same script with speculations on its origin. To add weight to his arguments, however, the author occasionally has recourse to other inscriptions, admittedly only to such as are relevant to the point he is trying to make.

Since Edward Johnston, it has become an accepted tenet of English and

American tradition that the Trajan Inscription is the *non plus ultra* of the *scriptura monumentalis*. That this should have been the case for Johnston and Eric Gill goes without saying, since both were restricted to exhibits in England, particularly in the British Museum and the Victoria and Albert Museum in London. To the best of my knowledge there is no English book on scripts (and few from the rest of Europe) which does not follow this tradition, and American literature is no exception. Hence Catich justifies his choice of this inscription as the starting point for his observations. Up to this point Catich is in agreement with most of the authors whose theories he later attacks.

Anyone who knows in how unscientific a manner books on lettering are customarily compiled—by a process of copying or re-arrangement—can only smile in wonderment at the remark "Almost every book on lettering acknowledges its superiority." It is enough to have seen the original or the plaster-cast in the Victoria and Albert Museum (which is far from perfect!) and to have studied the photographs and rubbings published by Catich in the original size to know that its formal quality far exceeds anything that a bad photograph, an even worse reproduction, or a so-called "faithful" drawing based on such models can convey.

It is not my aim to cast doubt on the extraordinary qualities of the Trajan Inscription, but to appeal against (1) its being constantly publicised as *the* example of a Roman inscription, and (2) what is even worse (and this is the main butt of my criticism), its being elevated to an absolute standard for the *scriptura monumentalis*.

If a palaeographer or calligrapher who publishes this inscription feels great admiration for it and is not merely following custom or tradition, then this must be respected as a personal opinion. When, however, he applies its standard to all other inscriptions, this procedure needs sound justification—and a sound justification for such a procedure is not easy to produce. For apart from the fact that there are but few instances of pointed apexes in A, M, and N, the N's only rarely have three strokes of constant thickness: in the overwhelming majority of cases there are differences—ranging from small to manifest—between the two verticals and the oblique. Such comparisons could be extended to other letters. If the shape of the letters in the Trajan Inscription is exceptional in more than one respect, then for this reason alone it cannot be taken indiscriminately as a model for all others, unless objective criteria could be produced for the rightness of precisely these exceptions. In Figure 17 three different versions of the letter A are juxtaposed as an example, one from an inscription in the Museo Civico in Bologna, one from an inscription once housed in the former Lateran Museum,[12] and the first A from the first line of the Trajan Inscription.[13] Is the Trajan A "better" than the other two? Are we justified

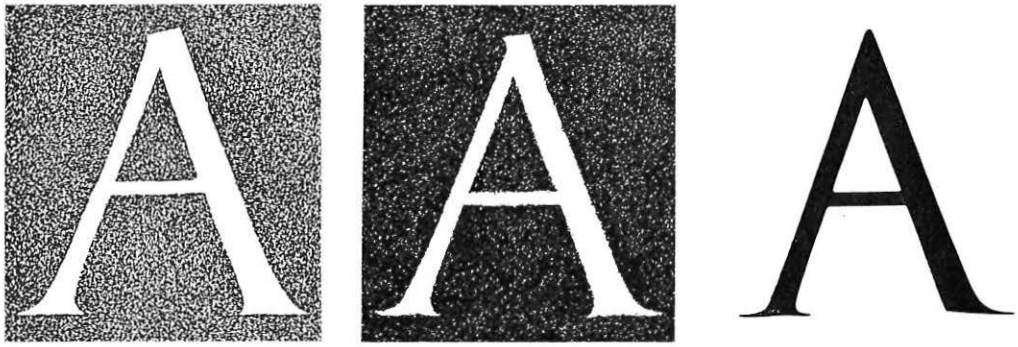


Figure 17.

in giving it preference over the others as *the* valid correct form? It is enough to ask the question to have answered it, and in the negative.

The point at issue, it seems to me, is that no new dogmatism should be allowed to gain ground, that the qualities of other inscriptions should be seen and acknowledged alongside those of the Trajan Inscription, that truth should not be invested in *one* form and *one* doctrine, and this truth then repeated and believed in by all the academic faithful.

If Catich had restricted himself to describing and analyzing the technical craftsmanship aspects of the Trajan Inscription, his book would have been a valuable development on the first part of the trilogy. His constant inferences from the particular to the general, however, make his conclusions occasionally very dubious, particularly as he does not attempt any allocation of the Trajan Inscription within the context of the first- and early second-century Roman inscriptions.

But none of the objections brought forward here detracts in any way from the value of Catich's book as a fundamental study of the *scriptura monumentalis*, a standard work capable, as none other hitherto, of conveying to all who are willing to read it with an unbiased mind and to go to the trouble of trying out for themselves the practice of lettering with a square brush, a wealth of new insights and incentives to independent observation.

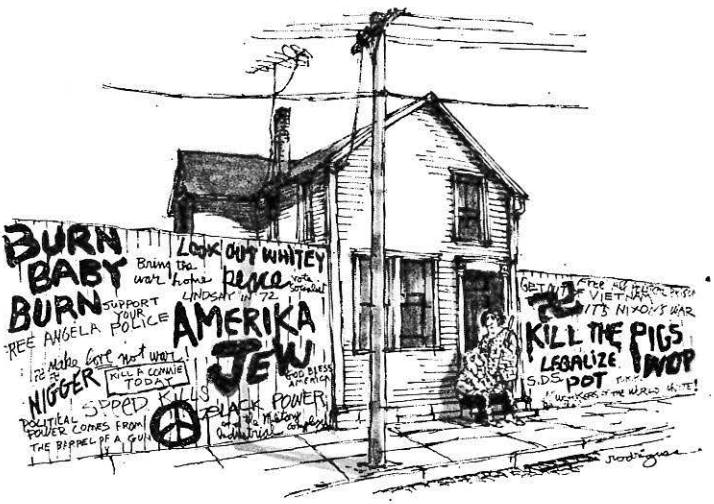
I can do no better—or fairer—than conclude with the author's own words (p. 285): "Much remains to be learnt about letters. The views advanced here cannot be final. There are certainly gaps to be found in it, and perhaps even some errors. In printing it I have the hope that my brother calligraphers will find here a footing for theory, discussion, and practice more rockfast and sure than the sands we have inherited from the Renaissance."

Jost Hochuli

Jost Hochuli (Waldgutstrasse 37, 9010 St. Gallen, Switzerland) was trained as a graphic designer and as a typographer. He is a free-lance designer and teacher for writing and lettering at the Kunstgewerbeschule Zürich. A regular contributor to the Schweizerische *Typografische Monatsblätter*, he is currently working on a publication on basic principles in writing and lettering.

Jost Hochuli's review was originally published in German in *Typografische Monatsblätter* (Nr. 11, 1971) and is reprinted here with kind permission. The review has been translated by Frank Shaw (15 Kellaway Avenue, Bristol, England). Dr. Shaw worked for many years as English Lektor at the University of Bonn; since 1967 he has been lecturer in German at the University of Bristol.

1. Emil Hübner, *Exempla Scripturæ Epigraphicæ Latinæ. A Cæsaris dictatoris morte ad ætatem Iustiniani.* Berlin, 1885.
2. Albert Kapr, *Deutsche Schriftkunst.* Leipzig: Verlag der Kunst, 1959.
3. Clarence P. Hornung, *Lettering from A to Z.* New York: W. Penn Publishing Corp., 1954.
4. Frederic W. Goudy, *The Alphabets and Elements of Lettering.* Berkeley: University of California Press, 1942.
5. Oscar Ogg, *An Alphabet Source Book.* New York: Harper and Brothers, 1961.
6. G. Battelli, *Lezioni di Paleografia.* Città del Vaticano, 1936.
7. The illustrations in the book are about 116 mm (4½ inches) high; i.e., the same height as the letters in the second and third rows of the original.
8. I am unable to say to what extent Joyce S. Gordon and Arthur E. Gordon are concerned with formal questions and questions of craftsmanship and technique in their *Contributions to the Palaeography of Latin Inscriptions* (University of California Publications in Classical Archaeology, Vol. 3, No. 3, Berkeley and Los Angeles, 1957—now out of print).
9. Prepared and edited by teachers at the Zürich *Kunstgewerbeschule* and by students attending day classes in lettering and printing.
10. Arthur E. Gordon, *Album of Dated Latin Inscriptions. Part I—Rome and the Neighbourhood, Augustus to Nerva.* In collaboration with Joyce S. Gordon. Berkeley and Los Angeles: University of California Press, 1958. *Part II—Rome and the Neighbourhood, A.D. 100–199.* In collaboration with Joyce S. Gordon. Berkeley and Los Angeles: University of California Press, 1964.
11. There were in Europe, of course, many other authors who presumed before Käch that Roman inscription letters were probably made with the flat brush or something like a brush, but it was Käch who first *proved* this fact.
12. Both reproductions from Walter Käch, *Rhythmus und Proportion in der Schrift.* Olten and Freiburg/Breisgau: Walter-Verlag, 1956, pp. 49 and 59.
13. Reproduced from E. M. Catich, *Letters Redrawn from the Trajan Inscription in Rome.* Davenport: The Catfish Press, 1961, plate 1.



"No, I'm not sick or anything like that—I just feel that I've got to get away for a few weeks."

Résumé des Articles

Traduction: Fernand Baudin

Les caractères grecs des drachmes parthes *par Richard A. Olson*

Les monnaies parthes sont parmi les plus curieuses de l'Antiquité. Les Parthes occupaient l'empire le plus vaste de toute la période hellénistique. Quoiqu'ils ne fussent pas Hellènes, le grec était leur langue officielle et la plus couramment utilisée dans leur monnaie. Notamment dans les drachmes d'argent qui ont porté des caractères grecs pendant près de cinq siècles, non sans subir quelques modifications en cours de route. Comme la numismatique est la source d'information principale pour tout ce qui concerne les Parthes, ces modifications devraient retenir l'attention des historiens.

L'usage des majuscules dans la première édition in-folio de Shakespeare *par Carleton S. Tritt*

Les interprétations traditionnelles données à l'usage élisabéthain en matière de majuscules, de clichés syntaxiques, d'inflexions suggérées par la construction des phrases, ne tiennent pas un compte suffisant de l'absence de toute cohérence qui caractérise apparemment la pratique de l'époque en ces matières. On oublie que les capitales par ex. suggèrent en réalité la charge émotive, la portée, la dignité, la suréminence attribuée à tel ou tel mot. Ce qui est démontré par des exemples empruntés à 11 sur 35 pièces de Shakespeare contenues dans la première édition in-folio.

Communication visuelle: un cours expérimental *par Sharon H. Poggenphohl*

L'article rend compte d'une expérience tentée à l'*Institute of Design*, Chicago. Le cours consiste en cinq problèmes de "communication visuelle". Ils sont proposés sous forme d'énoncé et d'orientation. On montre, à titre indicatif, les solutions apportées par des étudiants de première année. Il s'agit, par ex. d'exprimer, graphiquement et spontanément, une réaction à une perception visuelle, en rendant le fond aussi bien que la forme, en vue d'arriver finalement à une expérience collective de communication.

La distinction de trois types de graphismes *par Henry G. Timko*

Quarante enfants de 4 ans et quarante enfants de 6 ans ont été testés en vue de déterminer les corrélations possibles entre le milieu social et l'aptitude à discerner les graphismes. Des lettres, des formes vaguement alphabétiques, des dessins au trait représentant des visages marqués de lettres ont été répartis en deux groupes et fait l'objet de trois exercices. Les erreurs commises ont fait ressortir des groupes d'âge, de sensibilité, de lucidité et d'aptitude. Des différences attribuales à la classe sociale ont été observées chez les enfants de six ans, mais pas chez les enfants de quarte ans, à l'occasion des lettres les plus ambiguës. Aucun groupement par catégorie d'âge ni par classe sociale n'a pu se faire à l'occasion des formes vaguement alphabétiques, ni des dessins de visages.

Kurzfassung der Beiträge

Übersetzung: Dirk Wendt

Griechische Buchstabenformen auf Parther-Drachmen *von Richard A. Olson*

Zu den ungewöhnlichsten Münzprägungen des Altertums gehören die des Parther-Reiches, des größten der späten hellenistischen Reiche. Die Parther waren ein nicht-griechisches Volk, das Griechisch als seine erste offizielle Sprache und als vorherrschende Sprache auf seinen Münzen benutzte. Die gebräuchlichste Münze, die Silberdrachme, trug griechische Zeichen für fast ein halbes Jahrtausend, und die Buchstabenformen erlebten beträchtliche Veränderungen. Da die Münzprägung die größte Informationsquelle über die Parther der Antike ist, sind diese Veränderungen von erheblichem Interesse für Altgeschichtler.

Die Bedeutung der Großschreibung in Shakespeare's Erstausgabe *von Carleton S. Tritt*

Die traditionellen Ansätze zur Interpretation der Elisabethanischen Großschreibung — konventionelle Hauptwörter-Gruppierungen und Kontextbetonung — können den vielen Inkonsistenzen im Gebrauch der Großschreibung in jener Zeit nicht gerecht werden. Außerdem decken sie nicht den Elisabethanischen Gebrauch der Großbuchstaben als sprachlicher Ausdruck der vielfältigen emotionalen Konnotationen der Wörter auf. Aufgrund einer repräsentativen Stichprobe von 11 aus den 35 Stücken in Shakespeare's Erstausgabe kann an den Anordnungen der Großbuchstabenhäufungen gezeigt werden, wie der Setzer der Erstausgabe die Großbuchstaben benutzte, um Konnotationen emotionaler Spannung, Betonung, Eigenart und dichterische Würde in einer Vielzahl von Wörtern und Wortgruppierungen auszudrücken.

Sichtbare Sprache — eine Experimental-Übung *von Sharon H. Poggenpohl*

Eine Experimental-Übung "Sichtbare Sprache" am Institute of Desing in Chicago wird besprochen. Die Übung bestand aus 5 Aufgaben, die als Fragestellung und Ziel vorgegeben wurden, zusammen mit Beispiel-Lösungen von Studenten des ersten Studienjahres. Die Arbeiten reichten von spontanen sichtbaren Sprachausdrücken bis zu Wahrnehmungs-Erfahrungen, über Inhalt-Form-Untersuchungen, und endeten mit kooperativen Kommunikationserfahrungen.

Die Unterscheidbarkeit von drei Typen von graphischen Reizen *von Henry M. Timko*

Vierzig Vierjährigen und vierzig Sechsjährigen wurde eine Vergleichs- und Unterscheidungsaufgabe gestellt, um Beziehungen zu bestimmen zwischen sozialem Klassen-Status und der visuellen Wahrnehmung graphischer Reize, die nach kritischen Merkmals-Veränderungen zusammengestellt waren. Englische Buchstaben, buchstabenähnliche Formen und Strichzeichningen von Gesichtern mit eingezeichneten Buchstaben wurden gleichmäßig aufgeteilt in zwei Verwechselbarkeits-Niveaus und drei Aufgaben-Arten. Eine Varianzanalyse der Fehlerwerte zeigte Unterschiede zwischen Altersgruppen, Reiztypen, Verwechselbarkeits-Niveaus und Aufgaben-Arten. Soziale Schichtunterschiede wurden bei leicht verwechselbaren englischen Buchstaben an den Sechsjährigen gefunden, aber nicht an den Vierjährigen. Bei den buchstabenähnlichen Formen und Gesichtern fanden sich keine signifikanten alters und schichtspezifischen Unterschiede.

Resumen de los Artículos

Traducción: Tony Evora

Letras griegas en las dracmas de Partia *por Richard A. Olson*

Una de las acuñaciones más raras de la antigüedad la constituyen las monedas del imperio partiano, el más grande de los imperios Helenísticos tardíos. Los partos fueron un pueblo, que sin ser griegos, usaron el griego como primer idioma oficial del estado, empleándolo predominantemente en sus monedas. La denominación más común, la dracma de plata, muestra inscripciones griegas a través de medio milenio, sufriendo las letras en este proceso una transformación importante. Como las monedas constituyen el material de información más interesante sobre la antigua Partia, esta transformación resulta de gran interés para el historiador clásico.

El lenguaje de mayúsculas en el primer folio de Shakespeare *por Carleton S. Tritt*

Las versiones tradicionales acerca de la utilización de mayúsculas en la época Isabelina—agrupamientos convencionales de nombres y énfasis contextual—no tratan adecuadamente las frecuentes inconsistencias en el hábito de usar mayúsculas de aquella época. Aún más, tampoco aclaran el uso Isabelino de las versales como indicador lingüístico de las diversas connotaciones de las palabras. Empleando como muestra 11 de los 35 dramas del primer folio de Shakespeare, ha sido posible probar mediante pautas en la frecuencia de las mayúsculas, la carga emotiva, la elevación, la singularidad y sobriedad poética de un número considerable de palabras y grupos de palabras.

Lenguaje visible: un curso experimental *por Sharon H. Poggenphohl*

En el Instituto de Diseño de Chicago se ha realizado un nuevo curso experimental sobre el lenguaje visible. Este curso consistió en cinco problemas que fueron presentados en forma de resúmenes e intención, junto a ejemplos de soluciones por alumnos del quinto año. Los problemas cubren desde espontáneas reacciones sobre el lenguaje visual, hasta experiencias perceptivas, pasando a través de exploraciones del contenido-forma y terminando con una aventura de tipo cooperativista en comunicación.

La Discriminación de Tres Tipos de Estimulación Gráfica
por Henry G. Timko

Cuarenta niños de 4 años de edad y cuarenta de 6 fueron examinados en un experimento para establecer la discriminación en la identificación de objetos, con el propósito de determinar la relación entre la clase social y la percepción visual estímulos gráficos, siendo estos últimos ajustados siguiendo determinadas transformaciones críticas de sus rasgos. Caracteres latinos, formas parecidas a letras, así como dibujos a línea de rostros incrustados en las letras, fueron igualmente divididos en dos niveles de confusión y tres niveles de labores. El análisis de la variación de errores anotados reveló diferencias entre la edad de los grupos, el tipo de estímulos, los niveles de confusión y las tareas. Fueron observadas diferencias de clase social en caracteres excesivamente confusos entre chicos de 6 años de edad, pero no entre los de 4. No fueron halladas importantes diferencias de edad en cuanto a clases sociales ante las letras parecidas a otras formas y rostros.

The Authors

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Carleton S. Tritt is assistant professor of English at the State University of New York College at Buffalo (Buffalo, N.Y. 14222). He received his Ph.D. from the University of Washington (Seattle) after completing a dissertation on paradox and wit in the English drama of the seventeenth century. Dr. Tritt is presently at work on a study of the dramatic censorship of Restoration drama in eighteenth-century England.

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Henry G. Timko is assistant professor of education at the University of Victoria (Victoria, B. C., Canada). He was awarded an NDEA Fellowship to do graduate work in educational psychology at the University of Illinois where he completed his doctorate. His research interests have been primarily in the area of perceptual skills in beginning readers, with particular concern for the visual cues utilized in early word discrimination.

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