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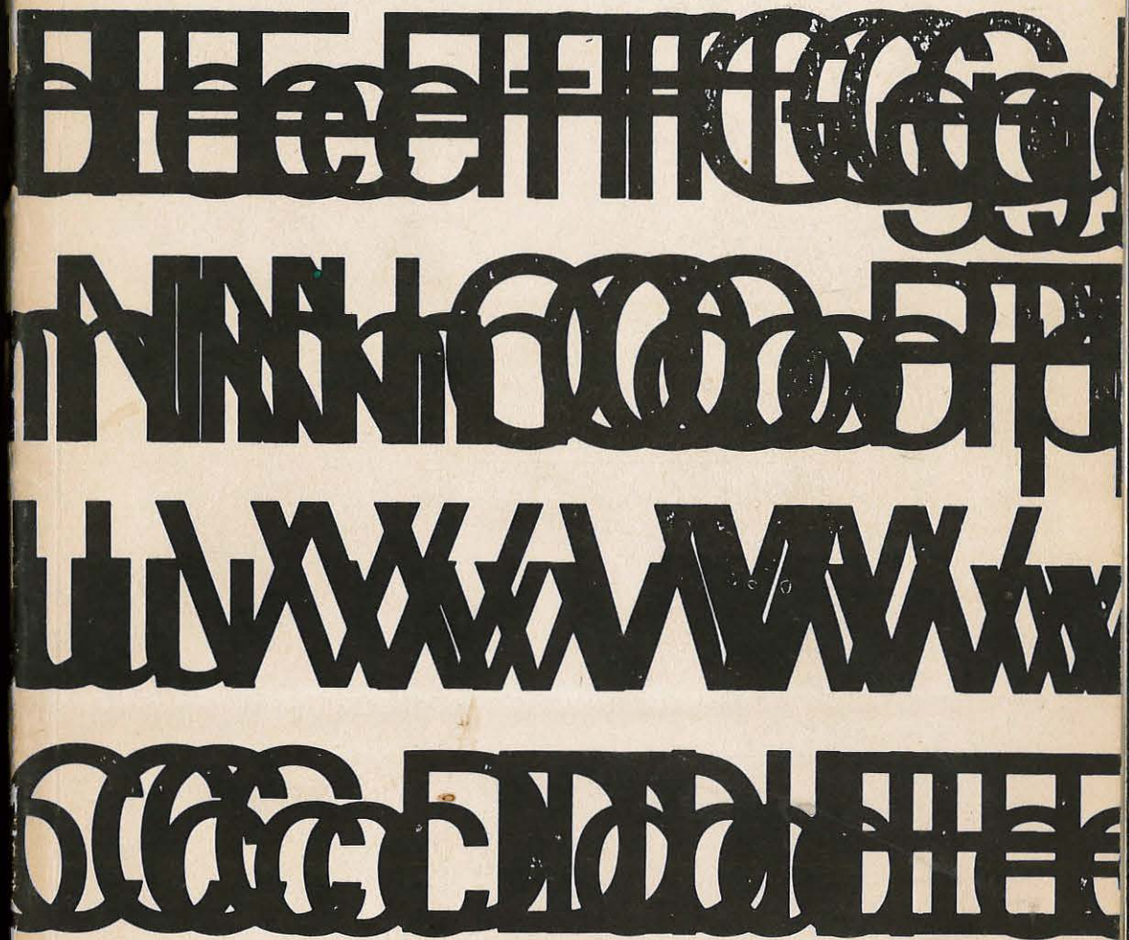

POGGENPOHL

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The Genesis of the Russian *Grazhdanskii Shrift* or Civil Type—Part I

Ivan L. Kaldor

The development and adoption of *grazhdanskii shrift* or civil type by Peter I (1689–1725) is considered as a step with social and cultural implications for the late seventeenth- and early eighteenth-century Russia that go far beyond the impact of any innovation recorded in the general history of printing—save the introduction of printing with moveable type. The paper offers a documented history of the creation of *grazhdanskii shrift*. In an attempt to identify possible models used by the designer of the new type contemporaneous engraved texts with characters of potential prefigurations are examined. Transitional types used by Western typographers in the Tsar's service are identified and analyzed with the same purpose. Finally, the actual creation of the new type—the first modern typeface used in Russia—is traced starting with the search for an episode that may have triggered the idea in Peter I at the turn of the century to the imperial *ukaz* enforcing the use of *grazhdanskii shrift* in all lay works of printing.

One would be tempted to draw an easy parallel between the creation and successful adoption of *grazhdanskii shrift* or civil type by Peter I (1689–1725) on one hand, and the changeover by Western printers from the drab *textura* of Gutenberg to the celebrated roman types of Jenson and the Aldine publications on the other. The intriguing history of the Russian *grazhdanskii shrift* and the unique role this type played within the framework of the socio-cultural reforms of the great innovator, however, would make such an analogy rather unsound, if not outright false.

Thus, the present study will consider the general historical, cultural, and ideological characteristics of the late seventeenth- and early eighteenth-century Russia as the sole backdrop against which the individual events and fragmented data of the history of Russian printing would be viewed and interpreted.

The Inadequacies of Poluustav Types

The printed Russian *poluustav*—like the German *textura*—was a close imitation of the medieval book hand. By the dawn of the eighteenth century it became evident that this archaic type was no longer fit to satisfy the needs of Peter I's dynamic publishing policy:[1] Russian and foreign typographers in the Tsar's service[2] and the Tsar himself expressed their longings for a "clean print"[3] similar to that seen in foreign books.

What was really wrong with the *poluustav* type? In his work on the history of the design of the Russian book, A. A. Sidorov offers an analysis of that type from the point of view of composition and legibility: "The cyrillic type is far too overloaded with accents . . . abbreviations [over-written signs, *titlos*]. Neither *viaz*,[4] with its solemn decorativeness, nor these over-written elements help legibility. The individual letters of the cyrillic type stop the line and do not merge into a word. . . ."[5]

Thus, the motives of the typographers were obvious: the printed *poluustav* with the abundance of diacritical signs, abbreviations, and over-written characters (Fig. 1) had been a real compositor's nightmare.

The Tsar's reason for calling for a reform of *poluustav* type was mainly ideological. He regarded printing as an important vehicle of transplantation of the spiritual wealth of the West. For Peter I books were tools which helped him to implement his dream of importing European science, technology, and arts to his own country. A man of strong practical sense, he understood that the vehicle had to be brought in concert with the message.

Beside the painful recognition of this irreconcilable clash between form and content, the old *poluustav* type had another connotation for the Tsar. It reminded him of the archaic Church-Slavonic language which, when coupled with the conservative attitude or open hostility of the Orthodox Church, proved to be one of the major obstacles to his reforms. Through the desperation of his translators who worked on the Russian versions of Western books,[6] he understood that without breaking away from the formal and intellectual heritage of the Middle Ages (i.e., from the *poluustav* type and the Church-Slavonic language) the "window to the West" would never open for his subjects.

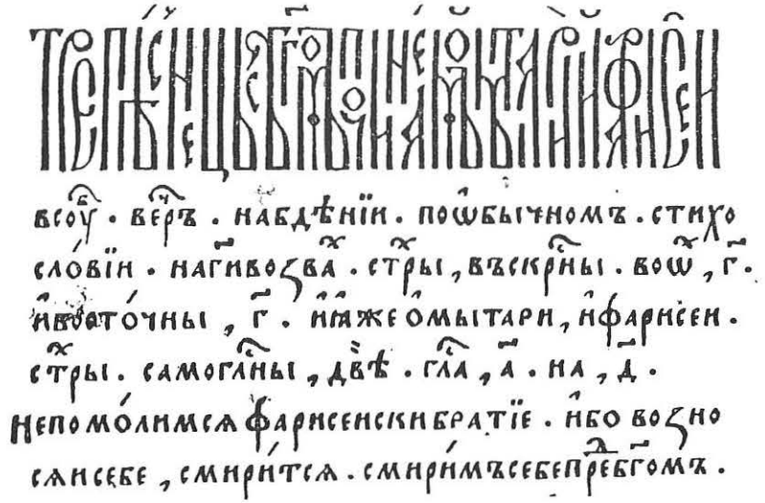


Figure 1. Fragment of a page of the undated (sixteenth-century) *Triodion* (Kar. No. 67; Und. No. 37) illustrating A. A. Sidorov's statement concerning *poluustav* type and printing.

Early Attempts to Develop a Modern Type

The scattered signs of attempts by printers and engravers to introduce modified versions of certain cyrillic characters truly reflect the frustration against which some of these craftsmen worked. Their efforts—with the exception of Slavic printers working abroad under the daily influence of roman type[7]—were not aimed at the design of actual printing types but rather at the esthetic improvement of the general appearance of engraved title pages and inscriptions on maps. Nevertheless, since the attempts seem to have foreshadowed—if not stimulated—the introduction of *grazhdanskii shrift*, some representative cases will be listed and illustrated. Also, in view of the widely differing opinions among scholars as to the real significance of these early experimentations,[8] a general theory will be developed concerning the motivations and circumstances that brought these "mixed" characters into existence.

It is not without import that one of the earliest examples of the use of modified cyrillic characters is to be found in a theatrical publication, *The Story or Act of the Evangelical Parable of the Prodigal*

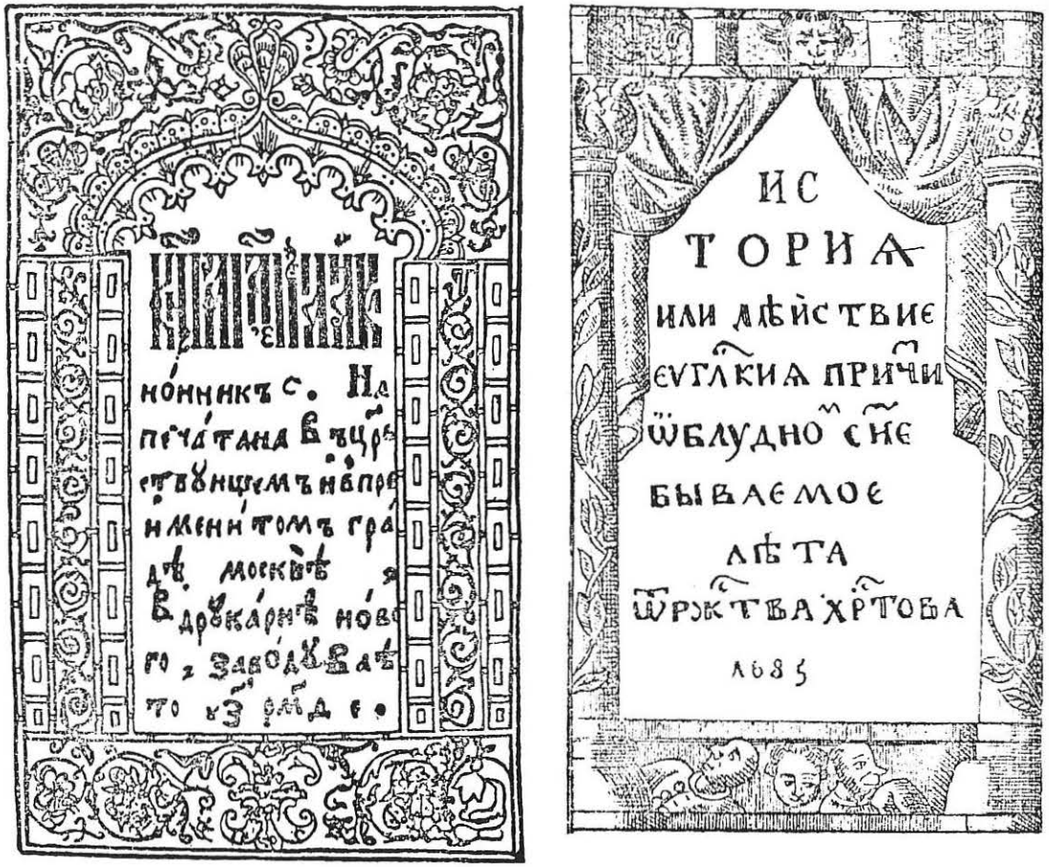


Figure 2. The title pages of (a) [left] a *Book of Canons*, published in Moscow (1641) by V. Burtsev; and of (b) *The Story or Act of the Evangelical Parable of the Prodigal Son*, published by Simeon Polotskii in 1685.

Figure 3. Fragments of Adriaan Schoonebeeck's map of the river Dvina (1701) with text containing, among others, romanized Cyrillic characters.

Son (1685) which was published by Simeon Polotskii. The title page (Fig. 2b) of this Western (Dutch)-style engraved book in A. A. Sidorov's words "forecasts the civil type of Peter I."[9] There can be no doubt in this case that the engraver's aim was to produce a close imitation of the Dutch original. While performing this task, he engraved illustrations with the characteristics of the Dutch school,[10] preserved the arabic numerals in the date on the title page and also in the pagination, and *modified* certain characters of the cyrillic *poluustav* in order to bring the layout of his title page nearer to the original. The resulting title page is in sharp contrast to that of any publication printed with the traditional *poluustav* type (cf., Figs. 2a and 2b).

In 1701 Adriaan Schoonebeeck (1661–1714),[11] a Dutch engraver in the Tsar's service, issued a map of the river Dvina. The text of the map seems to reflect an attempt by the foreign master to interpret Slavic characters in terms of roman type. This led certain

authors[12] to the conclusion that in fact Schoonebeeck's modified characters could be considered as the source of Peter I's civil type. A more careful analysis of the text (Fig. 3) of the map indicates that besides the elements of the so-called "Russian antiqua" or "Amsterdam antiqua" there are also present some Greek, Latin, Russian *poluustav*, and other transitional characters. This mixed evidence, however, does not justify Shitsgal's view[13] which completely rejects the possibility that the attractive letters on the map which had been made on the Tsar's order could have influenced Peter I in his selection of certain basic lines for the *grazhdanskii shrift*.

P. N. Polevoi and later S. F. Librovich[14] referred to a copper engraving of three cyrillic alphabets by the Dutch engraver Peter Pickaerdt or Pickart (1668/69–1732). Both authors considered the third set of characters on the undated and unsigned engraving (Fig. 4) to be the one created by Peter I.

A comparison between the set in question and the specimens of *grazhdanskii shrift* approved by the Tsar indicates that there is indeed a close resemblance between the two alphabets (ѣ, ь, б, я, А). The sharp differences between the forms of certain other characters (к, л, ф, ц, щ) and the absence of two dots above the letter I in Pickaerdt's specimen,[15] however, support the assumption that the third set was not the prototype for the *grazhdanskii shrift*. Moreover, a similar comparison between the characters of the third set and the corresponding characters either of the 1708 version of *grazhdanskii shrift* or Efremov's characters[16] would probably lead to the same results. Thus, Pickaerdt's alphabet can be considered only as one of the many interpretations of the new civil type still under development.

There are many other instances of astonishing similarity between engraved characters and the types approved by Peter I for his *grazhdanskii shrift*.[17] However, the cited cases seem to supply adequate evidence for some conclusions concerning the possible impact of earlier attempts on the design of Peter I's new civil type:

a. The phenomena of modified *poluustav* in late seventeenth-century Russian publications may be considered as unsystematic prefigurations. There is no sign of conscious effort on the part of any late seventeenth- or early eighteenth-century printer or

Figure 4. Three sets of Cyrillic characters on an engraved plate in the Moscow Historical Museum. The first set is that of *poluustav* characters, the second set represents a transitional type between *poluustav* and civil type, and the third is considered by certain authors as the prototype of Peter I's *grazhdanskii shrift*. The controversial engraving belongs to the Dashkov collection of the Moscow Historical Museum.

engraver—foreign or Russian—to modify that type as a whole;

b. In the case of Russian engravers, the similarity between their individual modified characters and civil type can be explained by the possible common source of both of those—the roman type (or Dutch antiqua) and the Russian civil hand. The reason for the alterations was an attempt rather to produce the closest possible imitations of the foreign original than to create a new and complete set of characters;

c. The foreign engraver or printer in the Tsar's service as a rule was lacking in adequate knowledge of the Russian language. He relied on the help of non-printer Russians or persons of Slavic origin residing in his country.[18] In more or less complete isolation—a significant part of early Russian printing was done in Amsterdam—he inevitably tended to interpret certain cyrillic characters in terms of the then popular roman type (Fig. 5).

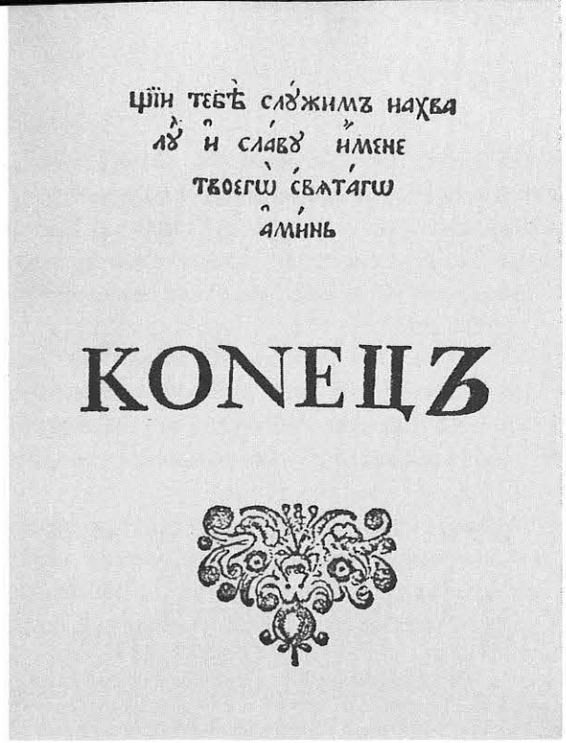


Figure 5. Fragment of the last page of the Russian translation of Leo III's *Tactics*, published in Amsterdam (1700) by Jan Thesing. The word (The End), all in capitals, clearly shows the influence of roman type. For full description of the work see Und. No. 1274 or Pek. II, No. 23.

Figure 6. Peter I.

In the final analysis, the appearance alone of a printed *poluustav* page should have encouraged a skilled printer with some artistic inclination to try to bring that medieval type up to date. However, neither Russian printers in Moscow nor their Dutch colleagues in Amsterdam or Moscow displayed any conscious effort towards that goal. Thus *the design of printing types remained stagnant for almost a century and a half.* One could put the blame for this on the direct or indirect control over Russian typographical activities by the Orthodox Church which resisted any change in its publications—the only products of the early Russian press—or, on the extremely weak technological background with which Fedorov[19] and his successors had to cope. However, the overwhelming fact that early Russian printing just did not produce any innovators of the caliber of Jenson, Manutius, or Granjon is quite apparent.

Peter I and His Grazhdanskii Shrift

Although a vague search for alternatives to the archaic *poluustav* type started long before, it took the keen spirit of the robust reformer to sense the importance of the change and it was his "extraordinary gift of manipulating men and things"[20] that helped him to break away from the old and to pursue the new.

Just exactly what triggered Peter I's interest in this matter is not known. There are plausible indications that he may have been impressed by the easily legible romanized inscriptions of the triumphal arch raised by the Muscovites in 1703, on the occasion of the Tsar's victories in the Northern War.[21] It is also possible that he may have been influenced by the clarity of the text on Schoonebeeck's map of the Dvina (cf., above) or by the beauty of the Latin text in his favorite bilingual Aesopus volume.[22] Whether it was his frustration over seeing the clash between form and content in his cherished project, the *Vedomosti o voennykh i inykh delakh* (the first Russian newspaper), or rather a suggestion about 1705 by "the merchant man Vasilii Kipriianov" to whom he granted the privilege "to print books which are necessary in schools for the students and are useful for the citizens . . . with cleanest composition print as in foreign books. . . ."[23] that started the set of reactions can only be a matter of conjecture.

Peter I undertook the task of reforming the Russian printing type

in Zholkva[24] in the midst of feverish work on the general plan of war against the Swedes. The brief, to-the-point references in his correspondence make the period of the creation of the *grazhdanskii shrift* one of the best-documented episodes of the general history of printing. There is, however, a flaw, a missing link in the chain of documented events: the author of the conceptual design, the first tentative sketches, has not been identified.

The question inevitably arises: was Peter I himself the creator of the basic conceptual design for *grazhdanskii shrift*? A record of his deep involvements in the implementation of each of his reforms—be it ship building, court manners, or heraldics—supports this hypothesis. An earlier attempt by the Tsar to try his hand at the art of engraving[25] suggests the same. However, the artistic and typographical consistency in the design of certain groups of characters (e.g., б ъ ьы ѣ) alone raises questions about the validity of this theory. The peculiar treatment of certain typically Slavic letters[26] could even suggest the influence or direct participation of one of the Dutch printers working for the Tsar in Amsterdam. Thus, Peter I could be credited with the overall concept of a new "clean" type but the detailed execution of the concept, the drawing of the first sketches, could hardly be attributed to him. This opinion is now shared by some Soviet scholars who recently expressed their doubts in Peter I's authorship. They did so without reference to any supporting evidence.[27]

The documented history of *grazhdanskii shrift* begins at Menshikov's headquarters in Zholkva where, about the end of 1706, a certain Kühlenbach (or Kiulenbakh), a military draftsman or engineer by profession, was given the assignment to perfect the preliminary sketches and develop the final design of the new type.[28]

By the end of January, 1707, the draftsman completed the final design. It included all lower-case characters but only four capitals (А, Д, Е, Т)—32 letters in all.[29]

Peter I's earlier efforts to hire Dutch type-cutters and founders to prepare the punches and matrices in Moscow failed.[30] So he decided to send the designs to Amsterdam. In his letter of January

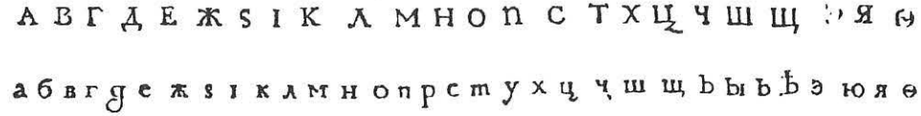


Figure 7. Facsimile reproduction of specimens of types made by Mikhail Efremov at the Moscow Printing Court. The specimen sheet was first published by N. Grigorovich in 1877. Out of the reported 57 characters, only 56 are shown and one of them is imperfect (З).

29, 1707, he asked Christopher Brant—an Amsterdam businessman and official purchasing and recruiting agent of the Russian government—to have the missing capitals designed, and punches and matrices made for all three sizes of capital and lower-case letters. Peter I also asked the agent to have fonts cast and "The Lord's Prayer or something else short" printed in three sizes and the proofs sent to Zholkva.[31]

Hardly three months had passed from the dispatch of the Tsar's order to Amsterdam when the restless spirit of the reformer made him act again. Just before his departure from Zholkva, the Tsar decided to give the Moscow printers a try with the new type. At the end of April, 1707, he sent by I. A. Musin-Pushkin a copy of the new type design to the Moscow Printing Court[32] where, by an order dated May 18, 1707, Mikhail Efremov and his two companions undertook the preparation of punches and matrices. N. Grigorovich reports on a petition by Mikhail Efremov in which the work on the new type had been described as follows: "Sire, in the past year of 707 [*sic*] in May on the 18th day, by your Great Ruler's order, and by the order of boyard Ivan Alekseevich Musin-Pushkin, at the printing court, I made punches and matrices, following the manuscript sample which you had sent from the military campaign in the year 1707, in May on the 18th day, and those punches and matrices, because of the haste, were made by three of us. For the medium-size types, 57 in number, we also punched the matrices in tin and made a sample font . . ."[33] (cf., Fig. 7).

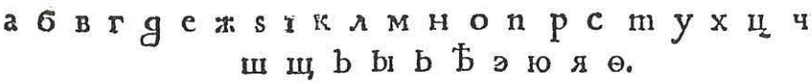


Figure 8. Specimens of medium-size characters (lower-case) prepared by Dutch craftsmen in Amsterdam (1707).

While printers were busy preparing the new type in Amsterdam and Moscow, the Tsar must have been giving some thought to the problem of adoption of *grazhdanskii shrift* in general use. He decided that the best place to start with the innovation and reform was the school. His next step was a logical one: the preparation of the manuscript for a new primer. In his letter to Musin-Pushkin[34] the Tsar explained that the side-by-side presentation of the old Church-Slavonic and the new civil types would make it easier to recognize the new characters and to get accustomed to them. He ordered Musin-Pushkin to have new primers printed on the basis of the manuscript and sold to children. He also emphasized that no other books should be printed at that time with the new type. Thus the Printing Court began working on a second version of the civil type.[35]

On May 6 (17), 1707,[36] Christopher Brant forwarded to the Tsar specimens of the medium-size type made by Amsterdam craftsmen (Fig. 8). Peter I received the letter in Lublin after great delay. On June 18 he dispatched the specimens to Musin-Pushkin with the bitter remark ". . . you were hoping to make such [types] in Moscow but I suppose that will not happen. . . ."[37]

We learn from Mikhail Efremov's above-quoted petition that ". . . after that manuscript specimen another specimen was sent from the military campaign, [the latter] having been printed in Amsterdam—and that specimen proved to be different from the first manuscript [design] and from our newly created [characters]. And those 57 matrices and punches, I, your slave, again remade alone following the dispatched printed specimen. . . ."[38]

Figure 9. Specimen sheet of *grazhdanskii shrift* submitted by Mikhail Efremov in support of his petition on January, 1708. The sheet, which contains Efremov's handwriting, was first published by N. Gregorovich.

A final count—based on the above evidence—will show that the Moscow Printing Court prepared 57 medium-size types (among them one defective Э hardly shows on the specimen sheet and another character is completely missing). Large size types were made only in lower-case version and they were of the design sent by the Tsar for the new primer (Figs. 7 and 9).

This poor showing by Efremov and his companions was a clear setback for Peter I's plan of having lay books printed in Moscow by Russian printers with the "newly invented" type made by Russian craftsmen. Though disappointed, he accepted the challenge and acted accordingly. Knowing that a party of Dutch printers contracted for work and for training of Russian type-cutters and founders had left Amsterdam for Arkhangel'sk, together with 144 pounds of large, 214 pounds of medium, and 233 of small fonts of *grazhdanskii shrift* and with other printing equipment,[39] the Tsar decided to suspend work on the new type at the Moscow Printing Court and to wait for the arrival of the esthetically and technically better executed Amsterdam fonts.

By the end of 1707 three skilled Dutch printers (one compositor, one pressman, and one type-founder) and the long awaited Amsterdam fonts (Figs. 8 and 10) were in Moscow. The year-long preparations for the printing of the first Russian book with *grazhdanskii shrift* reached a climax. In his *ukaz* dated January 1, 1708, the Tsar ordered the book *Geometria* to be printed by the Dutch printers and with all three sizes of the imported type. Fedor Polikarpovich Polikarpov-Orlov, the manager of the Moscow Printing Court, was made responsible for the operation.[40] An entry dated February 29, 1708, and signed by I. A. Musin-Pushkin in the log book of the Printing Court essentially repeated the same instruction.[41]

Since the printing of *Geometria* with the new civil type symbolizes the advent of a new era in Russian cultural history, it seems proper to offer a fairly detailed description of the work and to deal briefly with the history of its making.

Geometria slavenski zemlemerie is the shorter title of the Russian version of A. E. Burkhad von Pürkenstein's anonymously published book *Ertz-Hertzogliche Handgriffe des Zirkels und Lineals oder Ausserwählter Anfang zu denen mathematischen Wissenschaften* (Augsburg,

Figure 10. Specimens of the original large and small size characters (lower-case) prepared for Peter I by Dutch craftsmen in Amsterdam (1707).

1690).[42] The Russian rendering of the original was done by Ia. V. Brius and was completed in June, 1707. The manuscript of the translation which was subsequently forwarded to the printers from the military campaign against the Swedes contains several corrections in Peter I's handwriting.[43]

Two hundred copies of *Geometria* were printed in quarto between February 17 and March 17, 1708.[44] A new edition was published in the same year, and a third edition in octavo came out in February, 1709.

A table of contents and an alphabetical subject index were added to the Russian version of the book. The frontispiece is a copper-engraving by K. T. Amling of Munich presenting the scene of Joseph I's ascension to the Hungarian throne. The relatively simple title page (Fig. 11) is dominated by a central axis. Types of various sizes of the same font are used to emphasize the title of the book and the Tsar's name.

The text proper shows a balanced use of the three sizes of characters of the Amsterdam font.

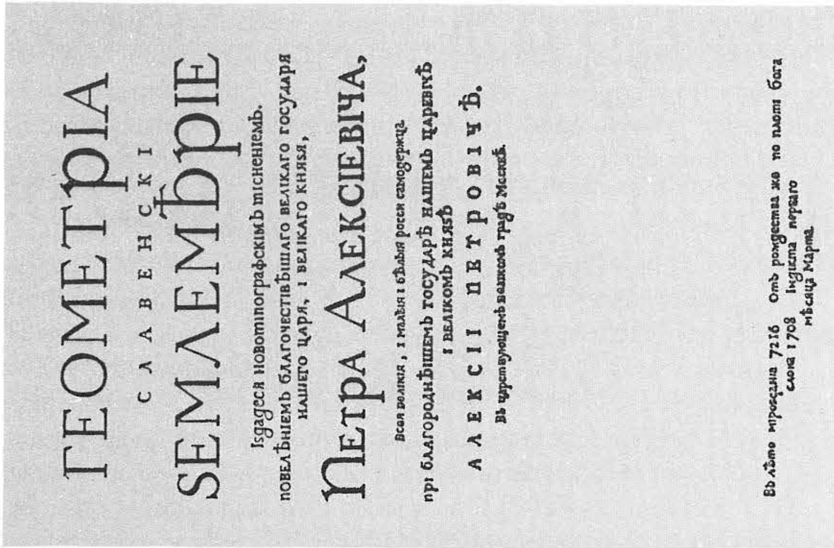


Figure 11. Facsimile reproduction of the title page of *Geometria slavenski zemlemerie*, the first Russian book printed with Peter I's *grazhdanskii shrift* or civil type (1708).

Figure 12. Page from the 1708 edition of *Geometria slavenski zemlemerie* published in Moscow.

Geometria contains 122 full-page illustrations engraved in copper and several woodcut ornaments. The plates were probably ordered from Germany in a restricted number. This, together with the possibility of losses and wear, might account for the existence of several known copies without frontispiece and illustrations.[45] In the German original the numbering of the plates corresponds to that of the pages with the relevant text.

This results in peculiar gaps in the sequence of numbers (e.g., 8–21, 23, 25, 29, 32–53, etc.).[46] The Russian edition preserved the plate numbers of the original.

For the new editions of *Geometria* Peter I ordered that the illustrations be remade[47] and printed on the text pages. This was only partially completed in the second edition. The third edition (1709) has most of the illustrative matter printed with the text and supplied with captions. The engravings for this book in octavo were made by Peter Pickaerdt.[48]

There are certain variations in the title and text of the three known and reported editions of *Geometria*. Furthermore, the text of the second edition—on Peter I's order—was supplied with signs indicating accents.[49] These were partly omitted in the third edition which at the same time includes some exercises by Ia. V. Brius[50] and three articles on sun dials probably by the Tsar himself.[51]

Finally, the following is a brief summary of bibliographical data related to the first Russian book printed with Peter I's *grazhdanskii shrift*:

The copper-engraved frontispiece, title page, and bastard-title page are followed by 4 unnumbered, 3–233 numbered, and 10 unnumbered pages. There are 122 copper-engraved illustrative plates placed after the text. Page 233 and the last page are decorated with woodcut ornaments of identical design (Fig. 13).

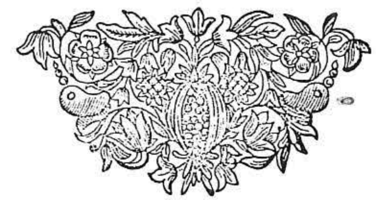


Figure 13. Woodcut ornament used at the Moscow Printing Court during the period 1708–1724 and applied, among others, in the printing of *Geometria slavenski zemlemerie* (1708).

The size of a printed page is 142/144 by 113 and the format of the book is 4to. There are three sizes of type used in *Geometria*. When translated into Fournier-Didot points they are approximately 36 points (large), 12 points (medium) and 10 points (small), respectively.

The types used for printing *Geometria* were far from being the final ones. As early as April 19, 1708, Peter I ordered Kühlenbach to prepare the design of certain additional characters previously omitted from the set.[52] In a second letter of May 27, 1708, there are references to a number of characters for which types had been designed previously in Zholkva but the Tsar apparently decided to alter the original design.[53]

By July, 1708, Kühlenbach completed the work on the additional and modified types. Copies of the designs were sent to the Moscow Printing Court (July 27, 1708)[54] and to Peter I's agent in Amsterdam (August 2, 1708).[55]

While the additional and modified types were being cut in Moscow and Amsterdam, the Tsar concentrated his attention on the improvement of the basic font of the Amsterdam type. On May 8, 1708, he decided to introduce in print signs indicating accent;[56] on the same day he ordered the use of two dots above the letter I ("Izhe");[57] and later, on January 25, 1709, he changed his mind and banned the use of signs denoting accents.[58]

Although Peter I ordered the Moscow Printing Court and his Amsterdam agent to prepare additional and modified types in all three sizes, an analysis of a contempory *Primer* (1710)[59] and of several books printed during the period 1708–1725 led Shitsgal to the conclusion that the Moscow Printing Court prepared only two sizes of those characters, i.e., medium-size capitals and lower-case letters, and small-size types in lower-case version alone.[60] These types included 21 medium-size (9 additional, 9 revised characters, and "Ot," "Omega," "Ius") and 17 small-size types.

As far as the Amsterdam order was concerned, all the nine

additional (ѕ́ и ѵ ф є́ ѧ ѫ ѱ ѵ)

and nine modified (б п ҏ ц щ ъ ы ь ѣ)

types were prepared in three sizes but only in lower-case

Figure 14. Additional and modified types made for Peter I by Amsterdam printers in 1708–1709.

version (Fig. 14). They arrived in Russia on September 4, 1709.[61]

The first specimens of the new additional and modified types prepared by Moscow printers were presented to the Tsar in October, 1708, in Smolensk. After having scrutinized them, he ordered Musin-Pushkin to have a complete set of characters printed out for him with the Moscow-made types whenever possible.[62] This order opened a period of hard work on the new type lasting for a year. There are at least four documented instances of the Tsar's painstaking search for improvements in his *grazhdanskii shrift*.[63] A series of misunderstandings between him and Polikarpov of the Moscow Printing Court, the continuous changes in the location of his headquarters, and the resulting delay in the delivery of mail made the execution of these improvements extremely difficult.[64]

On September 10, 1709, after having learned from Brant's letter that the additional Amsterdam types had been forwarded to Russia, the Tsar instructed Musin-Pushkin to have another

complete set of characters, including the newly made Amsterdam types, printed out and sent to him.[65]

Finally, on January 18, 1710, Peter visited the Moscow Printing Court and gave his blessing to the proof of an alphabet. This alphabet (Fig. 15 [1–5]) was then corrected by him and certain archaic types were deleted. Under the date January 29, 1710, the following instruction was written by the Tsar's hand on the cover of the folder containing the samples: "Historical and manufacturing books to be printed with these types. And those which are crossed out are not to be used [in] the above described books."[66] A facsimile reproduction of Peter I's note is to be found in Figure 16.

This brief note ended a three-years struggle for the creation of a new, modern Russian type. It also opened the road to the development of the language of Pushkin, Turgenev, and Chekhov. And, above all, it opened the "window to the West" to the subjects of a great Tsar.

NOTE: Part II of the paper will deal with the typographical analysis of *grazhdanskii shrift*. It will also represent an attempt to delineate Peter I's actual contribution to the innovation. One of the salient features of Part II will be the proposal of a hypothesis concerning a possible Western roman model used by the designer of *grazhdanskii shrift*.

Figure 15 (1–5). The following five pages show a booklet containing the final version of *grazhdanskii shrift* corrected and approved by Peter I in his own hand on January 29, 1710. The original booklet is in the Central State Historical Archives in Leningrad.

З З з з з земля И И и и и иже

Ї Ї ї ї ї ı ı ı ı

К К к к к к к к како

Л Л л л л л л люди

М М м м м м м мыслете

Н Н н н н н н нашъ

О О о о о о онъ

П П п п п п п п покой

Р Р р р р р р р рцы

С С с с с с с с слово

Т Т т т т т т т твердо

Ѹ ȣ ȣ ȣ ȣ ȣ икъ

У У у у у у у у

Ф Ф ф ф ф ф фертъ

Х Х х х х х х х херъ

Ѿ Ѿ ѿ ѿ omb

Ц Ц ц ц ц ц ц цы

Ч Ч ч ч ч ч ч ч червь

Ш Ш Ш Ш ш ш ш ш — ша

Щ Щ Щ Щ щ щ щ щ — ща

Ъ Ъ Ъ Ъ ъ ъ ъ ъ — єръ

Ы Ы Ы Ы ы ы ы ы — єры

Ь Ь Ь Ь ь ь ь ь — єрь

Ѣ Ѣ Ѣ Ѣ ѣ ѣ ѣ ѣ — ѧ́ть

Э Э Э Э э э э э

Ю Ю Ю Ю ю ю ю ю

Ѿ ѿ ѿ ѿ о

Ѧ Я Ѧ Ѧ ѧ я ѧ ѧ

Ѯ Ѯ Ѯ Ѯ ѯ ѯ ѯ — кси

Ѱ Ѱ Ѱ Ѱ ѱ ѱ ѱ ѱ — пси

Ѳ Ѳ Ѳ Ѳ Ѳ ѳ ѳ ѳ ѳ — фита

Ѵ Ѵ Ѵ ѵ ѵ ѵ — ижица

Сло́зи двописме́ннїи, ѿ согла́сныхъ начина́емїи

Ба ва га да жа ѕа за ка ла ма на па
ра са та фа ха ца ча ша ща.
бе ве ге де же ѕе зе ке ле ме не пе
ре се те фе хе це че ше ще.
бі ві гі ді жі ѕі зі кі лі мі ні пі рі сі ті
фі хі ці чі ші щі ксі псі.

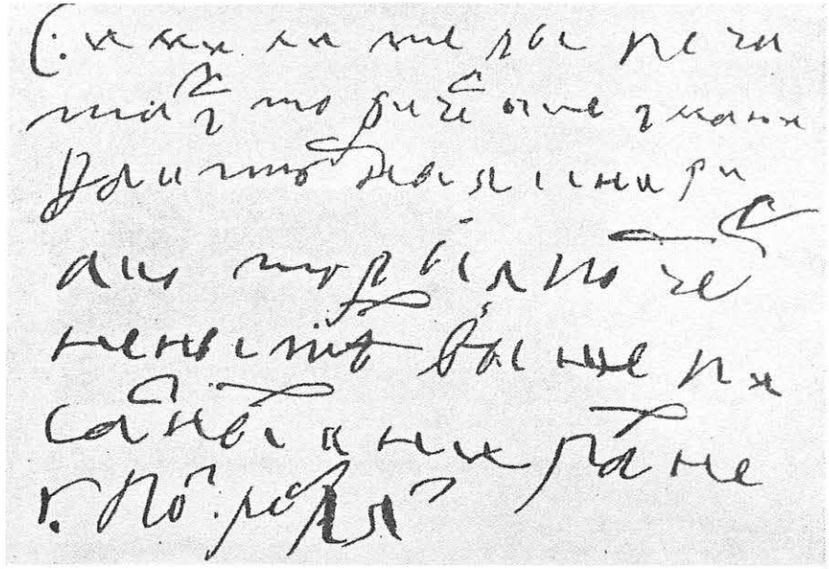
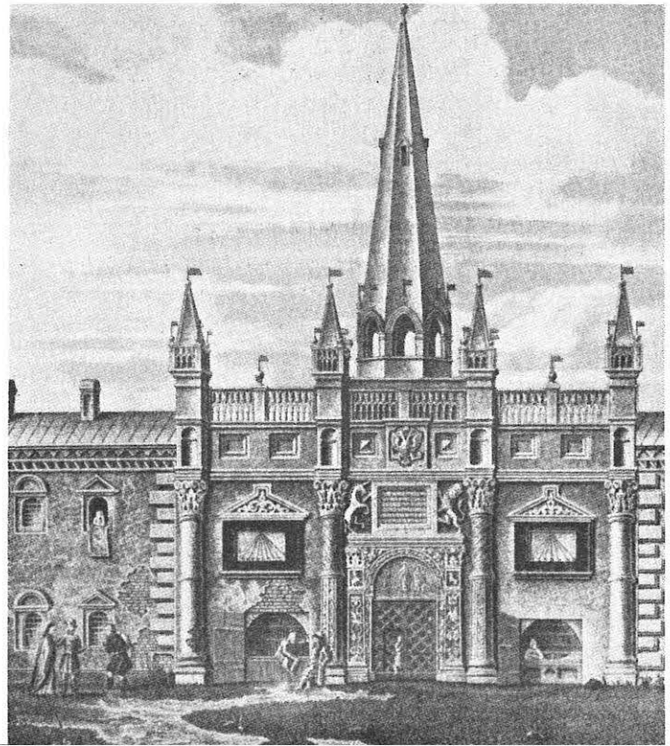


Figure 16. Peter I's handwritten note on the folder of a booklet containing the final version of *grazhdanskii shrift* corrected and approved by him (January 29, 1710).

Figure 17. The Moscow Printing Court in the mid-seventeenth century; an artist's reconstruction by V. E. Rumiantsev.



1. Leningrad. Publichnaia Biblioteka imeni M. E. Saltykova-Shchedrina, *Opisanie izdanii napechatannykh pri Petre I. Svodnyi katalog . . .*, Vol. I: *Opisanie izdanii grazhdanskoi pechati 1708– ianvar' 1725 g.* (Moskva: Izd-vo Akademii nauk SSSR, 1955); Vol. II: *Opisanie izdanii napechatannykh kirillitsei 1689–ianvar' 1725 g.* (Moskva: Izd-vo Akademii nauk SSSR, 1958).

The twin volumes of the above *Description of Editions Printed under Peter I* added a considerable number of titles to those reported by I. I. Golikov (1789) and P. P. Pekarskii (1862). On the basis of these listings the number of known and described editions published during Peter I's reign reaches the remarkable figure of 837.

2. The Tsar heavily relied on the services of Amsterdam printing houses. Through his agents in the Netherlands he recruited Dutch typographers and contracted them for the training of Russian type-cutters and founders.

3. M. M. Bogoslavskii, *Petr I—materialy dlia biografii* (Moskva: Ogiz Gospolitizdat, 1948), IV, 291–295; also:

A. V. Borodin, "Moskovskaia tipografiia i bibliotekari Kipriianovy," *Akademiia nauk SSSR. Institut knigi, dokumenty, pis'ma. Trudy*, V (1936), 59–60. The relevant part of the text of Peter I's order reads: ". . . takovye knigi v shkolakh uchashchimsia potrebnye i vsemu grazhdanstvu poleznye . . . pechatat' . . . nabornym tisneniem samym chistym kak v inozemnykh knigakh . . ." (Dated: May 30, 1705).

4. A combination of abbreviations—mainly of ligatures and pseudo-ligatures—and decorative writing. Shchepkin, in the German translation of his definitive study called it "Ligaturschrift," i.e., ligature writing. Kaldor, in his *Slavic Paleography and Early Russian Printing* (unpublished doctoral dissertation; University of Chicago, 1967) introduced the term "interlaced writing". Early Slavic printers as a rule followed the MS traditions and added the black band of viaz' to the initial pages of their chapters.

5. A. A. Sidorov, *Istoriia oformleniia russkoi knigi* (Moskva: Gizlegprom, 1946), p. 132.

6. V. Ia. Adariukov (ed.), *Kniga v Rossii*, Vol. I: *Russkaia kniga ot nachala pis'mennosti do 1800 goda* (Moskva: Gosudarstvennoe izd-vo, 1924) pp. 147–153; and

P. N. Berkov, "Russkaia kniga grazhdanskoi pechati pervoi chetverti XVIII veka," in: Leningrad. Gosudarstvennaia Publichnaia Biblioteka imeni M. E. Saltykova-Shchedrina, *op. cit.*, I, 36–39.

7. As far as Slavic printing abroad is concerned, the strong influence of roman type demonstrated itself much earlier. The signs of borrowings from roman type naturally are most accented in Slavic books printed in sixteenth- and seventeenth-century Rome, Venice, and in the Balkans. P. N. Berkov reports that he found in the *Pravoslavnogo ispovedaniia very* (Rome, 1648) marginal notes printed with modified cyrillic type similar to that used by Kopievskii and Thesing in Amsterdam and later in Moscow.

The title page of F. Skorina's *Bibliia ruska* (Prague: 1517–1519) has several characters which are direct borrowings from the contemporaneous roman type and others which are cyrillic characters modified under the influence of roman type. The same is valid, to a certain extent, for books printed by Fiol in Krakow (1491).

8. V. Ia. Adariukov in his study on Russian books of the eighteenth-century lay

press (*op. cit.*, pp. 140–141) writes: "None of our researchers have yet noticed that the civil type appeared as early as in 1701 though it was not printed but engraved; but its mere appearance indicates that it was, so to say, 'invented' already in the year 1701. Thus, on the map of the river Dvina. . . ."

Sidorov pays equal attention to engraved characters in early Russian maps and title pages as possible sources of a new, modified *poluustav* type (*op. cit.*, p. 132).

A. Shitsgal, in his *Russkii grazhdanskii shrift 1708–1958* (Moskva: Gosudarstvennoe izd-vo "Iskusstvo," 1959) p. 403, n.1, rejects this theory.

9. A. A. Sidorov, *op. cit.*, p. 114.

It should be noted here that there is another work by Simeon Polotskii, *Istoria ili povest' o Varlaame i Ioasafe* (Moskva: 1681) with a copper-engraved title page designed by Simon Ushakov. The letters in the word "ІСТОРІЯ" on the title page bear strong resemblance to the characters of Peter I's civil type (Und. No. 977; Kar. II. No. 881; Zer. No. 360).

10. E. Gollerbakh, *Istoriia graviury i litografii v Rossii* (Moskva: Gosudarstvennoe izd-vo, 1923), p. 31.

11. Different sources give variants of spelling of the engraver's name and there are significant differences in his dates. His name is spelled Shkhonebek, Shanubek, Skhonebek, Schoonebeck and Schoonebeeck. The date of his birth varies from 1650 (*Bryan's Dictionary of Painters and Engravers*) to 1661 (cf., D. Rovinskii's *Russkie gravery i ikh proizvedeniia*).

The present paper follows the spelling of the engravers' name as given in U. Thieme (ed.), *Allgemeines Lexikon der bildenden Künstler von der Antike bis zur Gegenwart* (Leipzig: Engelmann, 1907–1950).

The same source gives his dates as 1657 (or 1658) and 1705. Since there are several known works by the engraver which date from the period 1705–1710 (among others two large-size engravings depicting the 1706 Poltava battle) for the date of his birth the year given by Rovinskii, i.e., 1661, will be used and for the date of his death 1714, as given in Nagler's *Künstler Lexikon.*

12. V. Ia. Adariukov, *op. cit.*, p. 140.

13. A. Shitsgal, *op. cit.*, p. 94.

14. P. N. Polevoi, *Istoriia russkoi slovesnosti s drevneishikh vremen do nashikh dnei* (Sanktpeterburg: A. Marks, 1900), I, 373.

S. F. Librovich, *Istoriia knigi v Rossii* (Moskva, n.p., 1914), II, p. 96.

15. Peter I ordered the use of two dots above the letter "I" (described by the Tsar as "Izhe") in publications printed with *grazhdanskii shrift* in his letter to Musin-Pushkin of May 8, 1708. Cf., *Pis'ma i bumagi imperatora Petra Velikogo*, VII, Pt. 1, 159.

16. i.e., Mikhail Efremov of the Moscow Printing Court.

17. For further examples of engraved characters which show strong similarity to the letters of the *grazhdanskii shrift*, the reader is referred to Shitsgal's above cited work and also to *Graficheskaia osnova russkogo grazhdanskogo shrifta* (Moskva: Gizlegprom, 1947), by the same author.

18. The case of Jan Thesing is a good illustration for this statement. Thesing, a Dutch businessman from Amsterdam, was given the exclusive right to print Russian lay books and maps for the Tsar. Not having adequate knowledge of the Russian language required for the job of translating and editing Russian versions of western books, Thesing hired Il'ia Fedorovich Kopievskii (alias

Kopievich or de hasta Hastenius), an Ukrainian from Poland or a White Russian living in Amsterdam, to act as his associate and to take care of that part of the business. Cf., M. M. Bogoslavskii, *op. cit.*, pp. 294–300.

19. Ivan Fedorov, the first known Moscow printer.

20. K. Waliszewski, *Peter the Great* (London: Heinemann, 1898), p. 147.

21. P. P. Pekarskii, *Nauka i literatura v Rossii pri Petre Velikom*, Vol. II: (Sanktpeterburg: Tip. Tovarishchestva "Obshchestvennaia Pol'za," 1862), p. 75, and A. Shitsgal, *Russkii . . .*, p. 255.

22. The bilingual (Latin-Russian) Aesopus volume which was often quoted by Peter I was based on a contemporaneous Dutch school text, *Fabulae Aesopi graece et latine nunc denuo selectae . . .* (Amsterdam: n.p., 1672). The Russian translation was Kopievskii's work. For full descriptions of the first edition of the work the reader is referred to Und. No. 1277; Kar. No. 1157; Pek. Vol. II, No. 28 and Opis. II, Suppl. I, No. 12.

23. Cf., A. V. Borodin, *loc. cit.*

24. Small town near L'vov, now called Nesterov.

25. D. Rovinskii included the Tsar's name in his list of Russian engravers (*op. cit.*, p. 261) on the basis of an allegoric scene engraved by Peter I in Amsterdam (1698) under the supervision of Adriaan Schoonebeeck. Copies of the engraving are to be found in the Amsterdam Museum (D. Rovinskii, *loc. cit.*) and in the Museum of Peter the Great of the Academy of Sciences of the USSR (cf., V. Ia. Adariukov, *op. cit.*, p. 164).

26. The reader is referred here to the second part of this paper where, within the framework of a type-by-type analysis of the civil type, this aspect of Peter's innovation will be discussed in detail.

27. P. N. Berkov, *op. cit.*, II, 24: "It is possible that the idea of the creation of an antiqua-type Russian alphabet really belonged to Peter, but it is difficult to surmise that he drew the 'specimens'."

28. *Pis'ma i bumagi imperatora Petra Velikogo* (Moskva: Pervaia gosudarstvennaia tipografiia, 1918), VII/I, 187.

29. See, *loc. cit.*, V, 33–55.

30. See, *loc. cit.*, V, 416–418.

31. *Pis'ma i bumagi . . .*, V, 53–55.

32. See, *loc. cit.*, V, 675; and

N. Grigorovich, "Azbuka s ispravleniiami imperatora Petra Velikogo i ukazom ego o vvedenii v upotreblenie grazhdanskogo shrifta," *Obshchestvo Liubitelei Drevnei Russkoi Pis'mennosti*, Publication No. 78, Supplement to Article 8 (Sanktpeterburg: OLDP, 1877), pp. 5–6.

33. N. Grigorovich, *op. cit.*, pp. 5–7.

34. Dated May 23, 1707; cf., *Pis'ma i bumagi . . .*, V, 271.

35. The original MS is to be found in Moscow, at the Central State Archives of Ancient Documents (Tsentral'nyi Gosudarstvennyi Arkhiv Drevnikh Aktov) among the papers of the Moscow Synodal Printing Shop, No. 1182/2, XLVI, 70 and verso. See A. Shitsgal, *op. cit.*, p. 258.

36. See his letter in *Pis'ma i bumagi . . .*, V, 414.

37. *Ibid.*, V, 313.

38. See *supra*, n. 1.

39. See *Pis'ma i bumagi . . .*, V, 416–417.

40. See P. Stroev, *Opisanie staropechatnykh knig slavianskikh* (Moskva: n.p., 1841).

41. The text of Musin-Pushkin's order is in Moscow, at the Central State Archives of Ancient Documents (Tsentral'nyi Gosudarstvennyi Arkhiv Drevnikh Aktov) among the papers of the Moscow Synodal Printing Shop, No. 1182/2, XLVII, 22. See A. Shitsgal, *op. cit.*,p. 259.
42. See T. Georgi, *Europaisches Bücherlexicon* (Leipzig: n.p., 1742), II, 206; III, 256; IV, 346.
43. The MS of the Russian translation of *Geometria* with Peter I's corrections is in Moscow, in the Central State Archives of Ancient Documents.
44. See *Pis'ma i bumagi . . .*, VII/2, 731.
45. The plates and frontispiece are missing in the copies of the first edition at the Lenin Library and at the Saltykov-Shchedrin State Public Library in Leningrad.
46. The gaps in the numbering of plates made Bychkov think that certain plates were missing in the copy he described. See A. F. Bychkov, *Katalog khraniashchimsia v imp. Publichnoi biblioteke izdaniiam, napechatannym grazhdanskim shriftom pri Petre Velikom* (Sanktpeterburg: n.p., 1867), p. 2.
47. See P. P. Pekarskii, *op. cit.*, II, 649; and *Pis'ma i bumagi . . .*, VII, 159, and IX, 50.
48. See Leningrad, Publichnaia Biblioteka imeni M. E. Saltykova-Shchedrina, *op. cit.*, I, 75; and also P. P. Pekarskii, *op. cit.*, II, 649.
49. See Peter I's letter to Musin-Pushkin of May 7, 1708.
50. This edition was probably the idea of Ia. V. Brius who repeatedly expressed his interest in gathering exercises to supplement the first edition of *Geometria* or to publish them as a separate volume. See *Pis'ma i bumagi . . .*, VI, 455.
51. See S. E. Fel', "Petrovskaia geometriia," *Institut istorii estestvoznaniia. Trudy.*, IV (1952), 140–155, or for special reference to the above hypothesis, see pp. 151–152.
52. See *Pis'ma i bumagi . . .*, VII/1, 144. The order was sent by the Tsar through A. D. Menshikov.
53. See *Pis'ma i bumagi . . .*, VII/1, 187.
54. *Ibid.*, VIII/a, 937.
55. *Ibid.*, VIII/1, 53.
56. *Ibid.*, VII/1, 159.
57. See *supra*, n. 4.
58. *Ibid.*, IX/1, 50.
59. A. Shitsgal, *op. cit.*, p. 41, refers to an undated *Primer* or rather specimen sheet in the Lenin Library collection.
60. *Ibid.*
61. See *Pis'ma i bumagi . . .*, IX/2, 1228–1229.
62. The Tsar sent his order to Prince M. N. Gagarin on November 8,1708. See *ibid.*, VIII/1, 289.
63. See the Tsar's letters of October 10, 1708, November 11, 1708, January 4, 1709, and January 16, 1709.
64. See the Tsar's letters of October 10, 1708, October 31, 1708, and November 8, 1708.
65. *Ibid.*, IX/1, 370.
66. The Russian text of the note reads: "Simy litery pechatat at' istoricheskie i manifakturnyia knigi. A kotoryia podcherneny, tekh [v] vyshepisannykh knigakh ne upotrebliat'."

Visual Language from the Verbal Model

Colin Murray Turbayne

Hypothesis: the visible world is a script, presented in alphabetical form, which we have to learn to read. In looking at the ancient problem of how we see, we must first consider the conflict of common sense vs. illusion in our interpretation of what we see. Man learns to decode a complex code of vision, which includes bridging the gulf between a written language and a spoken language (both called, for example, "English") as well as between visuals and tactuals. Seeing is modelled upon reading; painting, sculpture, and photography are modelled on writing—and are forms of writing in visual language.

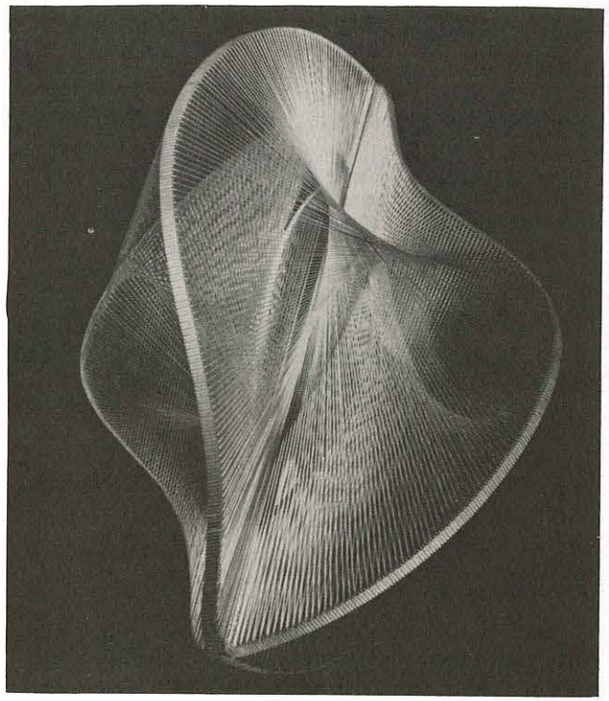
My hypothesis is roughly defined by a remark made recently by the sculptor, Naum Gabo: "Lines, shapes, forms, color, and movement have a language of their own, but reading takes time. It is not enough to look. You must see, and 'see' means 'read' "[1].* This hypothesis —that *to see* is to *read a language* whose elements are these lines, shapes, forms, color, and movement that Gabo talks about—is a development from some of the ideas of two philologists: Plato, who wrote shortly after the invention of the modern alphabet, and Berkeley, who wrote shortly after the invention of modern optics. They shared the view that the visible world is a script, presented in alphabetical form, which we have to learn to read. This conception I shall develop in order to suggest the main lines of a solution to the ancient problem of how we see.

The Problem

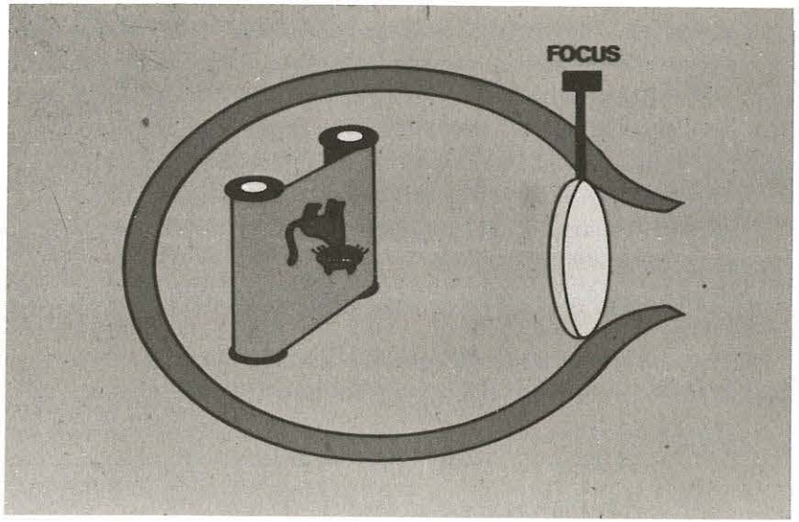
Any adequate solution must be able to accommodate two sorts of facts. It must be able to fit in the very ordinary facts of common

*Numbers in brackets [1] refer to the illustrations.

[1] Naum Gabo, *Linear Construction, No. 2*, plastic.



[2]



sense: those popular suppositions such as that sight gives us a direct intuition of physical objects, including their distance, sizes, shapes, positions, and movements. But it must also be able to fit in the apparent misfits: those not so extraordinary facts connected with illusion, for without these the whole problem of vision would never have been posed. Macbeth saw a dagger before him, but could not clutch it. We see a lake before us in the desert, but we dip our pannikins into sand. We see in the distance a small round tower, but we climb a large square building. We see a bent stick partly immersed in water, but we pull out a straight one. What, then, do we actually see? What explains our deception, and how do we avoid being deceived?

The Camera Model

Cases such as these prompted many theorists to ask such questions as "How can what we directly see be the same as the physical object, when the latter remains fixed though the former varies?" Their answers persuaded them to reject the popular supposition that sight gives us a direct intuition of physical reality, and to adopt the view that it gives us a direct intuition only of a copy or picture of reality. This view, styled the Copy or the Representative Theory, dominates our Western tradition. The model characteristic of this view is the camera. It was Kepler, the father of modern optics and the inventor of the first portable camera obscura, who specified its main features: The eye is a camera [2], a machine for taking photographs of physical objects. It is equipped with an aperture, a light-sensitive material, a converging lens, a focussing mechanism, and a screen on which the photograph is received.

Certainly the camera model brightly illuminates the dioptrics and structure of the eye. It shows the nature of clear and obscure, distinct and confused, vision, and it exhibits the process of accommodation. But it sheds little light upon how we see. We notice that the interpreter of the photographs is not built into the camera. In order to make it work we must suppose a mind and another eye behind the camera to look at and interpret the photographs, just as Kepler himself had to get inside his own camera obscura. Accordingly, we are back where we started: How do we interpret the photographs or, indeed, any visual object? The answer obviously is that the photographs are pictures or copies of their originals. But then how do we tell that they

are good or bad likenesses when we cannot compare the pictures with their originals? We are forever confined to the contemplation of our own private photographs. Moreover, many photographs are most unlike the objects they are supposed to copy.

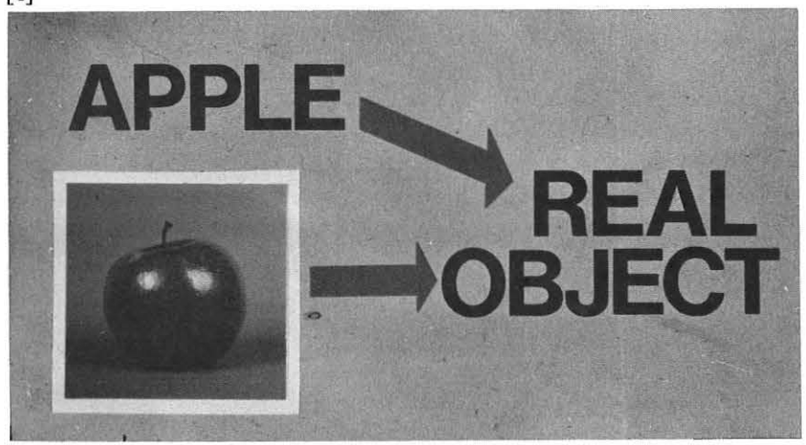
In consequence of these factors the camera model cannot suggest an adequate account of illusions. Indeed, it seems that the camera does a good job in creating them! The camera is notorious for such things as turning a maiden's mini-feet into those of a mastodon [3]. The mind behind the camera may see the little upside-down pictures on the screen, but he cannot tell by sight that the originals are right side up. He may see the image of the crooked stick, but he cannot see that the stick is straight. He cannot tell which is bigger, his thumb or the Eiffel Tower. He must even be fooled by the images seen in the plane mirror. In all these cases he must be fooled unless he is a mind with a memory who can interpret the pictures in the light of additional *information*, a mind who can tell and often mis-tell what things *signify*, and who, aware of *contexts*, can see through the *ambiguities* of vision. In short, he must be fooled unless he has learned to *decode* the complex *code* of vision, i.e., to *read* the *language* of vision.

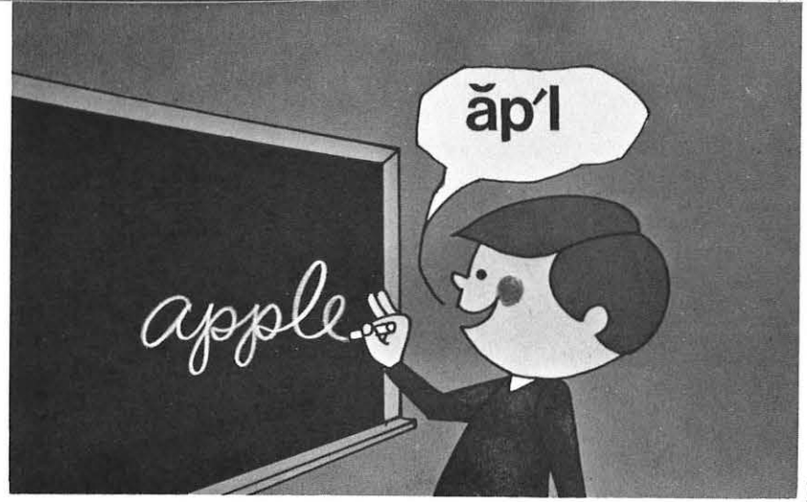
Dropping the Copy Theory

Equipped with the view that visual objects constitute *a language*, I could proceed to interpret the words of this language as visual objects and their referents as physical objects, leaving it unspecified whether the words are those of a written or a spoken language. Accordingly, visual objects would suggest, or function as signs of, physical objects, just as words suggest or signify their referents. By adopting this model I could deduce that physical objects are not objects that are directly or intuitively seen, for when we see or hear the word "apple," there is no need to see an apple [4]. We need only to think of it. This model has many merits.[1] By indicating a sharp distinction between the sign and the thing signified it suggests how we can accommodate illusions. Illusions are properly delusions, i.e., we make mistakes, not about the things that are the gifts of sight, only about the things they prompt us to believe. But it fails to suggest how we can accommodate common sense according to which we directly see physical objects. What is needed is a relation that is far more intimate than that between a word and its referent yet one that preserves their distinctness.

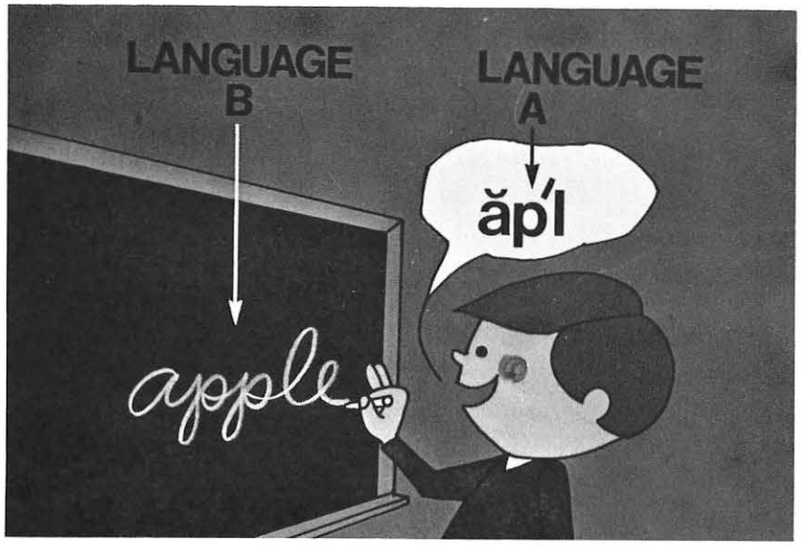
[3] Photograph: James Laragy, Rochester (New York) *Democrat and Chronicle.*

[4]

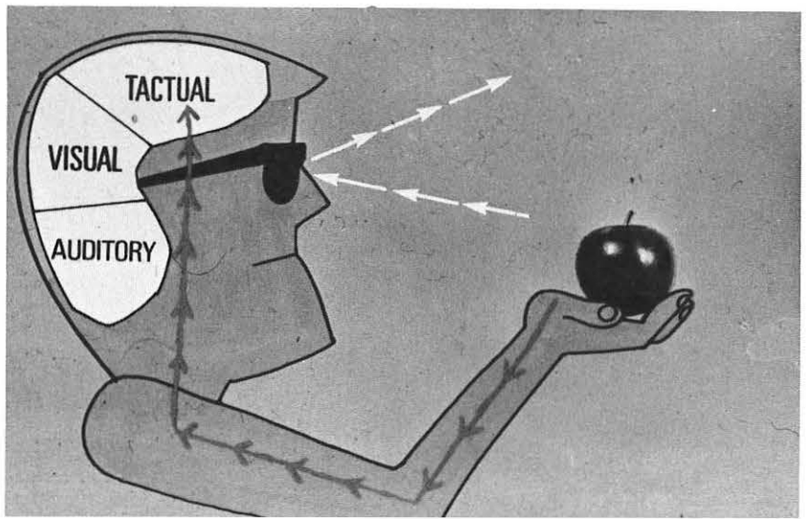




[5]



[6]

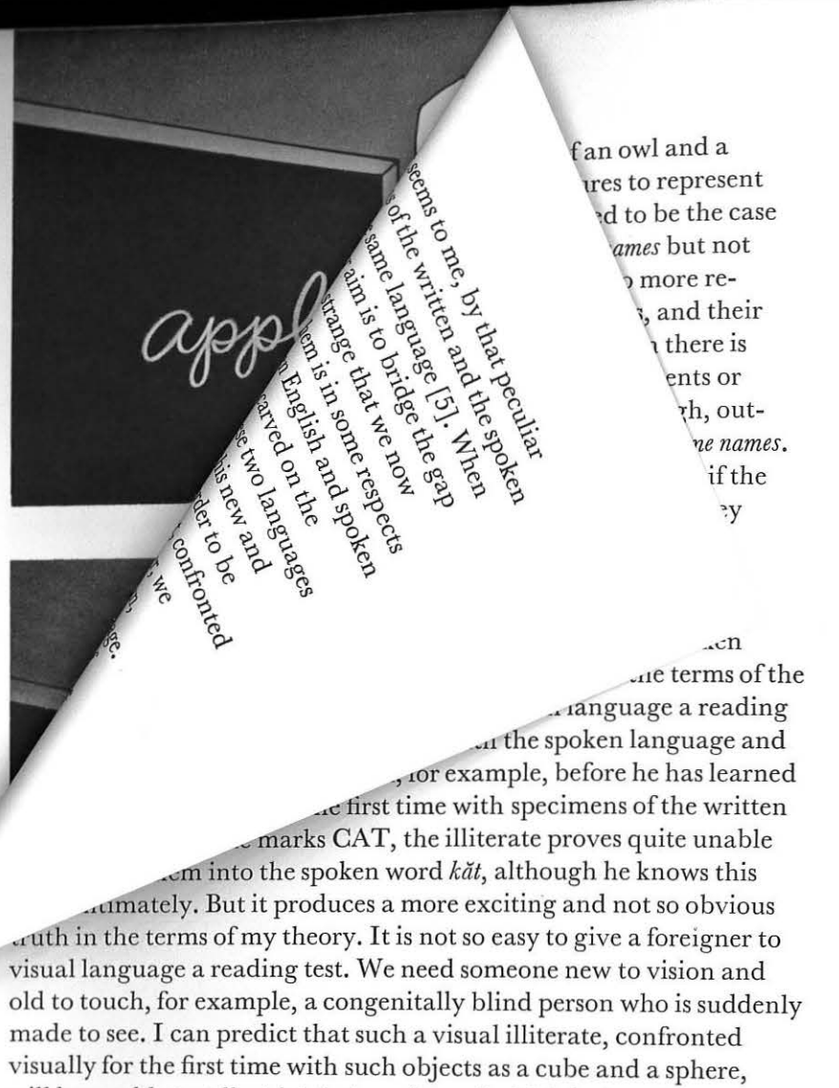


[7]

This desideratum is satisfied, so it seems to me, by that peculiar relation that obtains between the items of the written and the spoken languages of what we commonly call the same language [5]. When as children we learn to read and write, our aim is to bridge the gap between these *two different languages* [6]. It is strange that we now think them *one language*, for the gap between them is in some respects far wider than that between, for example, spoken English and spoken Italian, or the hieroglyphics and the Greek script carved on the Rosetta Stone. This is so because the elements of these two languages belong to two different sense realms. Presented with this new and unknown written language, which we have to read in order to be admitted into our exclusive literate society, we are, in fact, confronted with a decoding problem of enormous complexity. However, we come already equipped with a language that is old and known, namely, our own native but artificial tongue, the spoken language.

Let me then narrow the interpretation given above. Instead of assuming merely that visual objects constitute a language, I assume that visual objects constitute *a written language*. More specifically, I interpret the letters of this written language as visual sizes, shapes, positions, and movements, and the letters of the corresponding *spoken language* as the spatial properties of physical objects, i.e., their sizes, shapes, positions, and movements. These physical objects, I assume, could be known by us even if we had not been gifted with sight [7]. This is not an implausible assumption, for it appears that blind people possess spatial awareness. Indeed, the people in H. G. Wells' *Country of the Blind* knew more about the spatial features of their world than did the sighted intruder.

With this interpretation I can at once divorce myself from the most fundamental feature of the traditional Copy Theory of Vision. I deduce that visual objects—including photographs, paintings, and sculptures—are not copies or replicas of the objects they represent to us. This paradox is merely an easy application of an obvious feature of language. The written language, it is true, began with signs which were pictures, but it ended with alphabetical signs which are not. The hieroglyphs themselves nicely exemplify this paradox. Certainly the hieroglyphs look as if they are to be read pictorially or allegorically, and because of this they fooled the best philologists for more than two thousand years. There is little resemblance between a picture of



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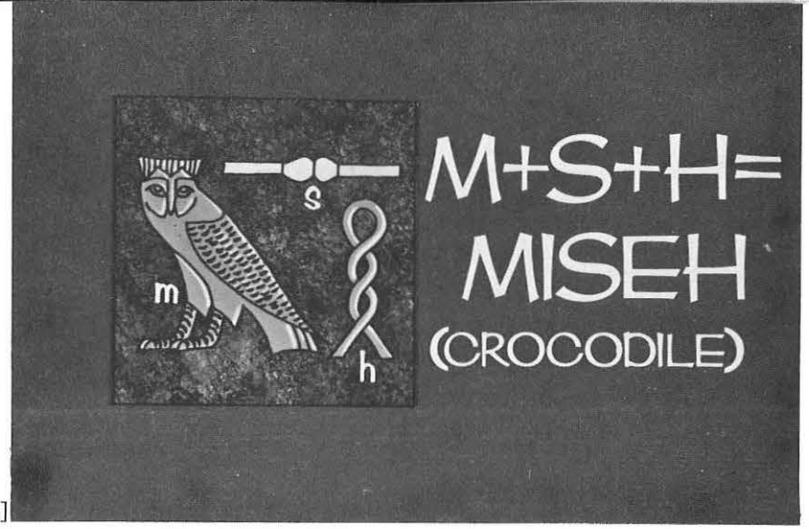
truth in the terms of my theory. It is not so easy to give a foreigner to visual language a reading test. We need someone new to vision and old to touch, for example, a congenitally blind person who is suddenly made to see. I can predict that such a visual illiterate, confronted visually for the first time with such objects as a cube and a sphere, will be unable to tell which is the cube and which is the sphere, although he knows both of them well by touch. This prediction, so it happens, turns out to be true. The test has been carried out on numerous occasions. None of them, it seems to me, disconfirms my theory. Three typical statements from the reports on these cases are as follows: "The patient is shown a sphere and a cube. . . . He realizes that the two are distinct, but does not know which is round and which cornered. . .;" "He could not in the least say which was the cube and which the sphere . . .;" "He remains absolutely incapable of saying



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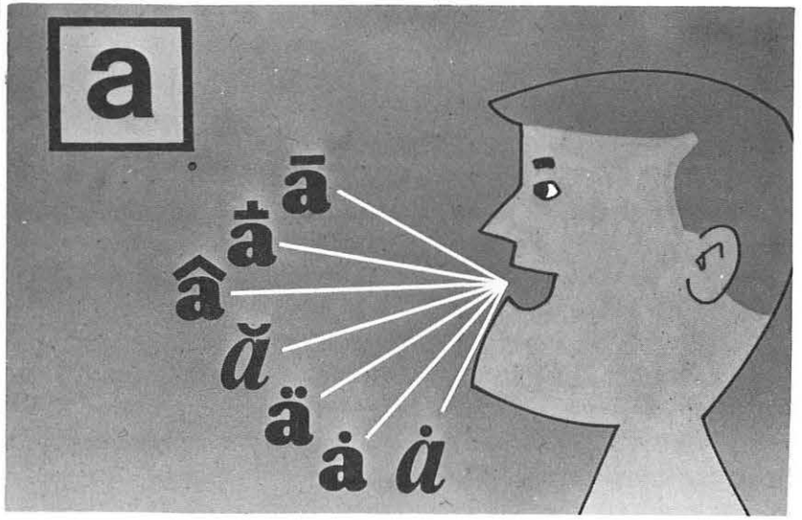

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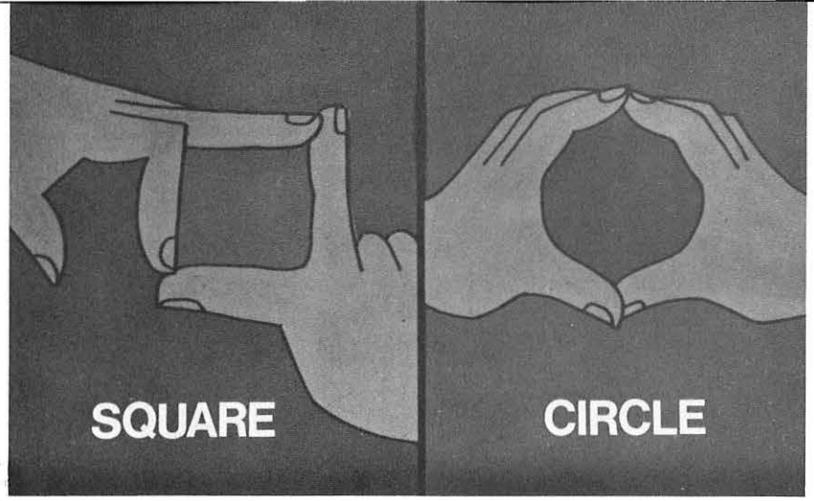


[11]

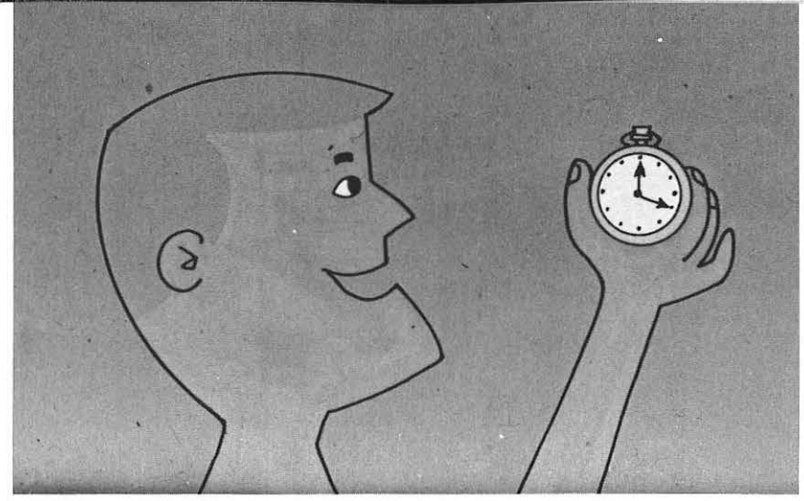
whether it is round or cornered."[2] As one expects, these visual illiterates, confronted for the first time with those paradigms of the Picture Theory (viz., photographs of familiar objects) have no idea about how to read them. But as one does not expect, even visually literate persons who have not yet learned the code of photography, e.g., Australian aborigines from the heart of the Never-Never, can make nothing of photographs.

Thus by dropping the picture theory of language, I am able to drop the picture theory of pictures.

Reading Visual Language

If, however, we cannot have recourse to the picture theory, how, then, do we bridge the gap between visuals and tactuals?

Once more the answer is given for me by an easy application of the written-spoken language model. As children confronted with specimens of this mysterious writing, our aim is to break its code and to become readers or native decoders, able to translate these foreign marks into the sounds of spoken English. Our predicament is similar to that of Champollion when he began to decipher the hieroglyphics. Like him, we have to transfer our knowledge from a language that is old and known to another that is new and unknown. Fortunately, to help us in solving what is perhaps the second most difficult problem that we shall ever be called upon to face, we possess the all-important factor that Champollion lacked. We have a teacher who can teach us the letters and their proper names. These we learn by ostensive definition, the way we begin to learn any foreign language. This in-



[12]

volves the establishment of an association between entirely different things so that when tested by being *shown* a letter or a word we can *tell* its name. The process takes time and experience and repeated acts.

Parallel remarks apply to the beginning reader in visual language. Here is a student whose mastery of the letters of this new language is being tested. On the second day of testing, the once-blind man is shown a watch. "'Is it round? Is it a round thing or a square one?' No answer. 'Do you know what a square is?' He positions his two hands to form a square. 'And a circle?' He again bends his hand to produce a ring [11]. In looking at the watch at which his gaze is obviously directed he remains absolutely incapable of saying whether it's round or cornered. However much I insist on an answer, none is forthcoming. On the following morning the same question, the same inability to answer. So I then let him feel the watch [12]. No sooner has he taken it in his hand than he immediately says, 'That's round, it's a watch.' "[3] After countless repetitions the beginner can tell the names of the letters of visual language and some of its words.

The remaining terms of visual language are learned in terms of the basic ones. A child who has learned his letters and a few basic terms can read words that are wholly new to him. For example, having read the word BAR, he is well on the way toward reading the new word BARBARIAN. Similarly the learner of visual language, equipped with a knowledge of the visual analogues of round, square, straight, curved, etc., can guess by looking, the names of wholly new objects. Eventually, with the help of analogies he may even be able to see the moon and flying saucers although he has never handled these objects.

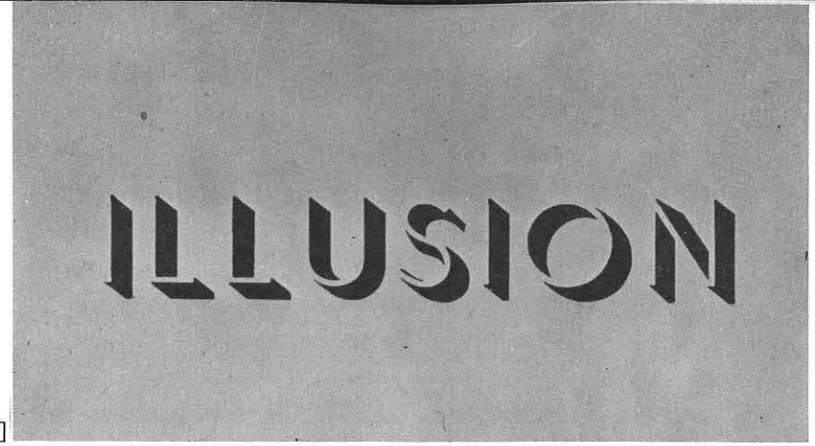
He might even become as good a reader as Lady Macbeth when she said to her husband: "Your face, my thane, is as a book whereon men may read strange matters." She might have said: "Your intentions are written all over your face but I alone can read your writing."

The Complex Code of Visual Language

Unhappily the code of visual language is chaotic. It is this factor that introduces visual illusions and thus sets the problem of vision. In illusion [13], as the etymon suggests, we are *played against* or *mocked.* At times, being genuinely cheated or deceived, we lose the game; at others, having seen through the deception, we win. It is rare for such expert readers as we are now to be taken in for more than an instant, but, as theorists, we must try to become strange to the familiar. What then explains illusion? Why are we deceived, and how do we avoid being deceived?

The model of the two languages is rich in its offerings here. The child learning to read English is baffled not merely by an enormously complex code but by one that is crazy. He cannot readily overcome the disparity between the sounds of his mother tongue and the symbols he sees on the page. There are only 26 letters in the alphabet but over 80 sounds in English. Thus one character may be translated into many different phonemes. There is nothing in the character O itself that tells him which translation to pick [14]: the sound $\bar{o}$ represented in GO, or the one in ONE, or in DO, or in GONE, or in WOMEN. Conversely, many different characters may translate into only one phoneme. There is nothing in such different characters present in TO, WOO, FLEW, CANOE, and RHEUMATISM, that can tell the beginning reader to translate them into only one sound. Finally, how is the frustrated beginner to know that some characters, such as the B in COMB, the E in CAUSE, and the H in HERB [15] do not translate into sound at all? It is easy to see why the young player loses these language games. Thus, winning the game with the F in AFT, IF, and OFT, he forthwith loses it with the F in OF. Able to read the combinations MIGHT, RIGHT, LIGHT, and TIGHT, the shocking truth is revealed when he encounters the combination EIGHT.

The beginning reader in visual language is equally baffled. The explanation of his deception is much the same as that of the other reader. Finding that certain visual sizes, shapes, positions, etc., are



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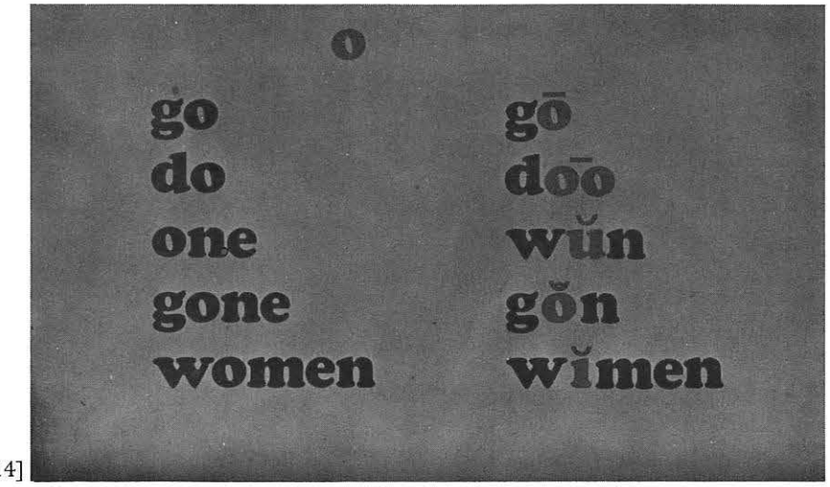

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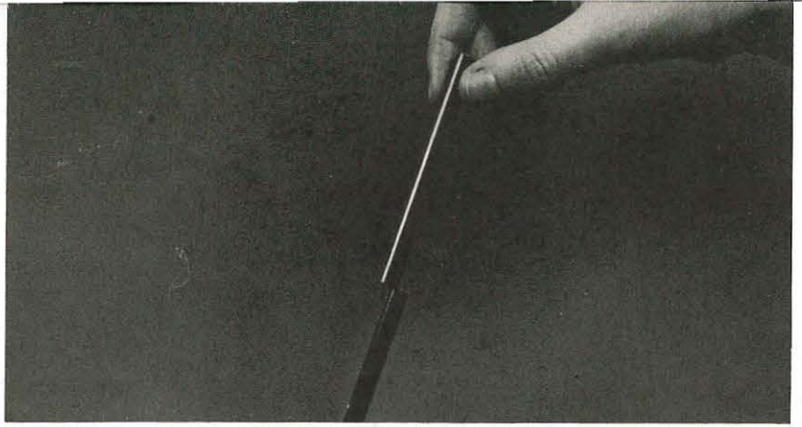

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[18]

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b	k	ue	ʤ	o
c	l	v	ʃ	u
d	m	w	ʒ	ω
ɛɛ	n	y	ŋ	ɷ
f	œ	z	ɑ	ɷu
g	p	ɤ	au	ɷi
h	r	wh	a	
ie	s	ʧ	e	

regularly translated into their tactual counterparts, he expects this regularity to continue. Encountering cases which to us are no longer extraordinary, the beginner is unavoidably mistaken. Thus having successfully translated blurriness into near distance, he mis-translates when he sees the same blurriness produced by an object out of focus behind a magnifying glass. Although one visual "character" may translate in two different ways, there is nothing in the visual bentness [16] itself to tell him it is really straightness. Although two or more different visuals may translate in only one way, there is nothing in the double visual itself [17] to tell him there is only one object; nothing in the elliptical and various other shapes to tell him it is only one circle. Some visuals do not translate into tactuals at all, but there is nothing in the mirror image itself to tell him there is nothing there, and there was nothing in the visual dagger that enabled Macbeth to translate it as "a dagger of the mind." Mocked by the ambiguities and other irregularities of visual language, it is no wonder that the once-blind man asked: "Which is the lying sense, feeling or seeing?"

In spite of these defects many of us learn to read. How, then, do we avoid being deceived? Unfortunately, we have no analogue to Sir James Pitman's Initial Teaching Alphabet[4] [18]—a simpler code that we can break before we tackle the more complex code of vision. It is a simpler system than English although it contains more primitives: Pitman has almost doubled the number of letters of its alphabet and tripled the number of vowels. Nevertheless, each letter translates into only one phoneme of our old language. Thus before we start to decipher, all the defects of our present alphabet that I listed above have been eliminated.

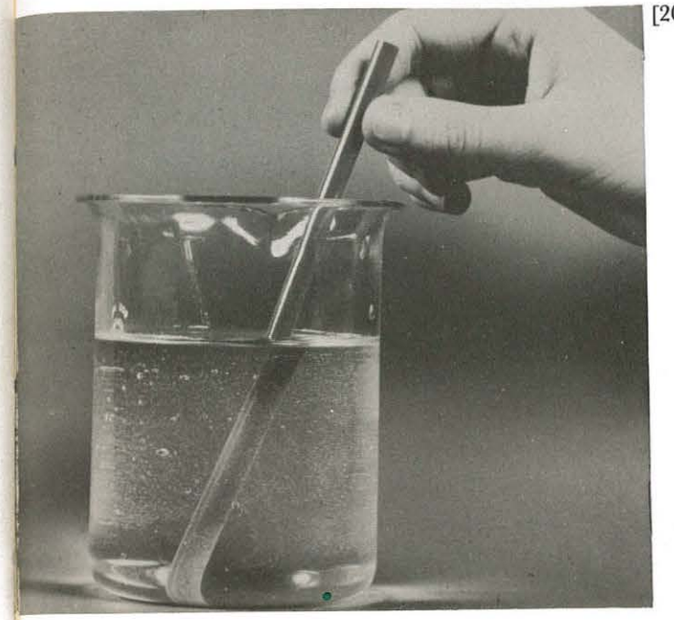
Fortunately, there are other devices to help in counter-acting the capriciousness inherent in either language. We rely upon two factors of great value, namely, our prenotions and context. Thus in reading the written language we tend to overlook the typographical sizes and shapes and pass on to the translation: Since the sizes of the marks BIG and LITTLE are not especially relevant to the translation, we ignore them. This factor parallels the well-known size constancy of visual language. Thus although the visual size of an object halves as its distance from the eye doubles, the mind ignores such information and relies instead on more massive cues such as its prenotions of the size of the object. A man, for example, looks just as big at a hundred

yards as at fifty. Indeed, the feat of returning to the old "innocence of the eye," built into the camera and prized by the Renaissance painters, requires an effort of attending or a glance through a grid.

The context of the characters on the page, or of the visual objects we seek to interpret, supplements this factor. There is nothing in the combination READ [19] abstracted from its context, that enables us to choose between the translation *rēd* and *rĕd*. Nevertheless, we translate successfully when it is preceded by such marks as TO or HAD. This illustrates how we avoid being deceived by many illusions; we can see that the stick, crooked in the context of air and water [20], is really straight. It also illustrates how we put a stop to the ambiguities present in some amusing figures and pictures. The small square [21] in the diagram appears to flap in and out; what was a duck turns into a rabbit [22]. The interpretations are fixed for us, however, when we are given additional cues: when figures of appropriate sizes are inserted in the squares [23]; and when the duck's body is added.

[19]

READ	rēd	rĕd
TEAR	tēr	târ
ROW	rō	rou
WIND	wīnd	wĭnd
LEAD	lēd	lĕd
CLOSE	klōz	klōs



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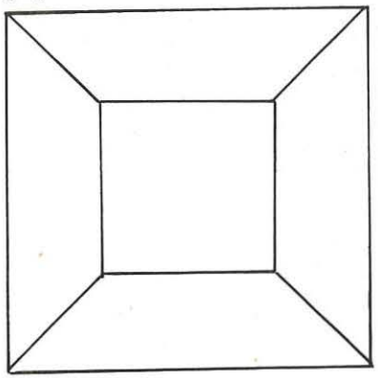

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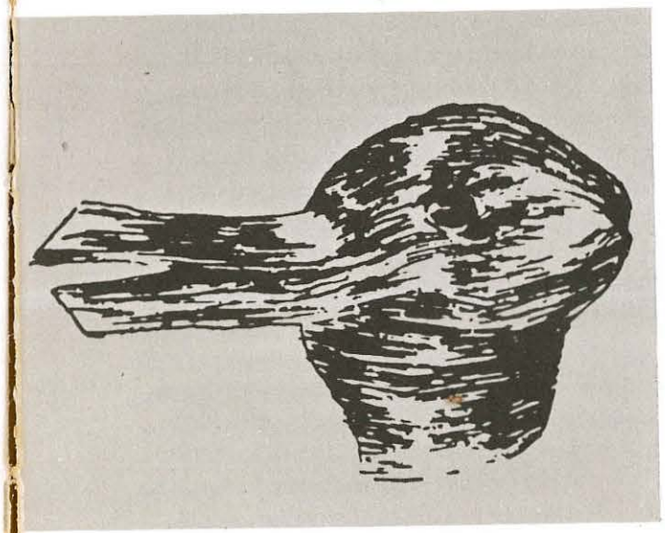

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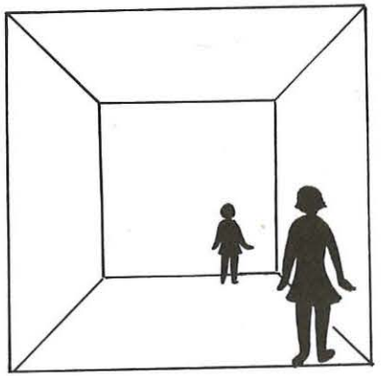

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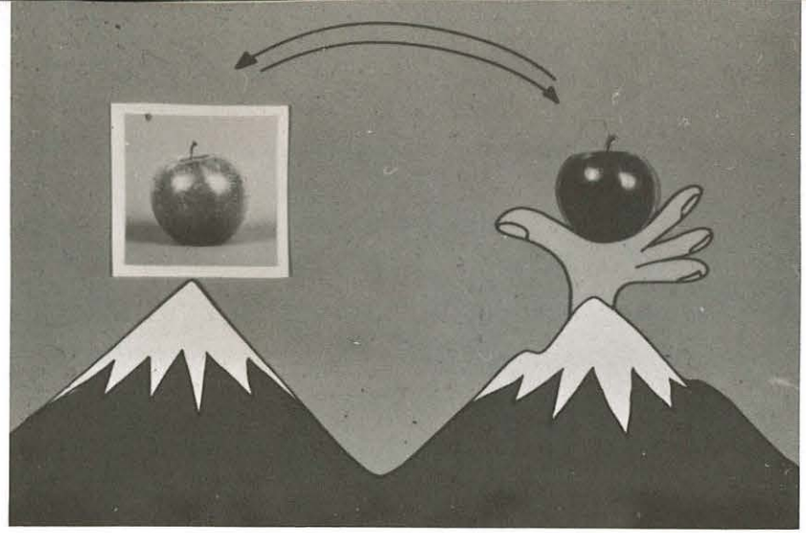

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Word Magic

In the preceding account I showed first the nature of the gap between the visual and the tactual realms; then how, with the help of experience, we begin to bridge the gap [24]. This is still not enough, for most people do not think there is any gap to be bridged at all. We ordinarily say and believe that we see the same sizes, shapes, and positions that we feel. How, then, can my theory accommodate these popular suppositions?

It is customary to call a word of the written language and the corresponding word in the spoken language by the same name. We call, for example, the marks SQUARE and the sound *skwăr* by the same name. We do the same thing with the characters and phonemes, using, for example, the name "Double-U" not only for the mark W but for the noise it translates into. The same custom is carried out with the specifically distinct sizes, shapes, positions, and movements of the visual and tactual realms. We use, for example, the same word "round" to refer to the shape that we see of a watch and to the shape that we feel.

This custom is highly convenient. It saves an endless number of new words, and it constitutes a translation link—a Rosetta Stone, as it were— between the members of each pair of languages. Although highly convenient, this custom leads us into error. There is a strong temptation to think that because we call them by the same names, the roundness, squareness, etc., that we see are the same roundness

[25] *Thoth*, Kestner Museum, Hanover.

squareness, etc., that we feel. Even though the correlations between written and spoken English were *not* learned in earliest infancy, we now not only call these two languages "one language," viz., "English", but we think of them as one. But the correlations between sight and touch were sucked in with our milk and the metalanguage established shortly thereafter. In this way visuals and tactuals are complicated, twisted, knotted, or concreted together. The products of such confusions or complications of the items of the visual and the haptic realms constitute our visible world.

Writing in Visual Language[5]

If seeing is appropriately modelled upon reading, then painting, drawing, sculpture, and photography are appropriately modelled upon writing. All these arts, then, are forms of writing in visual language, though each has its own special medium, its own vocabulary and code. The analogy between writing (*graphé*) and painting (*zographia*), also drawing and sculpture, was noted by Plato. Furthermore, Plato treated all these arts as forms of handicraft (*cheirourgía*). Finally, he used the legend of Thoth [25], the great inventor of writing, to make an important point: "What you have discovered is a recipe not for memory, but for reminder."[6] What we are reminded of when we read the written discourse is the real thing, the spoken discourse.

Writing, then, in terms of the model, is the manipulation of letters

[26] *Seated Scribe*, Louvre, Paris.

or other conventional characters to represent and remind a reader of items in the spoken language. A concrete symbol for this basic operation that we perform upon the spoken language is the Seated Scribe [26]. The scribe is taking dictation. Receiving a message in the primary language, he is in the process of translating it into another. Receving, for example, the message *miseh* in plain text, he encodes it into the cryptograms of the owl, the bolt, and the twisted flax, and, according to the rules of syntax, puts them together in order in an invisible rectangle to make a well-formed formula. Thus he is able to bridge the enormous gap between the two languages in the reverse direction from reading, so that another reader can be reminded of the original. The bridge or translation link that he uses is spelling, which, like a scaffolding, is dispensable. By spelling the *names* of the items of

the message he is able to bridge the gap, for these names constitute a rebus: they sound like the names of the vocabulary of the secondary language, the letters of his alphabet, which he has already learned by ostensive definition. It is, of course, accidental that the words of his metalanguage are in the same language as the original message. The characters and their syntax are conventional, being based upon a compact between him and his reader. Otherwise they could not be decoded, and there could be no language. Nevertheless, within these conventions, he has his own unconventional writing style.

When appropriately interpreted this model illuminates how we write with visuals.

A simple form of writing is represented by the Australian aborigine who writes his message by breaking a twig, and thus informs his readers of the presence of an old-man kangaroo. Samuel Butler, in his "Thought and Language," uses the case of Mrs. Bentley to illustrate the same simple form. Mrs. Bentley used to send her snuff-box to the college buttery at Trinity College when she wanted beer, instead of an ordinary written order, and the butler was able to read her extraordinary writing just as readily in this style as in the other. This example satisfies the main features of the model. It will be observed that the convention or mutual compact, necessary for language, was made between only one writer and one reader, even though the author chose to encode in an unconventional type of cryptogram further designed to conceal the very existence of the message from any prying readers.

Although the camera model may not illuminate how we read visual language, the camera itself is a wonderful instrument for writing in it. The cryptograms into which we encode our messages from the visible world with this instrument are more readily decoded than typewritten or handwritten characters. An important feature about the photograph that we learned from our model is that it no more copies the visible world than the hieroglyph does its referent, and yet, again like the hieroglyph, it appears to do so. What explains this appearance? With the help of the model I concluded that the things we see are complications or concretions of visual and haptic items: we have long since bridged the gap between the two realms and, through our prenotions and awareness of context, put a stop to ambiguity. Now the striking feature of the camera is that, without any help from the

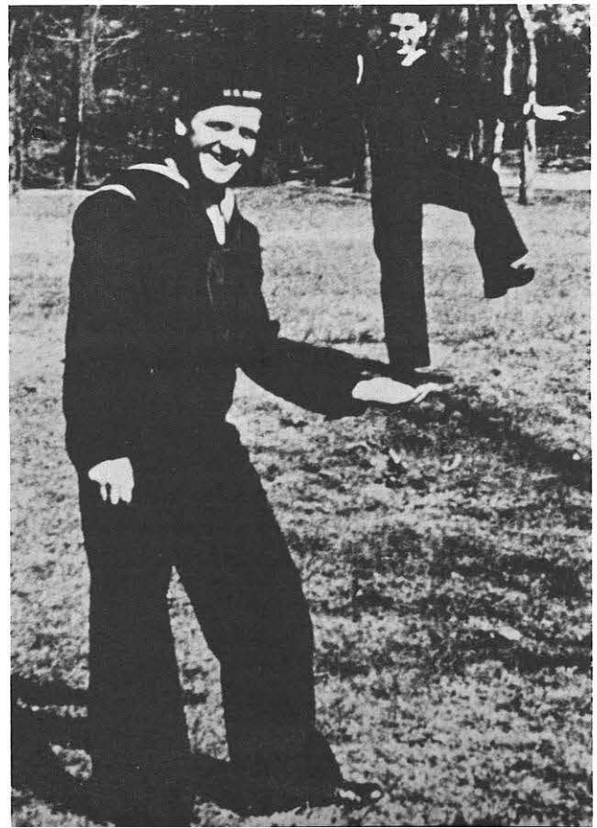
photographer, it uncomplicates the complex which is our visible world. It achieves this by translating a three-dimensional view of the world into cryptograms of color on a flat surface. If there were colored pictures on our retinas, and if we could see them, they would be photographs. This is so because the camera and the eye (which, as we have seen, is just another camera) give us perspective. In my view, this should be the interpretation of the phrase "the innocence of the eye." In perspective, to adopt Berkeley's definition, we suppose that we are *looking through* a gridded window at the world: "The eye sees all the parts and objects in the horizontal plane through certain corresponding squares of the perpendicular diaphanous plane."[7] The objects in the horizontal plane represent our visible world, while the images projected on the perpendicular plane represent a viewer's visual "window" (the word "field" is inappropriate), or what the camera "sees." The latter is no copy of the former, for what is projected as relatively large may translate into something very small, and conversely; what is "seen" as high up may be seen as only far away, and so on. Thus though the photograph may not copy our visible world, it does copy our visual window. While it does not imitate what we see, it does imitate what we "see."

What distinguishes painting and drawing, those more complex forms of writing in visual language, from photography? What techniques or rules of syntax does the artist follow in order to transmit his message? If he does not copy the visible world, does he then draw the images on his visual window? There is little doubt that since the Renaissance this has been the leading idea of most painters. It is as if the inventors of perspective drawing had invented the idea of writing with the camera. It would be a mistake to think, however, that perspective is purely geometrical. The painter can project on his canvas two pictures equally large, yet by making one fainter and higher up, enable his readers to translate it as something a hundred times larger. In this he follows the rules of perspective, as does the camera. But does he have to do so?

The camera, writing, as it were, according to fixed rules of syntax, is placed in an uncompromising position with regard to perspective. Just as it is very possible to write improperly through too strict an observance of grammar, so the camera (and some painters), governed by the rules of perspective, can run into mistakes. The skillful artist,

however, not so tightly bound, can make a compromise with perspective, and yet succeed in getting his message across to the reader. This begins to answer the puzzling question why a painting can be more "true to life" or more "convincing" than a photograph. To us and to the artist, equipped with a mind as well as an eye, a man looks just as big at a hundred yards as another at fifty, but the camera, fooled by its built-in perspective, "sees" and describes him as twice as small. The artist, however, can pick and choose. If he paints the man as he looks, the viewer reads him as a giant. If he matches the photograph, the viewer reads him as a midget [27]. Accordingly, he chooses the way of "understatement" with respect to visual size, perhaps "underscoring" faintness and situation on his canvas, and thereby produces a convincing reading.

What distinguishes painting from photography, then, is its flexibility or freedom from convention. Just as the writer can break some of the rules of grammar but not all, so the artist, such as the Egyptian scribe, Botticelli, and Chagall, can ignore the rules of perspective: While not free from all conventions (if so his work could not be read),



[27]

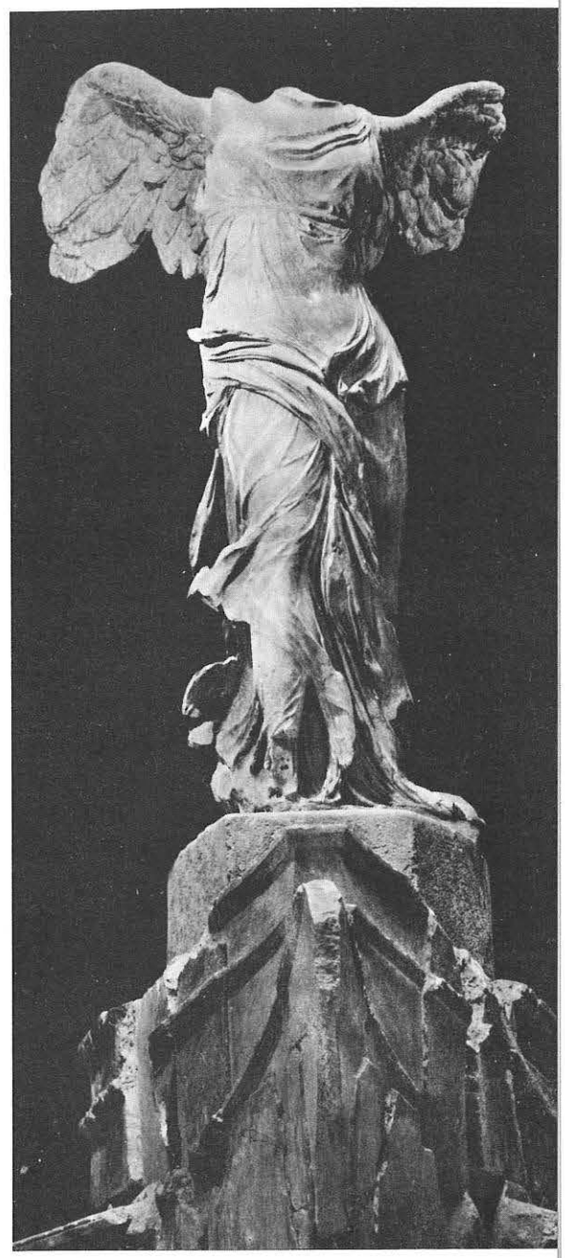
such unconventionality and other idiosyncrasies constitute his style or, as the etymon indicates, manner of writing.

An apparently simple but highly complex form of writing with visuals is sculpture, the art of carving figures in relief, in intaglio, or in the round. Because of his medium, with the three dimensions built into it, the sculptor more so than other artists, appears to represent his three-dimensional subject by making a copy of it. If I am right, however, he no more makes a copy or replica of his subject than does the scribe when he encodes the spoken message into painted characters on a flat surface, or the photographer when he takes a photograph of a statue.

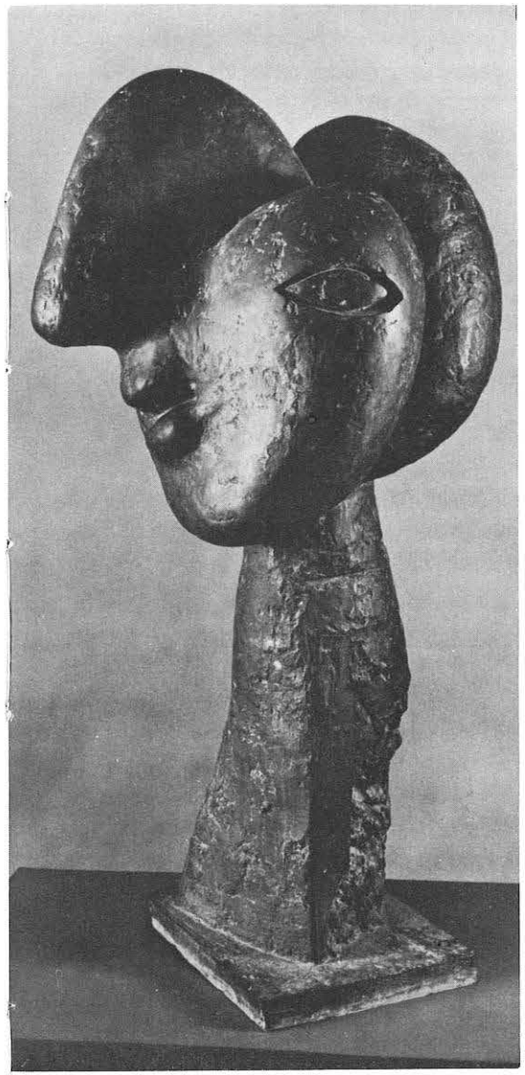
It may be granted that my thesis can accommodate those well-known symbolic compositions of the sculptor, e.g., Picasso's bronze *Head of a Woman* (1932) [28]. Just as the obvious reading of the hieroglyph I have been using is an owl, a bolt, and twisted flax (cf. the once-obvious reading of the letter A as a bull's head), and the correct reading is the phonetic sequence *miseh*, and through it, a crocodile, so the obvious reading of Picasso's composition is a smiling face with hard, prominent nose and soft, deeply modelled mouth, while the correct reading is a happy blending of the male and female sexual organs, and through it, the conception of the mutual subjectivity of sexual intercourse. This is to accept John Berger's illuminating account of the work in which "its secret is a metaphor."[8] Although I present the sequence from the reader's standpoint, one has only to reverse it to obtain the writer's sequence from the conception to the set of cryptograms. Unlike the scribe, Picasso has to invent his metaphor.

It may not be granted, however, that my thesis can accommodate those better known and apparently less symbolic compositions of the sculptor, e.g., *Winged Victory of Samothrace* [29]. The reader of this work is impressed by its naturalness. We see her looking *as if* she were alive. We see what *looks like* soft cloth and the living flesh of her belly beneath the transparent drapery. However, all this is reader's talk after the artist has worked his magic upon us. We are talking about what has been suggested or conveyed to us, just as we talk about any magician's sleight-of-hand. Because it seems like living flesh we erroneously conclude that the artist tried to copy living flesh as he worked. In fact, with his reader in mind, this has been the artist's purpose. By

[29] *Winged Victory of Samothrace*, 4th century B.C., Louvre, Paris.



[28] Pablo Picasso, *Head of a Woman*, 1932, bronze, Museum of Modern Art, New York.



his translation he has created the illusion of resemblance to cloth and flesh just as the Wizard of Oz created the illusion in Dorothy's mind that the Emerald City was really green, or just as a genius, by inventing a metaphor, can create the resemblance between all the world and a stage or between a political boundary and an iron curtain. All this is clinched for me by the Nike's most striking feature: She seems to move with astonishing lightness and grace. Yet this heavy block of marble has been stationary on its pedestal in the Louvre for decades.

A modified version of this paper, entitled "The Syntax of Visual Language" was presented at the first National Conference on Visual Literacy, at Rochester, New York, 27 March, 1969.

1. I used this model to illustrate vision in *The Myth of Metaphor* (New Haven and London: Yale University Press, 1962. Revised edition: University of South Carolina Press, 1970), Chapter V.

2. See M. V. Senden, *Space and Sight* (Glencoe, Illinois: The Free Press, 1960; tr. Peter Heath, from German edn., 1932), pp. 106, 108, 114.

3. *Space and Sight*, p. 108.

4. See John A. Downing, *The i.t.a. Reading Experiment* (London: University of London Institute of Education, 1964), pp. 5–25.

5. For another account of this topic, stressing different aspects, see John L. Debes, "Communication with Visuals," *ETC.*, XXV (March 1968), pp. 27–34.

6. *Phaedrus* 275A.

7. *Theory of Vision*, 55, in George Berkeley, *Works on Vision*, ed. C. M. Turbayne (New York: The Bobbs-Merrill Company, Inc., 1963), p. 145.

8. *Success and Failure of Picasso* (Penguin, 1965), p. 160.

Fashion in Type Design

G. W. Ovink

While "fashion" tends to have unfavorable connotations, "style" is interpreted as a favorable unity of the principles of form of a certain epoch. Questions of fashion in type design today are conditioned on different situations than before World War II, mostly due to the rise of photocomposition and easy reproduction of drawn lettering. Careful execution and self-discipline are no longer required; typographers prefer neutral types, creating their own expression through typographic design. We have today a dominance of the classicist tendency in typography: type is meant to be read. However, in printing types purely utilitarian forms hardly exist; type design has other subjective, emotional purposes. Type designers should be encouraged to create free forms.

The term "fashion," if not used for clothing in general, has a rather unfavorable meaning. It denotes a short-lived, superficial fancy in design, thought out with commercial, speculative aims for a spoilt, capricious public; or it may denote fantasies attached to utilitarian objects, for which a simple, durable form would be cheaper and more efficient and hence preferable for social reasons.

"Style," on the other hand, is taken as the mark of a definitely favorable unity in the principles of form of a certain epoch. This unity comes about naturally if these principles of form are not founded on the whims of the public at large, but on the philosophy of the cultural elite, using the best and foremost social, economical, and technical possibilities. "Style" is a title of honor, granted afterwards to a successful attempt at creating things that are right and of lasting value. Fashion seeks novelty deliberately and it is usually willing to sacrifice, for that purpose, the good things that are already there. Style originates unintentionally when artists wrestle seriously with the fundamental problems of a period and look for the correct solution. Fashions succeed each other every year: a style develops itself in the course of a generation at the least. Fashion, then, would be the ripple

on the surface of the long waves in the development of styles.

If fashion is only a squandering of energy and material and a falsification of noble cultural values, then we can state right now: there should be no fashion in type design. The printer should confine himself to a few types of proven quality for text and display, which suffice to establish a communication between author and reader. The trend today is towards using a few simple types. Many people even hope for a world-wide introduction of a single letterform for universal application.

The situation is not as simple as that, however. The question can be put whether our time can produce a real style of unity in variety at all. The great historic styles were created by and for tens of thousands of people, the taste of church and court being decisive. Today art and industrial design are the affairs of many millions in democratic organization, all with their own temperaments and their own social and national backgrounds. Among these millions there can hardly be a single style in the usual sense of the term.

And even if there could be, are fashions then not to be regarded as the inevitable by-products of a striving towards contemporary design which, if all goes well, does produce a real style? Fashion then would surely not be defensible as an aim in itself, but acceptable as a phenomenon that naturally accompanies any design activity.

Fashion is found in design when in pure problems of form the individual is overstressed. If this is done systematically, the result is called *fashion*; if (for instance, in the free arts) it is done owing to insufficient creative power or because the artist pursues purely private aims, then the result is called *mannerism*.

Perhaps you will make the objection here that type design is not a matter of artistic creation, in which any individualism is permitted, but purely a matter of utilitarian design, which should be supra-individual. I beg to differ. In printing types purely utilitarian forms hardly exist (I mean types whose shapes are entirely determined by such factors as legibility, word count, and printability). Something approaching pure utility occurs only in very critical situations, as in type for text matter and small ads of newspapers, in telephone directories, and in the lettering of road signs. Otherwise there is always a tolerance, a free margin in which different but equally valid solutions are possible. There taste enters along with the indi-

vidual preference of the reader, and consequently there is a need for change and variety.

When the sans serifs of the 1928 vintage originated, they were expected to last forever. Again, the same hope was cherished about the sans serifs of 1958, but they too will prove to be children of their time. We need not decide here whether they are products of fashion or the bearers of a true style. What matters is that while a single, universally valid principle of form was sought in all seriousness, while designers wanted to achieve only an efficient tool for communication without any pretensions of artistic individuality, the result showed many variants. It is even a matter of discussion which of these new sans serifs is already getting outdated and for which of them the time has not yet arrived. This means: the designers wanted supra-individual validity; they hoped for style; perhaps their efforts will later be found to have style, but in the process they also produced fashion and mannerism.

The question of freedom in type design—and consequently the question of the possibilities of fashion in type production—is conditioned today by a totally different situation than that which existed before the Second World War.

In the Thirties every printer had to offer several display types of recent cut (what the French call *caractères de fantaisie* or fancy types), at least for hand composition and often also on the machine. Consequently, every typefoundry and composing machine manufacturer had to provide a number of such types in its program. It was only by way of exception that these letters were hand-drawn specially for a certain work and then added to the type matter as photo-engraving.

A rough count reveals that in the 22 years between 1918 and 1940 about 40 type-creating foundries and composing machine manufacturers existed; they produced over a thousand original designs, each design after many months and often years of preparation. In the 24 years since 1945 we have not had nearly that number of producers or creations.

Today we have, besides hot-metal composition, photocomposition and a relatively cheap and easy reproduction of drawn lettering. Costs in composition are such that in hot metal and in the more expensive photocomposing devices only those types are made available which are used extensively and which have a lasting value. On

the other hand, types that are used less frequently are either issued on a cheap and simple photolettering apparatus or bought in word form from specialized firms, or they are specially drawn for a certain work.

This has some unfortunate results. The careful execution and self-discipline which were always prerequisites in type design for hot-metal composition are no longer necessary. Lettering for photographic reproduction is easily and speedily done, and technics do not impose limitations on artistic freedom. Hence, fashion types are more whimsical, immature, undisciplined than they used to be. Their field of use shrinks.

There is another point. Fashion types usually reflect the personal hand of their authors. But the typographical designer has his own creative personality, which hardly tolerates the expression of the foreign nature of another designer in typefaces. He prefers neutral types. If he wants to achieve playful, decorative, or striking effects, then he uses types void of expression in themselves, which he arranges in a playful, decorative, or striking way.

Some types which once originated as fashion types, have since become institutionalized. They now belong to the first requisites of every jobbing printer. So, for instance, certain lithographic and copperplate card types, English scripts, and condensed and extended bold sans serifs, etc. We don't see, as such, their origins as fashion types from the nineteenth and early twentieth century any more. They have become traditional. Something similar could happen again to more recent fashion types. In any case, the immediate effect of this development is that these institutionalized types and scripts for social printing and for headlines are making newer designs for these purposes largely superfluous.

There is a fourth factor which contributes to a decline in the appreciation and use of fashion types today. It is the temporary domination of a more classicistic tendency in the printing art. This classicism, like all its predecessors in history, strives for design according to timeless rules. As this school favors reason and intellect, it considers the purpose of type to be only to serve the reading and understanding of rational texts by intellectual means. Usually this is put in this way, that type is meant to be read; that type is only for communication—and "communication" only in the narrow sense of making reasonable people share ideas.

As the counterpart of this rationalistic movement, romanticism revolts all the more fiercely against this cool austerity. It does so with wild forms, weak or regular, entirely indefensible logically, which discredits it in the eyes of every "normal" person and so again reduces its field of use.

For all these reasons, the total consumption of prefabricated fashion types has diminished during the last decades both in a relative sense and probably in total numbers.

Does this mean that fashion types will soon be vanquished and replaced by one timeless, universally-valid type form? Not in the least.

Type and lettering has never been used, in the course of history, for reading only; it is not used so now and will not be in the future. Type can also serve as a mere sign to activate dormant ideas and images and to call forth reactions.

Type can also serve as a magnet for the eye, to direct the attention to what really matters.

Type can also serve as a decorative filling of a plane, purely and simply as a play of lines or pattern.

In all these cases optimal legibility or recognizability is unimportant; the shapes of the letters need not be simple, not familiar, not universally valid and acceptable. For certain purposes type may be illegible, irrational, valid only within limits; yes, it may be even unsympathetic, ugly, repulsive.

With this we come back to the question of fashion in type design. Type does not belong only to the objective sphere of optimal legibility, based on statistical facts. It is not sufficient that psychologists and ophthalmologists establish how type should look and that they have type drawn according to their specifications by dull, technical draftsmen. Type remains also in the subjective sphere of free design for effects, but one cannot calculate such things accurately beforehand. This being so, then with free design there will also be inevitably symptoms of fashion.

It is always harmful when emotional forces feel themselves threatened by a hard rationalism and therefore are led to gross exaggerations towards the opposite. We must acknowledge the right of these free emotional forces to exist and allow them a suitable field of action. This means: we should admit that any theory and any

practice is wrong in which the most simple and clear form of the letter is presented as the only correct one. Such a puritanical rationalism is of a passing nature—and will probably soon be followed by the predominance of a romantic irrationalism. It is possible that in a few years we may have to attack the onesidedness of a dominant artistic emotionality, while defending the rights of reason.

What are the practical consequences resulting from this concept of fashion in type design?

Actual practice has not allowed itself to be held back by the prevailing theory. Those in the Western countries, taken together under such catchwords as Hippies, Beatniks, Flower Children, Provotariat, Carnaby Street, etc., have long since provided outlets for their feelings in warmed-up Art Nouveau and with entirely illegible letter-clusters. Western publicity for luxury goods as well as for mass-consumption goods has not avoided fashion in type design either. The commercial logic of capitalism will not let itself be governed by any theory of communication, but by the highest sales returns.

Finally, the art schools and printing trade schools still teach lettering with all the historic paraphernalia of capitalis quadrata, rustica, uncials, and half-uncials; carolingian and humanistic minuscules, cancelleresca; renaissance, baroque and classicist roman, egyptian, and sans serif; in Germany, here and there, still textura, fraktur, and schwabacher; all this, whereas in theory these should be regarded as a mere collection of curiosities. Perhaps it is only the congenital conservatism of all educational institutions which causes them to maintain these historic pieces as models. Rather shamefacedly this is justified by pointing out that training in such models sharpens the sense of forms in general.

However this may be, let it be clear that in practice there are fields in which one still uses more than Baskerville or sans serifs only.

It would, therefore, be unnecessary to worry too much about the effects of puritanical theory in actual practice if it were not that many designers who create free forms, and therefore also fashion forms, do so with a bad conscience. They make scripts—decorated, open, shadow types; types with a peculiar personal hand—and they are conscious of doing something that is forbidden. It cramps their style. We should relieve these poor designers of this mental anguish.

Also it should be useful to assist those who, afraid of the theory, do not dare to make the types they would like to make and which would probably be much fitter for their purposes than the sans serifs they use now.

Why, too, shouldn't we allow some playground for national varieties of form? When the French would like to cultivate their Napoleonic types, the English their Georgian and Victorian variants, the Germans the inexhaustible richness of their fraktur forms, then they should do so without being accused of reactionary nationalism. As long as these variant forms can still be executed in a vital, contemporary spirit, there should be no limitations imposed to such activities.

If the roads to freedom in type design are reopened, this need not mean, I repeat, that there will be much liberty in type for hot-metal composition and for the rapid photocomposing machine. It is, however, already a big step forward when real creativity is relieved of the heavy pressure of puritanical theory.

This article is based on a speech by Dr. G. W. Ovink at the Eleventh Congress of the Association Typographique Internationale held at Prague, Czechoslovakia, June 1969.

Changes in Journal Subscription Policy

Effective immediately, the Journal's two-level subscription rate schedule (individual and institutional subscriptions) is being discontinued. The subscription rate schedule—for all subscribers to *The Journal of Typographical Research*—will remain the same as the institutional rates which have been in effect:

One year	$11.00
Two years	$21.00
Three years	$30.00

The price for back numbers of the Journal remains at $3.00 each.

Beginning January 1, 1970, new subscriptions to *The Journal of Typographic Research* will be entered only on a calendar-year basis. In other words, subscriptions received at any time during 1970 will receive all four Journal numbers for 1970. Special arrangements for adapting current subscriptions which expire at various times during the year will be outlined to subscribers with their renewal notices.

REMEMBER: *The Journal of Typographic Research* is a professional journal and is thereby tax deductible.

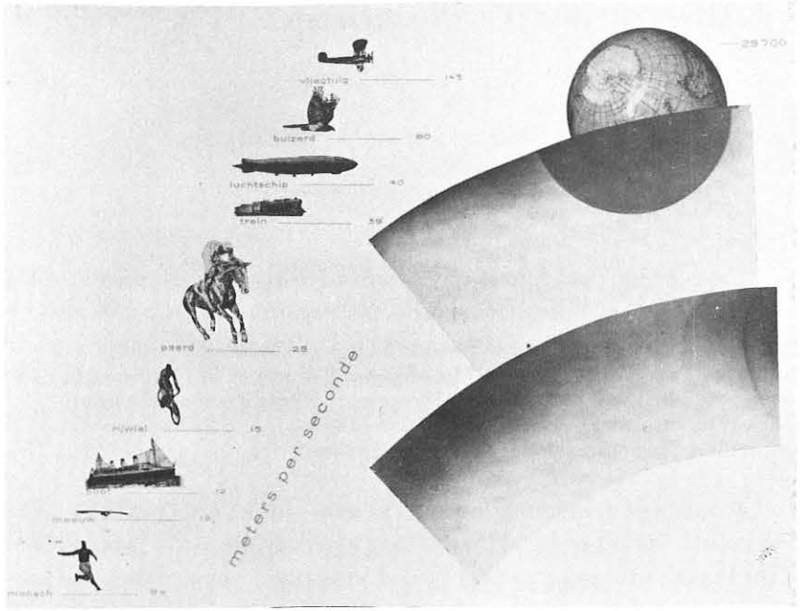
The House-style of The Netherlands PTT

Pieter Brattinga

"House-style" is defined as the aesthetic ordering of all facets of a corporation's business, both public and private. The origins and history of The Netherlands PTT house-style is briefly traced from the pioneer work of Jean Francois van Royen (circa 1910) through Dr. Hein van Haaren's direction today. Examples of stamp and booklet design through this period are illustrated.

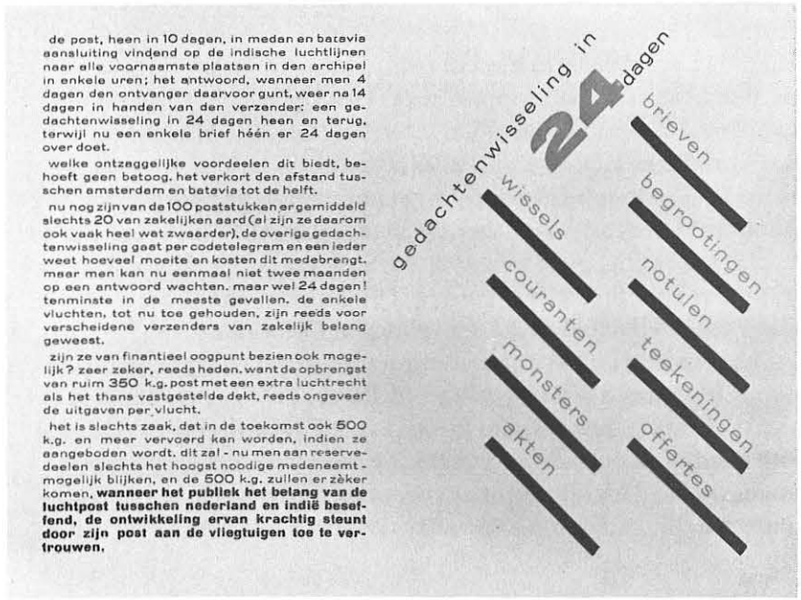
Today most self-respecting industries have—for a variety of reasons—a so-called "house-style." Not too long ago only idealistic chairmen of the board initiated an aesthetic ordering of all facets of their industry. Consider, for example, Adriano Olivetti for the Olivetti Corporation and Walter Paepke for the Container Corporation of America. Olivetti sells to the consumer market; Container Corporation produces protective covers for the products of others, containers in cardboard and paper. Guided by their intellectual interest and motivated by a deep belief in human relations, their house-styles were more than a mere visual appearance. Health centers, vacation sites, and even a commune had equal interest of Olivetti with the corporation's products, factories, and sales organizations. The advertisements for Container Corporation, as initiated by Herbert Bayer in the series "Great Ideas of Western Man," gave the Container Corporation tremendous good will with the business public. But Paepke not only drew attention to the services of his industry, he also founded a center for intellectual exchange in Aspen, Colorado.

Other industries have acquired a house-style or corporate image mainly for reasons of advertising—airlines, electronic companies, etc. And there are industries who for the sake of the ordering of elements both inside and outside their company have initiated very correct, intelligent, and highly aesthetic corporate designs—IBM, Westinghouse, Pirelli, and others. Nowadays it is even fashionable for indus-



PTT Booklet. Designer: Piet Zwart.

PTT Booklet. Designer: Piet Zwart.



de post, heen in 10 dagen, in medan en batavia aansluiting vindend op de indische luchtlijnen naar alle voornaamste plaatsen in den archipel in enkele uren; het antwoord, wanneer men 4 dagen den ontvanger daarvoor gunt, weer na 14 dagen in handen van den verzender: een gedachtenwisseling in 24 dagen heen en terug, terwijl nu een enkele brief héén er 24 dagen over doet.

welke ontzaggelijke voordeelen dit biedt, behoeft geen betoog. het verkort den afstand tusschen amsterdam en batavia tot de helft.

nu nog zijn van de 100 poststukken er gemiddeld slechts 20 van zakelijken aard (al zijn ze daarom ook vaak heel wat zwaarder), de overige gedachtenwisseling gaat per codetelegram en een ieder weet hoeveel moeite en kosten dit medebrengt. meer men kan nu eenmaal niet twee maanden op een antwoord wachten, maar wel 24 dagen! tenminste in de meeste gevallen. de enkele vluchten, tot nu toe gehouden, zijn reeds voor verscheidene verzenders van zakelijk belang geweest.

zijn ze van finantieel oogpunt bezien ook mogelijk? zeer zeker, reeds heden, want de opbrengst van ruim 350 k.g. post met een extra luchtrecht als het thans vastgestelde dekt, reeds ongeveer de uitgaven per vlucht.

het is slechts zaak, dat in de toekomst ook 500 k.g. en meer vervoerd kan worden, indien ze aangeboden wordt. dit zal - nu men aan reservedeelen slechts het hoogst noodige medeneemt - mogelijk blijken, en de 500 k.g. zullen er zeker komen, **wanneer het publiek het belang van de luchtpost tusschen nederland en indië beseft, de ontwikkeling ervan krachtig steunt door zijn post aan de vliegtuigen toe te vertrouwen.**

gedachtenwisseling in 24 dagen

wissels
couranten
monsters
akten

brieven
begrootingen
notulen
teekeningen
offertes

PTT Instruction Booklet for Children. Designer: Piet Zwart.

1913. Designer: K. P. C. de Bazel.

1921. Designer: Chris Lebau.

1924. Designer: Chris Lebau.

1931. Designer: G. Kiljan.

tries to have a corporate image if only for the sake of competition.

But one does not often find state or federal departments which have a house-style of their own, because too often house-styles are considered a luxury by government officials. Very clear exceptions to this are the house-styles of the London Transport and that of the Netherlands Postal, Telegraph and Telephone Authorities (PTT). The Netherlands PTT appears to the public only through the design of stamps, letterboxes, forms, and offices. But within this huge state enterprise many more elements of aesthetics in relation to economic management are felt.

The Netherland PTT was first brought in contact with the world of aesthetic visual communication about 1910 through the interest of their management-secretary Jean Francois van Royen. It was the immense influence of Van Royen which resulted in today's appearance of Netherland's stamps. Around 1911, for example, the PTT management decided to publish a series of stamps to commemorate the independence of The Netherlands. Against the wishes of the then responsible minister in the Dutch cabinet, Van Royen convinced the famous Dutch architect De Basel to design the stamps.

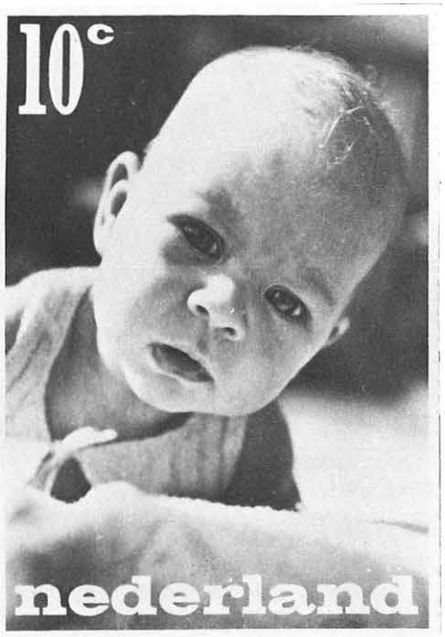
In 1916 Van Royen founded his own private press in his home. In 1918 he was made general secretary of the PTT, and, in this capacity, turned his attention to the design of stamps. But at the same time Van Royen emphasized the arts in and around the postal buildings. From 1918 to World War II the author Gouwe assisted Van Royen in the selection of artists and designers. After the war the so-called Aesthetic Department of the PTT was founded. Gouwe became its head and was put in charge of the design of stamps as well as the design of the interior and exterior of all PTT service buildings. Gouwe was followed by Christian de Moor, a painter; and De Moor, in turn, was followed briefly by a former curator of the Haags Gemeentemuseum, Karel Schuurman. At the present time the head of the aesthetic service is Dr. Hein van Haaren, a former curator of the Haags Gemeentemuseum in charge of the educational services.

The department for aesthetic design can be divided in three:

1. Typographic design
2. Spatial design (including the monumental arts for new buildings)
3. Aesthetic counsel (the consultant is also the head of the Esthetic Department)

1945. Designer: Otto Treumann.

1931. Designer: Piet Zwart.



1947. Photographer: Eva Besnyö.

1946. Designer: Jan van Krimpen.

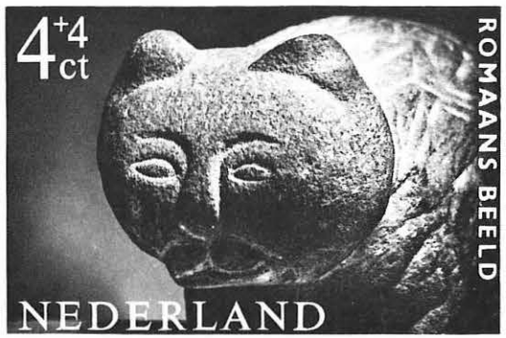
1956. Designer: Jan van Krimpen.

The design of stamps in the Netherlands shows a very clear history of art, architecture, and design in the Netherlands since 1918. Influences of the De Stijl group, Amsterdam Expressionism, New Functionalism, the Delft School of Architecture, and the Swiss influence in typographic design are all clearly visible in the design for stamps.

In addition, the selection of designers and artists to develop publicity material for the PTT is a clear indication of an open policy. One of the pioneers of Dutch typography, Piet Zwart, designed very early for Van Royen a number of brochures, some stamps, and also several forms for the checking system of the post office. Even if Van Royen (at that time a typographer himself) was not in agreement with the aesthetic directions of Piet Zwart, he had the courage to commission him.

Because of the growth of the PTT, the services of the Aesthetic Department also multiplied, and plans are underway to co-ordinate activities with the Department of Press and Publicity in informing the public about new stamps, new instructions, etc. It is Dr. van Haaren's plan to co-ordinate all communications of the PTT, both internal and external. Dr. van Haaren has a sympathetic ear in the director-general of the Netherlands PTT, Hendrik Reinoud. Reinoud is known, mostly outside the Netherlands, for his activities in regard to the automatization of all services of the postal authorities. The sensational new Netherlands giro system, completely computerized, was developed under the responsibility of Reinoud before he became director-general. The new trend which Dr. van Haaren wishes to give to the appearance of the PTT can best be illustrated by a quotation from his comment on the postal giro building in Arnhem: "The city will have to accommodate the pedestrian at all times. If the pedestrian feels lost in a world which is built according to a measurement which is much larger than the human scale, one has to make provisions on the 'natural pedestrian level.' In the Arnhem giro complex—a community for 2000 people—we have tried very hard to combine these two facets. The architects were able to analyze from their program of demands a number of responsible architectural decisions." Under the direction of someone who will guard and also will guide the aesthetic appearance of a state department, we can expect that in the coming years the Netherlands PTT will not only continue its good appearance but will become an example for many similar institutions around the world.

1968. Designer: Wim Crouwel.



1962. Designer: Cor van Weele.

Designer: Rein Draaier.

Designer: O. Oxenaar.

Search: An Approach to Cartographic Type Legibility Measurement

Barbara S. Bartz

It is proposed that a new task be selected for measuring the effect of type variation in cartographic context, and that since every name on a map must be found before it can be processed further, "search" would be such a meaningful task. From this, a definition of cartographic legibility would be held to include the notion, "the speed with which the map can be searched." Some literature is cited to show the utility of the search task in general, and various considerations which would restrict its use in map research context are also outlined.

Although the type used on any map is often the graphic element which attracts the most attention and tends to be the most criticized, there has been no substantive research conducted on the topic of cartographic type legibility. In the standard body of experimental type legibility research,[1] the word "map" never appears. We have seen in a previous article[2] how different are the ways in which type functions on a map, compared to standard text usage. The letter-forms encode meaningful sounds on the map, as they do in text, but they are also used to encode a variety of other quantitative and qualitative information about places. Any consideration of "legibility" in the cartographic context must be based upon quite a different array of assumptions, tasks, and questions.

Lacking experimental data from the map context, cartographers have resorted to the application of research findings from other type-use situations. Analysis points up the questionable nature of such application. For one thing, the type on a map is expected to function in a variety of ways. To put it another way (with the emphasis shifting from the map itself to the user of the map), the map user can carry out a wide variety of activities which involve type use.

He may look for names, he may read off the names in a particular area, he may try to remember all the names he has seen, he may make locative, qualitative, and quantitative comparisons of mapped features on the basis of the name type characteristics, and so on. In text usage, type can also be used in a variety of ways, but these are rather different from those just mentioned. In most experimentation it can be shown that the particular way in which type is used (the nature of the task performed) will affect the conclusions the researcher may reach about the effect of typographic variation on the speed, accuracy, or ease with which the task is performed. Thus the notion of achieving a general goal of legibility of type becomes less useful than it might at first be thought.

In themselves, the physical variations in type characteristics can be evaluated only in an aesthetic, subjective sense, for typography is no more than an arrangement of marks on paper. But type in use *is* more than itself; thus there is concern with the effect of typographic variation on the activity in which type is used to achieve some goal. Type can be evaluated, then, not for itself but on the basis of how it affects the performance of that activity. Generally, an increase in legibility is equated with an increase in the speed, accuracy, or ease with which the activity involving type can be performed. That typographic arrangement is considered best which maximizes one or more of these three activity characteristics.

In text legibility research, the word "reading" is either left undefined, or is defined in a particularly limited way for a particular experimental situation. There is, for example, the pronouncing aloud of running text, or the recognition of isolated words, or the reading of text for meaning which is tested for some kind of comprehension. Clearly, the "reading" of names on a map is an entirely different and rather novel use of the word. The combination of letters is vocalized, but may or may not have further meaning, depending upon the

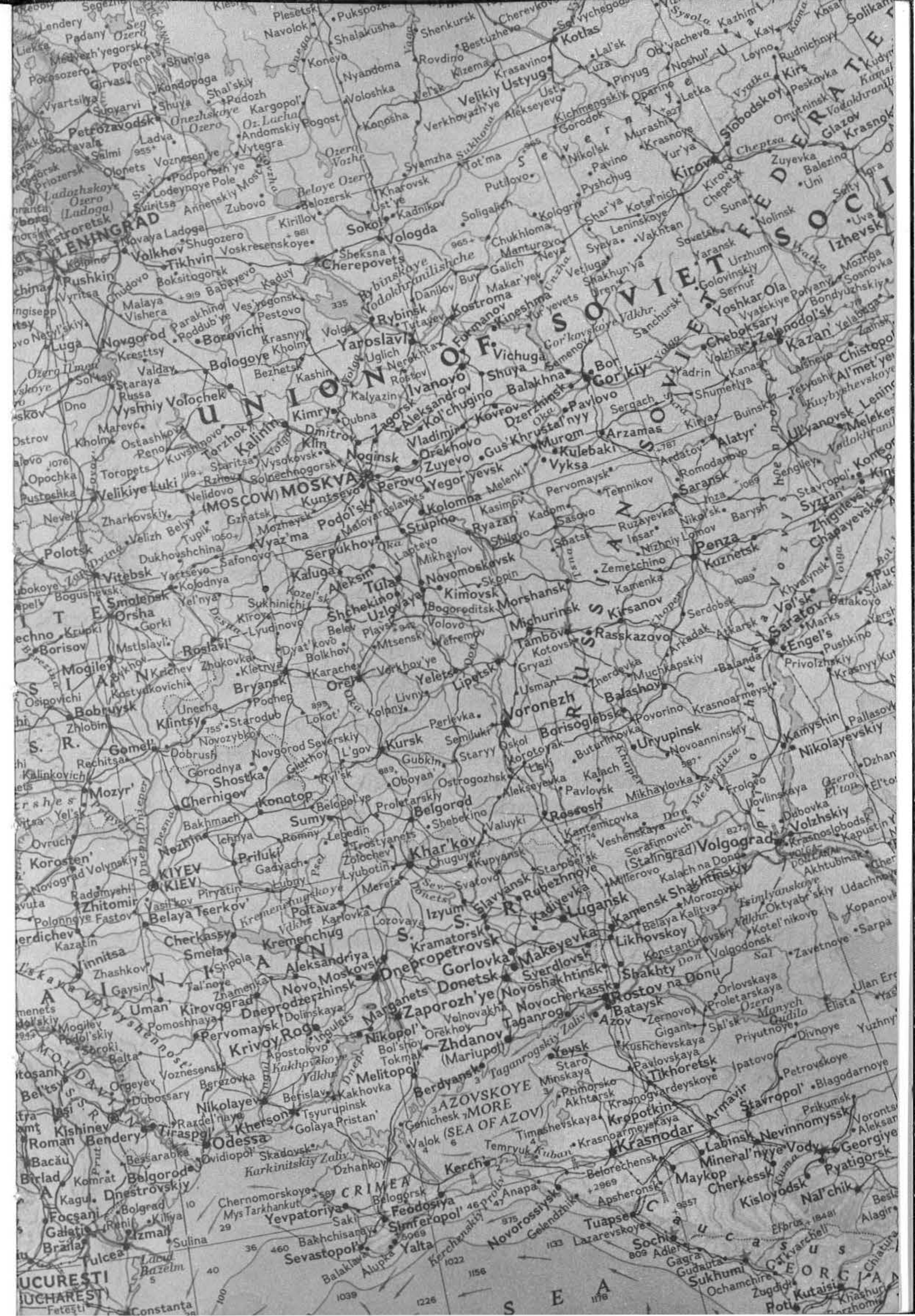


Figure 1. A densely-lettered, place-name reference map (illustration is the same size as the original map). It makes clear the difference between "reading" continuous text for meaning, and "reading" the names on an unfamiliar map. It also illustrates the complexity of cartographic typography. Source: National Geographic Society *World Atlas* (Washington: 1959), The National Geographic Society, Plate 30.

experiences of the map user. Speed-of-reading and comprehension do not seem particularly useful concepts in the cartographic context. In order to evaluate cartographic typography, an activity must be selected which is performed in actual ordinary map use. This activity must be one which uses typography and is measurable in some objective way. Then it must be determined whether typographic variation, in fact, can differentially affect this activity; that is, if it can affect the speed, accuracy, or ease with which the task is performed. If we are able to do this, we shall have one measure available to us which we can use to compare the effectiveness of various typographic arrangements in cartographic context (See Figure 1).

It seems reasonable to assume that finding a name is one of the more common tasks performed with a place name reference map. Before a name can be found, however, there must be a period of search. It is likely that a sensation of "ease" in finding a particular name will be correlated with the amount of time required for the search-and-find procedure. It further seems reasonable to assume that the characteristics of the map typography might have an effect on the rate at which this search-and-find procedure takes place. This would then provide us with a realistic task in cartographic context, and the amount of time it takes to find a name can be easily and objectively measured. Different cartographic type use situations could thus be evaluated and compared.

The search task (and associated timing measures) are not commonly found in the type legibility literature. We can arrive at some notion of its applicability and utility by examining some of the other experimental settings in which it has been applied. Several of these are considered in more detail because they suggest fresh approaches to the study of typographic coding in general. Search time can be affected by variables in the visual display, by the conditions surrounding the viewer performing the search task, and by the variable characteristics of the subjects themselves. Search-time measurement has appeared in the literature since about 1950, and is commonly used for three purposes:

(1) To investigate various techniques for coding targets,
(2) To study human searching patterns, in such applications as scanning for aircraft, and
(3) To study the searching process, either for its own sake or because

it is related to more general notions of pattern recognition, information processing, and other perceptual mechanisms.[3]

Map names, unlike words in text, frequently differ from one another on one or more visual dimensions. One would expect this to affect search times in some way, probably in rather complex fashion. The visual displays used for investigating coding dimensions with search times are often very simple, compared to the average reference map. Even then, results are not unambiguous. Eriksen, for example, investigated the effects of four coding dimensions (form, hue, size, and brightness) on the measurement of the amount of time it took to locate the target items. For one group of investigations, the objects on the display differed from one another on only one of the four dimensions; for the other group, the objects differed from one another on three of these dimensions. The visual display consisted of four-inch object cards on a 7 × 7 matrix. Eriksen was interested in the relation between the discriminability of an object and the number of dimensions on which it differed from the other objects in the field. "For example, in visual perception, can an object be more quickly located if it differs from the other objects in the field in form, brightness, and hue than if it differs only in form?"[4] His results were not such that this could be answered in a perfectly straightforward fashion. "For the single dimension, location time for hue differences was significantly faster than either brightness or size. The location times for the compounds of two or three dimensions were found to correspond to a weighted geometric mean of the single dimension of which they were composed. Compounds involving both the form and size dimensions were an exception due to interaction between these two dimensions."[5]

In another article, Green and Anderson used search time to investigate an aspect of target color coding. They had this to say of the search task in general: "Since almost any visual code can be tested in a visual search task, we suggest that codes can be evaluated in terms of search times. We would expect search times to be sensitive to such factors as the discriminability of coded symbols, the difficulty in learning the code, etc."[6] They conducted two experiments in which search times for colored symbols (two-digit numbers) on a visual display (again a matrix) were measured as a function of the relative number of symbols of each color, and the number of different colors used. They

found that when the subjects knew the color of the target beforehand, the search time for the target was approximately proportional to the number of symbols of the target's color. There was, however, a slight increment in search time due to the presence of the wrong-colored targets. When the subjects did not know the target's color, search time seemed to depend upon the total number of symbols on the display. "However, search times are slightly longer for multi-colored displays than for the comparable single-colored displays."[7]

Williams observed that when a person searches for a target in a cluttered visual field, his eye fixations typically fall on objects. He then studied the effect of target specification on the probability of fixating different classes of objects. "For fields containing objects differing widely in size, color, and shape, a high proportion of searcher's fixations were on objects of a specified size, and a slight proportion of their fixations were on objects of a specified shape. When two or more target characteristics were specified, fixations were generally based on a single characteristic. It is proposed that the specification of a target creates a perceptual structure which the searcher explores. The study of visual fixations, in effect, is the study of perceptual structure."[8]

He discusses this pattern of fixation in more detail, and observes that, "Overtly, search consists of a sequence of fixations which typically fall on objects. The process can be viewed as a sequence of two alternating activities, identification and acquisition. Identification is the classification of the foveally-imaged object as being the target or not (usually it is not). Acquisition is the selection of the new object from the extrafoveal field to fixate and the movement of the eyes to actually fixate that object."[9] This two-fold analysis of the process will be seen later to correspond fairly closely to the focal attentive and pre-attentive stages of visual processing proposed by Neisser and Beller. We stress this in some detail here, for the concern in map type "reading" would seem to be with this type of eye-movement pattern, rather than the more regular fixation-saccade-to-the-right pattern which is used in reading text. Eye movement in more complex visual displays, such as maps, is of a quite different, far less predictable character.

Neisser and his colleagues have used the search task as a basic tool in the development of certain arguments for a system of human pat-

tern recognition (stimulus equivalence). Neisser is, for example, interested in how one perceives a and *a* as "a," though the physical form is greatly different. If a subject is shown a list of letters, and verbally instructed to look for an "a," he will recognize it under greatly different conditions, and he will have to recognize a great many other letters as "not-a" on his way to locating "a." Search time (actually the amount of time it takes to ascertain the non-a configurations) can provide a great deal of information about the information-processing which is going on in this task of pattern recognition.[10]

In a doctoral thesis, Beller used search-time information to test a model of human pattern recognition. The model he proposed consists of two independent sequential stages of processing, pre-attentive and focal attentive. "The former is responsible for isolating and maintaining the *next* object of attention. The latter is responsible for identifying the presented object."[11] He proposed that these two stages would operate upon distinct, independent classes of information, *irrelevant* and *relevant*. "The irrelevant class of information is sufficient to elicit attention but not necessarily sufficient to enable object identification. The relevant class of information is sufficient to enable object identification but not necessarily sufficient to elicit attention."[12]

Beller designed a visual search experiment to test three hypotheses:
1. The time to process an irrelevant item would be less than the time to process a relevant item.
2. While relevant item time might be expected to increase with increased complexity of the stimulus, irrelevant time should not so increase.
3. The time to process an irrelevant item would increase with the difficulty of discriminating irrelevant from relevant items.

The results were in accord with the predictions.

To illustrate the nature of these implications with a concrete example, we can consider the instance of a name on a map. When one is searching through a number of other names on the map, in order to find a target name (that is, the name being looked for), one can process the non-target names so that (a) you know that they are not the name you are looking for, but (b) you could not tell what they actually were.

In other words, there is a preliminary partial processing which

rather quickly provides the information that "this is not the target name," but an actual identification, such as, "this is Greenbog," is a more complete process and takes more time. Further, if half the names on the map being searched were black, and half were red, and the subject knew that the target name would appear in red, red names would be considered "relevant" and black names would be "irrelevant." The time needed to process black names would be less than that needed to process red names; the processing of red names when they were not the target would be less thorough, in turn, than that which would finally produce positive identification of the desired name in red.

An important distinction is made in some near-cartographic research between the two activities, *search* and *recognition*. Nearly all of a 1961 issue of *Human Factors*[13] is concerned with problems of coding information for a map-like display. In general, the research reports do the following things:

(1) Outline some of the display variables relevant to map use analysis.
(2) Analyze and define possible map use tasks in a very specific way.
(3) Find that tasks which may *appear* to be very similar (such as *locate* and *identify*) are actually different, in that they may be differentially affected by coding variables.

The last point is of particular interest here. Hitt[14] was concerned to study the relative effectiveness of selected abstract coding methods, based upon their effects on various operator tasks. Five different coding methods were selected: numeral, letter, geometric shape, color, and configuration. Secondary variables included in this study were: target density, number of code levels, and operator tasks. The operator tasks included identifying, locating, counting, comparing, and verifying. Since the distinction between the first two is not always immediately apparent, an example should serve to make it clear. In an "identify" question, the subject was asked to perform a task which would be equivalent to, "Read off the city which is located in the upper-right hand corner of the map." For "locate" questions, the subject is asked to find a particular place name. "Locate" here is equivalent to "search" as it has been used throughout this paper.

Hitt statistically analyzed the degree of relation between these operator tasks, and concluded: "It is clearly seen from this figure that locating and identifying (or *search* and *recognition*) represent two in-

dependent operator tasks. On the other hand, the verifying, counting, and comparing tasks are loaded on both of these factors."[15] Hitt felt that this was one of the most important findings of the study, for it seemed to explain many seemingly discrepant results in earlier research with coding of visual displays. Further, ". . . it strongly implies that recommendations given to the design engineer concerning the design of visual displays must be based upon knowledge of the tasks involved in the system. Then finally, the identification of basic task factors would help establish a more rigorous framework for future research on visual displays."[16] Such concern with basic task characteristics has frequently been overlooked in much type legibility research, and particularly in the cartographic application of non-cartographic research. It is of fundamental concern in defining a "new" notion of cartographic type legibility.

The selection of the search task for use in assessing cartographic type variation seems both realistic and useful. The search task has been shown to be sensitive to variations in display coding variables; it seems reasonable to assume that it might also be so to the specific variable, typography. One aspect of "legibility" then, would be the speed with which a map can be searched.

The search task was used in research conducted by this author to evaluate selected lettering characteristics on a series of maps. The data so obtained are examined to evaluate the utility of such a task in the formulation of a more general definition of cartographic type legibility. The research is based upon the following assumptions about the use and users of place name reference maps:

(1) Such maps will be approached by a wide variety of users, under greatly varying circumstances.
(2) The majority of these users will most often want to learn where a particular place is by way of location of its name and symbol. In this respect, they have a specific task and goal in mind.
(3) The merit of the map for this purpose may be judged on the basis of (a) whether or not they can find a name they are looking for, and (b) how quickly and easily they can find it.

Aspects of the Search Task: 1. Total Map Versus Individual Names. It must be made clear that even restriction of our investigation to variation in type characteristics and their possible effect on search

time is not sufficient. There are at least two possible kinds of questions to be answered about type usage in this context, and these two kinds of questions could conceivably provide contradictory information. An illustration will clarify this point.

All previous type-reading research has indicated that an exceptionally intricate and conspicuous typeface, as for example Goudy Text, will greatly retard text-reading rates. This might be compared to searching a map with all names set in Goudy Text, where many names must be "read" before the searcher can find the desired target name. We might suspect that Goudy Text would impede the search for one name because all the names on the map will require more processing time. In other words, if all the names on the map are set in the same typeface, the question becomes: What typeface variation can affect the *search time for the entire map*?

On the other hand, if all the names on the map being searched are set in a light sans-serif face, and only the target name is set in Goudy Text, it would seem likely that the target name could be found very quickly since it would tend to stand out from the background. Thus, by choosing the same Goudy Text face, we might make *one name easier to find*. We see that there can be no one answer to the question: What typeface variations will make a map easier to search? We must decide whether we want all names on the map to be of equal "findability," or whether a few selected names should be more "findable."

It follows, then, that in establishing the conditions under which the research discussed here was done, the following two questions were asked:

1. Are there type characteristic variations which might affect search time for an *entire map*?
2. Are there type characteristic variations which might affect search time for *individual names*?

Aspects of the Search Task: 2. Expectation versus Non-Expectation Condition. There was an additional variable (condition) which seemed to be relevant and closely related to an analysis of cartographic type variation, namely, the nature of the attitude of the map searcher. That is, there would seem to be the distinct possibility that expectation[17] might affect the ease or difficulty with which names can be found on

a map. In simple question form, if the searcher expects a name to appear on a map in a *particular* typeface, will this expectation also affect search time? Are there cartographic type variations such that expectation might impede or facilitate search? In this research project, an attitude of expectation was controlled by having the subjects search from two forms of lists. Some subjects searched from typewritten lists (and since the names on the maps are hypothetical, this can be assumed to be a "no expectation" condition); other subjects searched from lists set to match the type in which the name appeared on the map, and they can be assumed to have an expectation about the appearance of the name on the map. Thus we are not only investigating the effect of type characteristic variation on search time, but are also comparing the magnitude of such effects with the magnitude of the effects produced by variation in the searcher's typographic expectation.

Testing was conducted in 1966 with about 300 participating seventh and eighth grade students in Chicago, Illinois, and Lakewood, Ohio. Test instruments, testing conditions, and results obtained will be discussed in a forthcoming article.

1. A summary of this research is contained in Barbara S. Bartz, *Type Variation and the Problem of Cartographic Type Legibility* (Madison: Ph.D. Dissertation, University of Wisconsin, 1969).
2. Barbara S. Bartz, "Type Variation and the Problem of Cartographic Type Legibility," *Journal of Typographic Research*, III (1969), 127–144.
3. Ulric Neisser has used it extensively for this purpose in *Cognitive Psychology* (New York: Appleton-Century-Crofts, 1967).
4. Charles W. Eriksen, "Location of Objects in a Visual Display as a Function of the Number of Dimensions on Which the Objects Differ," *Journal of Experimental Psychology*, LXIV (1956), 23.
5. *Ibid.*, pp. 59–60.
6. Bert F. Green and Lois K. Anderson, "Color Coding in a Visual Search Task," *Journal of Experimental Psychology*, LI (1956), p. 23.
7. *Ibid.*, p. 24.
8. L. G. Williams, "The Effect of Target Specification on Objects Fixated During Visual Search," *Acta Psychologica*, XXVII (1967), p. 355.
9. *Ibid.*, p. 355.

10. Neisser makes this comment about the visual scanning-search technique: "The method of visual scanning was employed in . . . experiments to obtain direct measures of the processing time of human information. The results indicate that the method is reliable, and permit several tentative conclusions about the organization of cognitive processes in the identification of printed letters." (Ulric Neisser, "Decision-Time Without Reaction-Time: Experiments in Visual Scanning," *American Journal of Psychology*, LXXVI (1963), p. 385.

11. Henry K. Beller, *Stages of Processing in Visual Search* (Waltham: Ph.D. Dissertation, Brandeis University, 1968). This quote is from an unpaged "Abstract" portion.

12. *Ibid.*, unpaged.

13. *Human Factors*, III (1961), pp. 86–146.

14. William D. Hitt, "An Evaluation of Five Different Abstract Coding Methods," *Human Factors*, III (1961), pp. 120–130.

15. *Ibid.*, p. 125.

16. *Ibid.*, p. 128.

17. In using the term "expectation" here, we are referring to a very specific expectation of the physical appearance of the type; there is always present a *general* expectation of the letter shapes and the total word "shape," but in this discussion, the use of "expectation" is always limited such that, for example, a subject would know that the target name would occur in bold, black letters of the largest type size, and so on. It is assumed that general expectation would be the same for any one name under all testing conditions.

Response Sheet / October 1969

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Résumé de Articles

Traduction: Fernand Baudin

Origine du caractère russe dit Grazhdanskii ou caractère laïque par Ivan L. Kaldor

C'est Pierre le Grand (1689–1725) qui décida la création de ce type de caractère. Pour M. Kaldor c'est là une décision dont les conséquences sociales et culturelles loin en importance toutes les innovations connues en typographie—sauf l'invention de la typographie proprement dite. L'article est une relation historique détaillée de l'origine et du développement de ce caractère *grazhdanskii*. L'auteur analyse divers textes gravés qui ont pu servir de modèles au dessinateur du *grazhdanskii*. Dans le même esprit, il analyse divers caractères de transition dessinés par des typographes occidentaux au service du Tsar. Enfin, L. Kaldor retrace tout le processus de création du caractère—le premier de style moderne en Russie—en partant de l'incident qui, probablement, est à l'origine de l'*ukaz* par lequel Pierre le Grand imposa, au début du XVIIIe siècle, le *grazhdanskii* pour tous les imprimés laïques.

Le langage figuré et le modèle verbal par Colin Murray Turbayne

Hypothèse: le mot est une transcription, sous forme alphabétique, que nous devons apprendre à déchiffrer. Si l'on se reporte au problème bien connu de la vision, il faut d'abord tenir compte de l'opposition sens commun—illusion avant d'interpréter ce que nous voyons. L'homme apprend à décoder une vision très complexe. Il doit notamment passer du langage écrit au langage parlé (l'un et l'autre s'appelant Anglais, par ex.); comme il doit passer du visuel au tactile. La vue se forme sur la lecture; la peinture, la sculpture et la photographie se forment sur le modèle de l'écriture—elles sont des manières d'écriture en termes visuels.

La mode et le dessin des caractères par G. W. Ovink

Lorsqu'il est question des principes formels d'une époque donnée, *style* est pris favorablement pour désigner ce qui en fait l'unité, tandis que *mode* a presque toujours un sens péjoratif.
Les circonstances qui conditionnent à présent la création des caractères typographiques sont bien différentes de l'avant-guerre. Elles sont marquées notamment par l'apparition de la photocomposition et par la facilité avec laquelle on reproduit un lettrage donné. Le goût de la discipline et un fini impeccable ne sont plus exigés. Les maquettistes préfèrent des caractères neutres auxquels leur mise en page prêtera vie. Actuellement, un certain clacissisme règne. La composition est destinée à être lue. Toutefois, en typographie, il n'existe guère de caractères purement utilitaires. Aussi faut-il encourager l'invention chez les dessinateurs de lettres.

L'image de marque des PTT aux Pays-Bas par Pieter Brattinga

Par image de marque ou visage d'entreprise il faut entendre l'ordonnance esthétique de tous les aspects d'une entreprise, publique et privée.
Les origines et l'histoire de l'image de marque des PTT aux Pays-Bas sont retracées depuis l'initiative de Jean-François van Royen (± 1910) jusqu'au temps présent où M. Hein van Haaren est directeur. L'article est illustré de reproductions de timbres et de brochures.

Mots-repères: une nouvelle approche dans l'étude de la lisibilité en cartographie par Barbara S. Bartz

L'auteur propose un nouveau critère pour mesurer la portée pratique des changements de caractères en cartographie. Puisqu'il faut nécessairement qu'un mot soit d'abord repéré sur la carte avant d'être lu, le critère des mots repères serait assez naturel. Partant de là, une définition de la lisibilité cartographique comprendrait nécessairement une notion telle que: la rapidité avec laquelle un mot est repéré sur la carte. Quelques ouvrages sont cités à l'appui de la thèse en général; mais l'auteur insiste sur les raisons de limiter sa proposition au contexte strictement cartographique.

Kurzfassung der Beiträge

Übersetzung: Dirk Wendt

Die Entstehung der russischen Graždanskijšrift *oder Amtsschrift* von Ivan L. Kaldor

Die Entwicklung und Verbreitung der *Graždanskijšrift* oder Amtsschrift durch Peter I. (1689–1725) wird als ein Fortschritt mit sozialen und kulturellen Implikationen für des Rußland des späten 17. und frühen 18. Jahrhunderts betrachtet, der weit über irgend eine andere Neuerung in der Geschichte der Druckkunst hinausgeht—mit Ausnahme der Einführung des Druckes mit beweglichen Lettern. Der Aufsatz bietet eine dokumentierte Geschichte der Erschaffung der *Graždanskijšrift*. In einem Versuch, mögliche Vorbilder des Schöpfers der neuen Schrift zu finden, werden zeitgenössische geschnittene Texte mit Buchstaben untersucht, die möglicherweise als Vorbilder gedient haben können. Zu demselben Zweck werden Übergangs-Schriften herausgesucht und analysiert, die von westeuropäischen Typographen im Dienste des Zaren benutzt wurden. Schließlich wird die Geschichte des Entwurfs der neuen Schrift—der ersten modernen Schrift, die in Rußland benutzt wurde—verfolgt, angefangen von der Suche nach Anlässen, die Peter I. dazu gebracht haben könnten, um die Jahrhundertwende durch kaiserlichen Erlaß den Gebrauch der *Graždanskijšrift* in allen nichtkirchlichen Drucksachen anzuordnen.

Sichtbare Sprache vom verbalen Modell von Colin Murray Turbayne

Hypothese: Die sichtbare Welt ist eine Schrift, dargeboten in alphabetischer Form, die wir lesen lernen müssen. Angesichts des alten Problems der Art unseres Sehens müssen wir erst den Konflikt zwischen gesundem Menschenverstand und Trugbildern in unserer Interpretation des Gesehenen betrachten. Der Mensch lernt, eine komplexe Verschlüsselung des Sichtbaren zu entziffern, einschließlich des Brückenschlags zwischen einer geschriebenen und einer gesprochenen Sprache (die beide, z.B., "Englisch" heißen) und einschließlich dessen zwischen Sichtbarem und Ertastbarem. Das Sehen ist aufgebaut auf dem Lesen; Malen, Bildhauerei und Photographie gestaltet nach dem Schreiben—es sind Formen des Schreibens in sichtbarer Sprache.

Mode im Schriftentwurf von G. W. Ovink

Während "Mode" dazu neigt, unvorteilhafte Konnotationen zu haben, wird "Stil" als positive Einheit der Formprinzipien einer gewissen Epoche verstanden. Modefragen im Schriftentwurf hängen heute von anderen Gegebenheiten ab als vor dem 2. Weltkrieg, zum größten Teil wegen des Aufkommens des Lichtsatzes und wegen der leichten Reproduktionsmöglichkeit gezeichneter Schrift. Sorgfältige Ausführung und Selbstdisziplin werden nicht mehr verlangt; die Typographen bevorzugen neutrale Schriften und gestalten ihren eigenen Ausdruck durch typographische Entwürfe. Heute dominiert die klassizistische Tendenz in der Typographie: die Schrift ist dazu da, gelesen zu werden. Allerdings gibt es unter den Druckschriften kaum rein nützliche Formen; der Schriftentwurf hat andere, subjektive, emotionale Ziele. Schriftentwerfer sollten mehr freie Formen schaffen.

Der Haus-Stil der Niederländischen PTT von Pieter Brattinga

"Haus-Stil" wird definiert als ästhetische Ordnung aller Aspekte eines Geschäftsunternehmens, sowohl öffentlicher wie interner. Ursprünge und Geschichte des Haus-Stils der Niederländischen PTT werden kurz gestreift, von der Pionier-Arbeit Jean Francois van Royen's (*ca.* 1910) bis zu der Richtung Dr. Hein van Haaren's heute. Es werden Beispiele von Briefmarken und Broschüren-Entwürfen aus dieser Zeit gegeben.

Suchen: Ein Ansatz zur Messung der Lesbarkeit von Druckschrift in der Typographie von Barbara S. Bartz

Es wird vorgeschlagen, eine neue Aufgabe zur Messung der Wirkung von Schrift-Variationen in kartographischem Zusammenhang zu verwenden. Da jeder Name auf der Karte gelesen werden muß, ehe er weiter verarbeitet werden kann, ist das "Suchen" eine sinnvolle Aufgabe. Daher müßte eine Definition der kartographischen Lesbarkeit den Begriff "der Geschwindigkeit, mit der die Karte abgesucht werden kann" enthalten. Es wird einiges aus der Literatur zitiert, um den Nutzen von Such-Aufgaben im allgemeinen zu demonstrieren, und es werden eine Reihe von Überlegungen angestellt, die den Gebrauch solcher Aufgaben auf kartographischen Kontext einschränken.

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