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11

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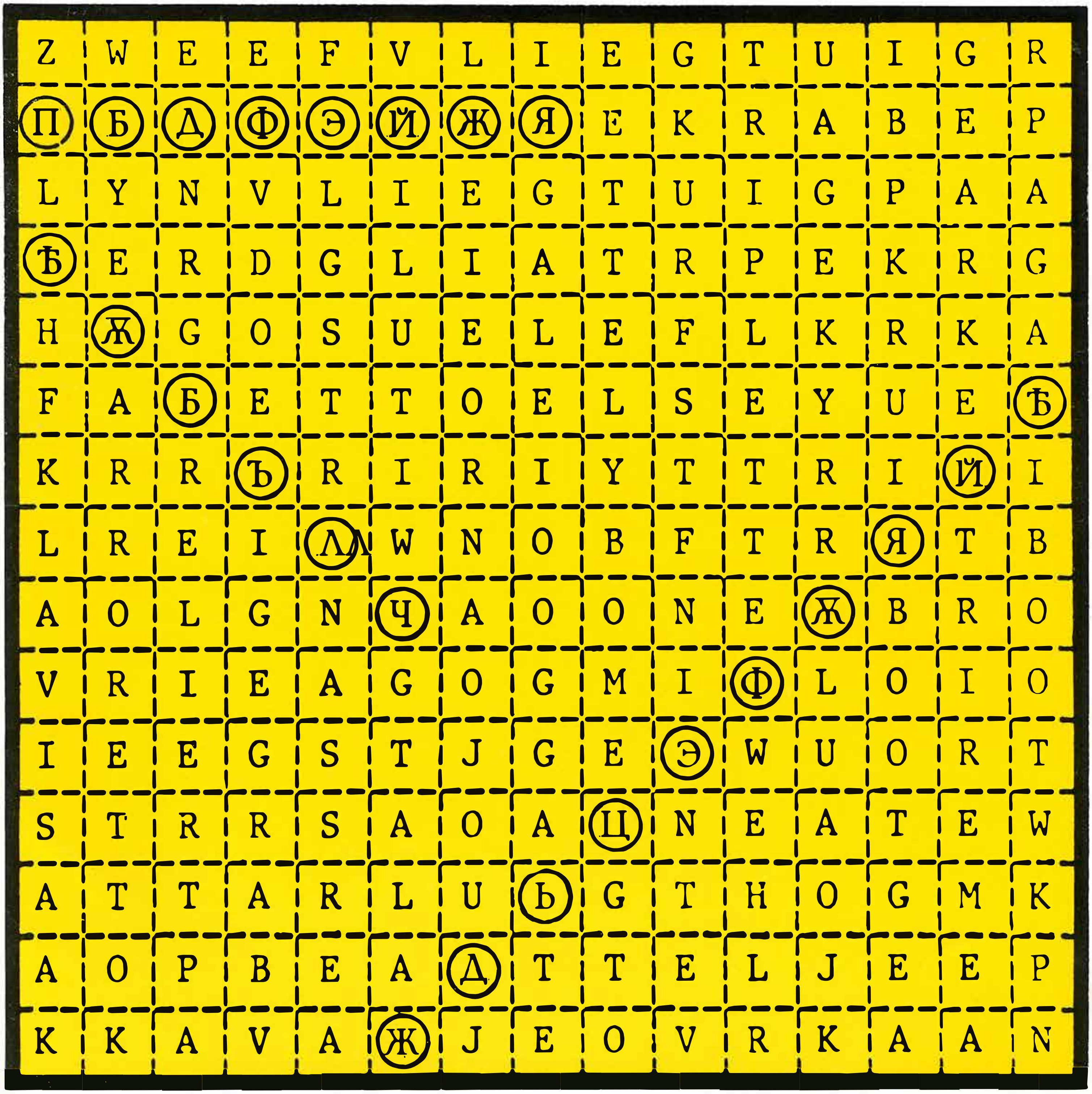
Contents include

Divergent and convergent
tendencies of the Latin and
Cyrillic (Russian) alphabet

Probing pictures for a lingua franca
Posters for Peace by Israeli graphic
design students
First steps on a thousand
mile journey—part 2

The inadequacies of the Roman
alphabet and a proposed phonetic
alphabet with concept-related
phonograms
Comenius and visual education



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Patrick Wallis Burke

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Executive Editor	Patrick Wallis Burke
Contributors to issue number 11	Patrick Wallis Burke J B Deregowski Albert Kapr Peter Kneebone Jan Rajlich Anthony J Rozak
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Introduction

Divergent and convergent tendencies of the Latin and Cyrillic (Russian) alphabet

Albert Kapr

The author thinks it likely that there will be a gradual, step-by-step development of a phonetic system of writing which will encompass ever more languages.
He traces the joint ancestry of both the Latin and Cyrillic alphabets and the debt that both owe to the early Greek alphabet.
The history of writing is intimately bound up with the rise of the great religions. From very early times, education and schooling were largely the province of the churches.
And since most of the major religions are founded upon some written document—a Holy Writ—their links with the development of writing are understandable.
They have, however, exerted a negative force upon efforts to unify methods of recording speech.
National pride and economic forces have also been factors in the conservation of existing methods and in the prevention of rational attempts to modify and improve alphabetic writing. In the Soviet Union, for example, the Cyrillic script is thought of as the 'Russian script,' and has been a central factor in the unification of the Russian nation.
Nevertheless, the author argues that the pressures towards a more universal alphabet will prevail, even though the process may be long and arduous.

Posters for Peace by Israeli design students

Yarom Vardimon

The author briefly describes a poster project which he initiated at the Bezalel Academy in Jerusalem for final year graphic design students, on the theme "Israel wants Peace."
He shows a selection of the work which they produced and each student contributes an explanatory note concerning the thinking that led to the solutions they offered to this difficult communication problem.

Probing pictures for a lingua franca

J B Deregowski

The author, a lecturer in psychology, discusses the commonly held notion that pictures might provide a *lingua franca,* free of all cultural and ethnic boundaries and equally comprehensible to all men. He suggests that such an idea is erroneous and that evidence from travellers, anthropologists and psychologists contradicts the layman's view. It would seem that members of many cultural groups find interpretation of pictures difficult.
The failure of pictures as a *lingua franca franca,* he believes, may have roots much deeper than those of mere convention. Even in pictorially rich cultures observers do not respond to pictures of objects in the same way as they do to the actual objects depicted. Pictures, it would seem, share some characteristics of objects, but a veil of unreality limits their effectiveness, and this veil varies from culture to culture.

First steps on a thousand mile journey—part 2

Patrick Wallis Burke

Many layman think that the Chinese write in pictures and that their writing system is unphonetic.
In his second article, the author explains how the Chinese phonetic system works and goes on to describe the special characters known as 'specifiers' or 'radicals.'
He gives some examples of ways in which the radicals can be combined to give new meanings, and uses them to demonstrate how metaphors for human experience seem to have a universal quality.

The indaequacies of the Roman alphabet and proposed phonetic alphabet with concept-related phonograms

Anthony J Rozak

The author describes a phonetic alphabet that he has designed, and the various factors that he took into account when devising it.
Like Bernard Shaw, he believes that only by abandoning the Roman alphabet can one devise a sensible working tool for rendering the sound patterns of English and other languages. His 40 character alphabet provides cues for learners to conceptualise the varying functions of the individual letters. These he bases upon our present understanding of human speech production. He believes that his system is faster to write, comparatively easy to learn, and capable of better word-pattern recognition than the Roman alphabet. His ideas make a useful addition to the debate concerning the improvement of English orthography.

Comenius and visual education

Jan Rajlich

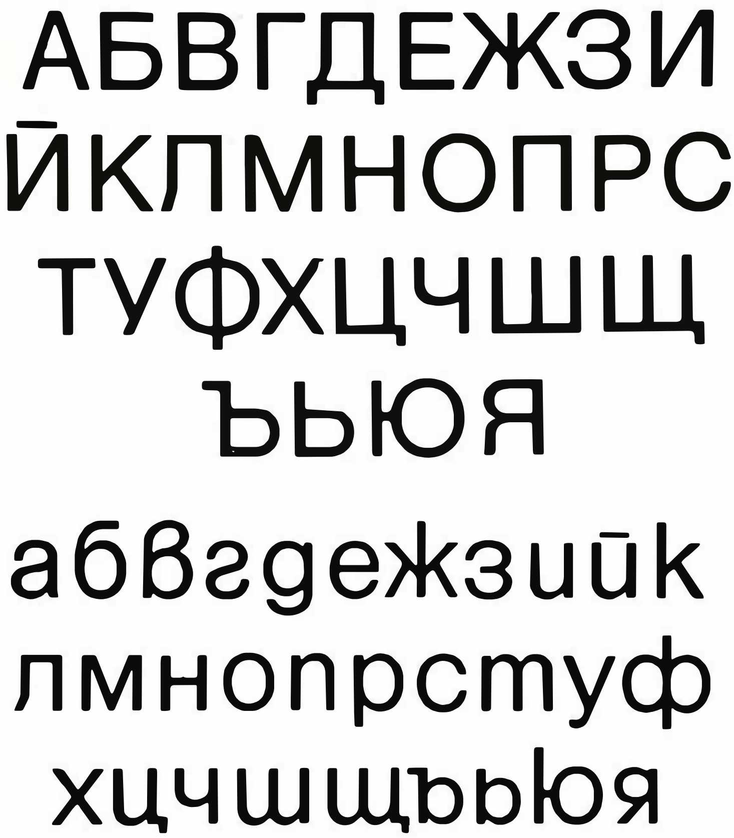
The author contributes a short article concerning the life and work of the remarkable 17th century Czech teacher, philosopher and cleric, Jan Amos Komensky, or Comenius, as he was known in Latin.
He was an undoubted pioneer in the field of pictorial education and many of his ideas about the processes of education still seem radical more than three hundred years after his death.
The article contains a number of illustrations, taken mostly from Komensky's most famous textbook, the *Orbis Pictus.* This great work was first published in Nurenberg in 1658 and subsequently reprinted many times, over a two hundred year period. *Orbis Sensualium Pictus* (The Pictorial World of the Senses) is one of the earliest illustrated textbooks, in which delightful woodcut illustrations are used to explain and amplify the ideas of its author.
It is a book that still has much to say to all teachers and designers in the field of visual education.

Divergent and convergent tendencies of the Latin and Cyrillic (Russian) alphabet

Professor Albert Kapr is Principal of the Hochschule fur Grafik und Buchkunst in Leipzig

Albert Kapr

translation from German by Maria Luise Huntington



Design of a new sans-serif typeface by Danail Donkow, Sofia 1972. Some of the lower case letters have been modified to fall into line with handwriting practice and some of them have been given new ascenders in an attempt to improve legibility

The relationship of graphemes and phonemes

This essay builds on the ideas and concerns of my friend, Solomon Benediktovitch Telingater, who discussed his problems with me in many conversations in Weimar, Moscow and Leipzig. Sadly, Solomon Benediktovitch himself was able to put only a few of his far-reaching ideas in writing. He lectured twice in Leipzig. The first time, on the occasion of the 200th anniversary of the Academy of Graphics and the Art of the Book, he spoke about "The graphemes of the Latin and Russian alphabet." (1)
The second time, at an international symposium commemorating the 500th anniversary of the death of Johannes Gutenberg, he advocated the "standardization of alphabetic graphemes." (2)

Lately I have had a number of requests to write about the relationship between the Latin and Cyrillic script. The problems are, however, manifold and presuppose a greater knowledge of languages than I possess. As a type designer and specialist in the history and aesthetics of the Latin script, I am apt to overemphasize questions of beauty and legibility. On the other hand, I recognize the obligation of the practitioner in this field to take a position on a development which, while it will only in the future bacome evident in a practical way, is already being theoretically initiated. I mean the gradual and slow development of phonetic system of writing which will encompass ever more languages and alphabets. Consideration is mostly given to those steps which are obvious and at this point feasible; but only when the more distant goal is to some extent defined, can the direction of the steps to follow be planned in a better and more intelligent fashion.

My reflections are on the whole of a prognostic nature, and the orientation towards the future requires that the road travelled so far be analysed first. For this reason I wish at the outset to sketch the relationship between language and writing and then take a look at the relationship —both historical and intellectual— between the Latin and Cyrillic (Russian) script.

In his late work *Kratylos* Plato already examines the relation of language to objects. (3)
Hermogenes, on of the conversational partners of Sokrates, is of the opinion that there is no other norm for words and the objects denoted by them than convention and concurrence.
And Sokrates states: "A name is then an instrument of teaching and of separating reality, as a shuttle is an instrument of separating the web." (4)

The Roman philosopher Boethius (5) differentiates between word and writing. "The letter is the figurative representation of the smallest part of the human voice; 'elementum,' however, is the sound of this writing. When I write the letter 'a', then the figure written in ink is called 'formala,' but the sound with which we reproduce this letter is called 'elementum.' "

Thus the topic which we wish to examine is established. It deals with the relationship between the smallest parts of language and words, that is the sounds, and the signs which represent them.
Telingater and the Soviet type designer Faik Tagirov suggested for this the terms *phonemes* and *graphemes.* The use of these terms simplifies the inquiry into the relation between the Latin and Cyrillic alphabet. By graphemes are meant visual signs which stand for sounds, while phonemes are symbols for sound which, either signly or in combination, form words.
Graphemes serve to reproduce language as true to sound as possible. The quality of a phonetic script results from the ability to represent the phonemes of a language in complete and practical fashion.

When this yardstick is applied to the Cyrillic (Russian) and Latin alphabet, the former is shown to be clearly superior. Russian writing and the Russian language show a considerable agreement between graphemes and phonemes. A similar harmony exists between the Cyrillic script and the Bulgarian, Serbian and Macedonian languages.
There are no double graphemes for for the same phoneme as is the case in the Latin script. The specific slavic sounds are well represented by the letters.
The palatal vowels have likewise their own letters and are well reproduced, with the exception of 'e' which can be read as either *ie* or as *io.* Some less important peculiarities do not need to be discussed here.

Lately the contradictions between writing and pronunciation of the Latin graphemes have been pointed out with increasing frequency.
As examples I would like to quote some proposals for improvement relating to the French, English and German languages.

In Paris in 1890, Paul Passy recommended an"alphabet phonetique international" which, however, because of the rather large number of 77 graphemes, had a somewhat intimidating effect.

In England and the United States, George Bernard Shaw and many others advocated phoneticization of writing for the English language. (6)

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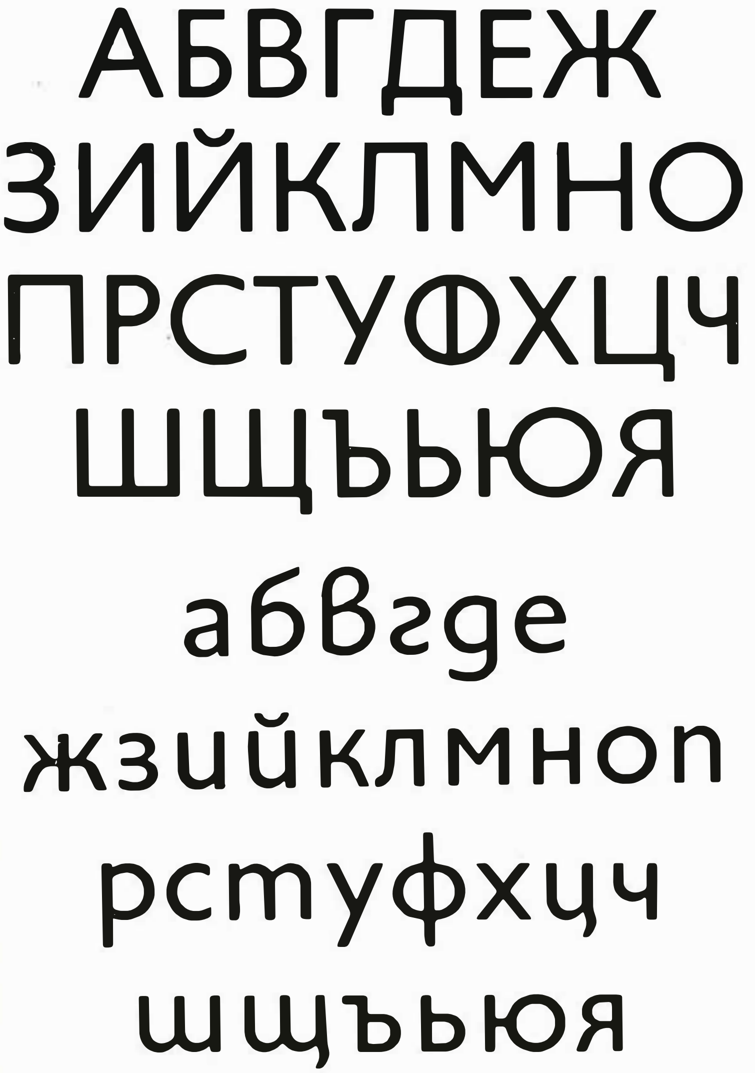
Author's address:
701 Leipzig
Jacobstrasse 22
German Democratic Republic



Design of a new sans-serif typeface by Pjotr Tontschew, Sofia 1972. As in the previous example, the designer has added a number of modifications to the lower case

When he died in 1950, Shaw left in his will a considerable sum of money for the purpose of developing and publicizing a "reasonable" phonetic alphabet for English.

The executors of Shaw's estate organized a competition for this purpose. But the best of the reformed alphabets which were selected on New Year's Eve of 1959 resembled a New Year's joke rather than the serious improvement intended by Shaw. In 1962, the comedy *Androcles and the Lion* was printed in the new alphabet. The new signs had, however, a strange effect because because they differed too much from the Latin alphabet.
Since then, no publisher has dared to use this typeface for a second book.

The reform proposals made by the World Language Association (7) show a way which is easier to follow. According to the WLA, unnecessary Latin graphemes (x, q, c, y) would be used for those sounds which have up to now been transcribed (x for th, q for ch, c for sh, y for ay). But it should be carefully considered whether substituting the proposed phonemes for these graphemes, as suggested, does not constitute an arbitrary choice which might block more far-reaching developments.
I shall indicate such possibilities below.

In 1960, I J Pitman, together with the Institute of Education of London University, called for a great pedagogical experiment with an enlarged Latin alphabet. He waived the questionable graphemes *q, x* and *y* (as, incidentally, does the Simpler Spelling Association in the United States) and invented several new graphemes which are rather easy to remember and are derived from Latin letters. With Pitman's new letters is is at least easier to learn the proper pronunciation; but graphically his new forms could be greatly improved.

Jakob Grimm, the founder of German philology, called already in 1819 for a reform of German spelling by simplifying it in accordance with sound. (8)
He recommended, furthermore, to do away with capitalizing nouns, that is to use capital letters similarly as in English, French and Russian. Since then, more than 150 years have gone by and still there exists the need to get rid of this baroque custom of capitalizing nouns.

Konrad Duden must also be counted among the pioneers of German orthography. Already in 1872 (9) he recommended a spaced-out and gradual reform leading to a phonetic method of writing.
Good pronunciation was to lead to accurate writing and accurate writing to correct pronunciation.

All double graphemes standing for the same sound were to be eliminated. Already one hundred years ago Duden realized that reactionary motives are hidden behind the elitist insistence on a complicated, traditional way of writing. He contrasted historical spelling with "democratic" phonetic spelling. "Writing in not only for scholars but for all the people."

Old-fashioned spelling is a hindrance to progress, as with a phonetic script much time and energy could be saved in school, in writing, in typesetting and even in reading.
It is therefore becoming an urgent task to introduce a phonetic alphabet. I will touch upon two more questions in order to clear up the old controversy between partisans of historic and phonetic writing.

Truly phonetic writing will be possible for a few languages only, as the diversity and modulation of phonemes is too great in the various languages. In Spanish, Czech, and Finnish there exist already today conditions of near harmony.
In the case of English, where centuries ago the pronunciation also largely coincided with spelling, pronunciation changed greatly due to shifts in sounds, and by perpetuating the original spelling, disharmonies were created.
French, German, Polish and many other languages also need to come closer to a phonetic method of writing. In some languages, however, where suffixes are used to construct cases—as for instance in Hungarian—it will be necessary for the etymology to remain recognizable even when there is a development towards a relative phonetization.

It has already been pointed out that changes and reforms of the alphabet can be introduced only step by step. If changes in type-face are too abrupt, the effect on those concerned is one of strangeness.
Orthography tends to be conservative, as it carries for some a connotation of right and wrong, and a different way of writing appears to be a punishable act. But proper spelling should first of all be practical and make sense; it is not a law, simply a convention which under certain conditions could be changed.

The method of gradual change and improvement of systems of writing hinted at by Telingater, has many opponents who recommend complete abolishing of the traditional alphabets and introduction of new graphemes or symbols. I am skeptical about the elimination of customary systems. Of course we need the Morse code Braille, shorthand, binary system and other methods of communication. But is it possible to replace the letters used in printing our books and newspapers suddenly with something new?

Gottfried Wilhelm Leibnitz already proposed ideogrammatic writing which could be read by all people irrespective of their language. In this sense *pasigraphy* is an attempt to introduce a kind of new heiroglyphics or optic signs not tied to language, such as have long proved effective in traffic signs and numerals. The idea is tempting. But according to to the dictionary-like card index which is at present being issued, the pasigraphic script *SAFO* (10) requires in addition to 180 basic symbols, 30,000 combined symbols. Such phantasmic figures make an undertaking of this kind an absurdity. (11)

I J Gelb (12) declares: "What we should look for is a system of writing combining the exactness of the IPA alphabet (IPA—International Phonetic Alphabet) (13) with the formal simplicity of a shorthand system. Both theory and practice could be satisfied by evolving a full and exact system of notation which could be shortened and simplified under certain conditions. The full system should contain signs for all the known signs of the various languages within the limits of the IPA alphabet, and the signs should be expressed by forms borrowed from a stenographic system." (14)

In this connection the development of "Visible Speech" is noteworthy, ie. the spectro-analytical or electro-physical fixation of the speech track and the combining of it with a binary typewriter or typesetting machine. But these spectrometrical records cannot replace the type used for books and newspapers. It is therefore worthwhile to continue considering the future of our traditional letters.

Language does not lend itself to revolutionary changes. Writing is a similar case. And so it seems to me impossible to convince the many millions of people who today read the Latin and Cyrillic alphabets of the desirability of a different and strange new script. It is therefore important to plan future changes in a sensible fashion. In this endeavour many factors which appear to be peripheral will have to be considered. One important factor is an analysis of the modern letters of the Latin and Cyrillic script. How did these forms develop and what were the reasons for the differentiation of the scripts? These questions will be dealt with in the following paragraphs.

Some observations concerning the development of the Roman (Latin) and Cyrillic (Russian) scripts

To me it appears at least incorrect to term the Latin script as "Western," as is done in some publications, or as a "script of the Western civilization." The Latin alphabet is plainly a modification of the Greek alphabet and could not be imagined without it. It is even possible that some of the letters of the archaic Roman capital script derived from the Phoenician through Southern Italian trade settlements, either directly, or by way of the Etruscans.

The Phoencian script became known in the coastal areas of most Mediterranean countries through trade. To what extent Crete and Cyprus developed separate forms does not need to be dealt with here. It is also not important whether the Greeks adopted and adapted the Phoenician alphabet in the 10th, 9th, 8th or 7th century BC. I would, however, like to stress that the influence of the Phoenician alphabet on the Mediterranean countries lasted probably eight centuries. Of course, there were considerable differentiations in form and method of writing of the Phoenician letters, caused by wars, the establishment of states, differences of religions, trade barriers, diversity of languages and races. In the beginning, the Greek script was merely one of the many offshoots of the Phoenician script.

It is true, however, that the Greek branch of the Phoenician script then developed into an independent trunk, pushing the latter more and more into the background. Decisive in this development was the ever greater influence of Greek trade, Greek seafaring, the increasing economic, political and military influence of the Greeks in the Mediterranean area. During this process which stretched over centuries, there developed early on, more than 40 different ways of writing Greek. It is likely that the Phoenician influence lasted longer on the African coast and in the Western Mediterranean area than in the immediate vicinity of Greece. Only the obligatory introduction of the Ionic (Milesic) alphabet following the adoption of Solon's laws in the year 403 BC led finally to the unification of the Greek alphabets. The older written dialects continued, however, to influence the Latin script, the Oscan, Umbrian, Etruscan, and Faliscan scripts. Perhaps also the letters which were later adopted by the Skyths, the Moesogoths and Proto-Bulgarians and used as specific forms of the Glagolitza and Cyrillic script.

The oldest discovered examples of Latin script date from the 6th century BC. The inscription on the *Manios* clasp which is oriented to the left, and the bustrophaedonal inscription on the Lapis Niger of the Forum Romanum, still greatly resemble Western Greek writing. With the establishment of the Republic (510 BC) and the increasing power of the Roman Empire, more stress was placed on the independence of the Roman capital script. But during the time of the Republic and the Empire, Greek culture reached Rome in various waves. Even the forming of the uncial letters could have been influenced by Byzantium, since the Byzantine dome and the Byzantine round arch similarly influenced Roman architecture (Ravenna).

The first independent creation of the Western European countries was the Karolingian miniscule from which the small letters of the Latin alphabet evolved. Notwithstanding this, the cultural superiority of Byzantium continued for centuries. Only with the invention of printing and with the Renaissance did the influence of the Byzantine art of writing and architecture cease to be felt. And after the conquest of Constantinople by the Turks, the Catholic Church was interested in seeing that the once considerable influence of the Eastern church should be forgotten. As a matter of fact, not only does the Roman-Latin script owe its inception to Greek culture, it was influenced by it for centuries.

The Cyrillic script was developed about twelve or thirteen hundred years after the Roman. According to existing epigraphic monuments, during the first two hundred years after the establishment of the Bulgarian state in the year 681, the Greek alphabet was used for the Bulgarian language. The old Bulgarian writer Tchernorisetz Chrabar reports that in the year 855 Constantin (Cyril, the philosopher) and his brother Methodius (15) created a new alphabet for the Bulgarian people. This alphabet, the Glagolitza, or old Church-Slavic script, is clearly derived from the Greek script which was at that time changing from uncials to half-uncials. Some graphemes which serve to represent slavic sibilants are thought to have been influenced by Semitic and even Coptic writing.

After Bulgaria had again briefly been under Byzantine rule, and after a popular uprising in the year 1187, the Emperor Assen and Peter established the second Bulgarian state, and therewith began the flowering of Bulgarian literature. The adapted and simplified Cyrillic alphabet, which was especially current in the scriptoria of the new capital Veliko Tirnovo, got its name probably because it was used to write the books of the Cyrillic liturgy. Of the 38 letters, 24 are taken directly from the Greek alphabet, some are ligations of Greek letters, other graphemes were derived from the Glagolitza.

The most important form of writing was at that time the *ustav* from which the half-ustav was developed. Ustav means boundary. Hence the ustav is a script limited by two lines. It can be compared to the Latin uncial, from which developed the half-uncial. In the scriptoria in Tirnovo a so-called speed-writing was in use which could be compared to the later Roman cursive.

At the end of the 14th century, the Turks occupied Bulgaria. They impeded the natural development of the Cyrillic alphabet; Many scribes fled to what is today Romania and to the Ukraine. The centre of the development of writing shifted to Kiev and later, Moscow. It is noteworthy that the forms of the Cyrillic letters, such as the particularly beautifully executed ones of, for example, the *Sava* Gospel, endured for a long time, even after the introduction of printing. The Cyrillic script was simplified and transmuted into the *Grazhdanka*—the civil script—by Elias Kopievitch, and through an edict of Peter the Great. In the Soviet Union, this form is now called the Russian script, as differentiated from the older, Cyrillic form, whereas in Bulgaria and Serbia, the name Cyrillic script was given also to the new and simplified forms.

To summarize: the Latin and Cyrillic alphabets are both the offspring of the Greek script; they are, as it were, sisters.

Divergent and convergent factors in the development of writing

It has already been mentioned before that there are various factors that contribute to the differentiation and standardization of writing; political and economic forces, differences of languages and races, religious differentiations. Up to now, the literature on the history of writing has dealt relatively little with the problem mentioned in the title, and here it is only possible to enumerate the most important factors without analysing them in detail.

Increased economic and social development was, and is, the basis for the rise and development of writing as a tool for communication. Progressive classes and forces were always interested in a simplification of scripts, in spreading the ability to read, in caring for writing. Eras of great and progressive economi changes were also golden ages of the development of writing. As examples, I would like to cite the period of Greek slave-owner democracy, the early Roman Empire, the first flowering of feudalism in the 9th century, the Renaissance, and the Period of Enlightenment and of the French Revolution. (16)

Those involved in trade had a special interest in the possibility of writing script quickly and reading it easily.

In Bulgaria, considerable research has been devoted to modification of the lower case letters in order to secure improvements in legibility. Below are shown two typefaces developed in the 70's. The sans face was designed by M Peikowa and G Kowatschew. The seriffed face was designed by W Bara

At the same time, through trade, literacy spread to other countries and continents, since for organized trade, written agreements between trade partners was indispensable.

The state, as the economic and social power, tried time and again to standardize the alphabets used in its territory. We can observe this trend in the Greek script after the acceptance of Solon's laws in the year 404 403 BC. It is especially noticeable in Egypt where, after Alexander's triumphant progress, the demotic script was superseded by the Greek. Within the Roman Empire, the Roman-Latin alphabet was dominant although others, especially the Greek, were also in effect and widely used. In the Spanish, Portuguese, English and French colonies, old and proven alphabets of peoples were supplanted by the Latin alphabet of the colonial masters. True, some of the great religions resisted this forcefully. In the Austria-Hungary of the Hapsburgs, many efforts were made to push back the Cyrillic and Arabic alphabets in Serbia, Bosnia and Montenegro.

Religions or churches play an important part in the differentiation or standardization of writing. This is understandable since the nurturing of writing, as well as of education and schools were largely the province of the churches. Only since the end of World War 1 can a certain lessening of the influence of the church on writing be observed. Perhaps the great importance given by churches to writing can be explained by the fact that most religions were founded on a written revelation, a "Holy Writ." On the other hand, there are hidden under the cloak of churches, economic and social forces that use writing as a means to expand their influence.

With the standard of the Prophet, the Arabic script was brought to many people who profess Islam. A further expansion of the Latin script resulted from the colonial conquests of the great powers who secured their dominance by bringing their priests and their writing to the occupied areas. The boundaries of the dominance of a particular alphabet, the Cyrillic for instance, or in part the Arabic, as well as the Latin, were until the end of the First World War, almost identical with the boundaries of the great religions. The area of the Latin script corresponds to the sphere of influence of the Roman church and the Protestant churches which evolved from it.

After these remarks let us look at some phenomena of early Christian church history in the context of the differentiation of writing. Already at the inception of Christian churches, the warring sects of the Jacobites,

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the Nestorians and the Melchites, had developed from Syrian writing various distinctive alphabets. (17) Monophysitic Christians, such as Copts and the Nubian Christians, changed the form of Greek writing and created independent scripts.
The Armenian alphabet is attributed to St Miesrob (3441), but it is likely to be an independent modification and further development of the Greek script through the Gregorian creed. (18)
It is probable that it was the Arianic creed which led the Italian Goths to change the Greek script into the particular form which we know from the *Codex argenteus* in Uppsala.
The Moesogoths had accepted Christianity long before the time of Ulfilas, as they were represented at the Council of Nicaea in the year 325, by their own bishop, Theophilos. (19) I did not find any proof that the writing of the Moesogoths influenced the Bulgars, who later invaded their territory, or that it influenced the old Bulgarian alphabet. On the other hand, it is not impossible that some Glagolithic letters represent adaptions from the Samaritan or Semitic script. (20)
When the Bulgarians adopted Christianity, they demanded and got their own Patriarch and the right to the liturgy in their own language. Parallel with that, they developed their Slavic script, adapted from the Greek, the Glagolitza.

The centuries of dispute between the Eastern and Western church were also reflected in the area of writing. The Czechs, under their Duke Bosivoj, had adopted Christianity from the Eastern church and, consequently, used the Glagolitza. After they converted to Catholicism in the year 967, during the reign of Duke Boleslav, the Latin alphabet came into use. Other Western Slav countries, Moravia and probably large parts of Poland, were first converted to Christianity by the Eastern church. About the middle of the 11th century, the Cyrillic liturgy, and with it the Cyrillic script, were replaced by the Roman liturgy and the Latin script.
Pressured by the Jaguellons, the Lithuanians had to renounce the Cyrillic script and join the Latin religious community. After Romania and Bulgaria were liberated from the Turkish yoke, there ensued strong Catholic religious propaganda. The ethnic relatedness was used by Rome to promote the use of the Latin script by the Romanians, who heretofor had used the Cyrillic.

To summarize: while the Serbians and later the Ukrainians and the Russians, to a large extent adopted the Cyrillic liturgy, and with it the Cyrillic alphabet, the Catholic Western Slavs use the Latin script.
The development of the Cyrillic alphabet cannot be ascribed to the primary and sole purpose of transliterating the special slavic sounds; it is rather, a characteristic of the earlier autokephalic national churches.

This leads to the question: why has a situation which is determined by factors having hardly any effectiveness today, been sanctioned to this day? What reasons are there for retaining those traditional, different alphabets? Are there tendencies to overcome these differences?
What are the disadvantages of the existing situation?

The shortcomings of the Latin and the Cyrillic (Russian) alphabets

The greatest advantage of the Latin alphabet is that it is so widely disseminated. Its written and printed forms lend themselves to wide variations. As positive factors I would also mention the display possibilities of Roman which, besides cursive and semi-bold, also offers serifs.
At its best, the Latin script is easy to read and has aesthetic qualities which should not be overlooked.

Latin characters are, however, more cumbersome to write than, say, Arabic. But its greatest shortcoming lies in the current confusion in the use of graphemes, which can only be compared to the legendary Babylonian confusion of languages.
I would like to cite two examples which are typical of the difficulties. This table shows the different graphemes currently in use for the same phoneme.

Phoneme	**š**	**č**
English	**sh**	**ch**
French	**ch**	**tch**
German	**sch**	**tsch**
Polish	**sz**	**cz**
Hungarian	**s**	**cs**
Romanian	**s**	**c**
Italian	**sc**	**c**
Swedish	**sk, ch**	**k, kj, tj**
Czech	**š**	**č**
Serbo-Croat	**š**	**č**
Turkish	**ş**	**ç**

In many languages, different graphemes are used for the same phoneme. Thus, in French, the phoneme *o* is variously written as *o, au* or *eau.* In German we even find four graphemes for the phoneme *k,* namely *c, k, q* and *x.* It is true that *x* stnads for the diphthong *ks,* and *q* in combination with *u* for the diphthong *kv.* But these diphthongs occur so rarely in German that there would seem to be no need for special letters. For the sound *ts* there are *c* and *z,* for the sound *f, the letters* f, v, and *ph.* Why could these double graphemes not be separated and those which are not needed used for other phonemes for which there are at present no graphemes?
It could be recommended to represent the sound *k,* only by the letter *k.* The letter *c* would have to do for the sound *ts. Kv* would be substituted for *qu,* and *ks* for *x.* The graphemes *q, x* and *z* could then be used for other purposes. If only *f* were used for the phoneme *f,* than *v* would become available as a grapheme.
The relatively recent and questionable invention of *w* could be revoked and *v* become the grapheme for the sound *w,* as is the case in many languages.

It would, of course, be useful if among the countries where the Latin alphabet is in use there could be a gradual coordination in the method of writing. In such a case it would be necessary to settle the question whether the frequent use of accents with letters as, for instance, in Czech, facilitates reading more than the exclusive graphematic representation by Latin characters as, for instance, in Italian. Does the doubling of consonants serve to lengthen them, as in Italian, or does it serve to shorten the preceding vowel, as in German? These questions can only be touched upon here. I do not have the specialized knowledge to deal with such problems. It is likely that they can be solved only by an international commission of linguists including, however, expert designers, since any change in this area should take into consideration the advantages and disadvantages for writing and typography.

The Cyrillic (Russian) script is today also widespread. It is used for about 80 languages within and outside the Soviet Union. (21)
Included in this are the many languages of Asian ethnic groups, who only under the Soviets developed their won written culture.
My Soviet friends are agreed that problems in that connection were satisfactorily resolved through diacritical and special signs. I do not have the knowledge to judge this.
In any case, there exists a much more harmonious relationship between phonemes and graphemes of the Slav languages and the Cyrillic (Russian) alphabet, than between the Latin alphabet and the languages for which it is used.

At present, the Cyrillic (Russian) script has, in my view, three shortcomings:

1 It is a little more difficult to write than the Latin. Several letters can only be comprehended in the direction from right to left.
Others are cumbersome to write, and they frequently give children trouble when they first learn to write.
The Cyrillic script also requires more up-and-down movements for certain letters, than the Latin.
The influence of handwriting was greater in the Latin than in the old Cyrillic letters, with the result that the latter retained more static forms.

2 In typescript, the Cyrillic (Russian) small letters have too few descenders. The lines resemble broad ribbons, decorative, ornamental, attractive in their contrast between vertical, horizontal, slanting and rounded lines. But the outlines of the word picture are frequently insufficiently defined. It is well known that in reading, the eye grasps with one look, groups of letters or word pictures; but word pictures without descenders and ascenders cannot be taken in as quickly. For this reason, various experts in the Soviet Union and Bulgaria are trying to provide some small letters with additional ascenders and descenders.
Professor Vassil Iontchev of Sofia, gave persuasive reasons for this at the International Exhibition of Modern Book Art in Leipzig. And the contest of the RGW for new typefaces which was also included during this exhibition, proved the advantages of such designs, a matter which caused an excited discussion among the jurors.

3 I believe that the Cyrillic (Russian) alphabet has too many letters.
Of course, the 26 letters of the Latin alphabet should not be considered as representing the most advantageous number. But it is questionable whether the palatal vowels do have to be represented by special graphemes. It should be possible to obtain the same graphematic characterization without extra lines, by joining *j* and a vowel, and thus do away with the need for several letters.

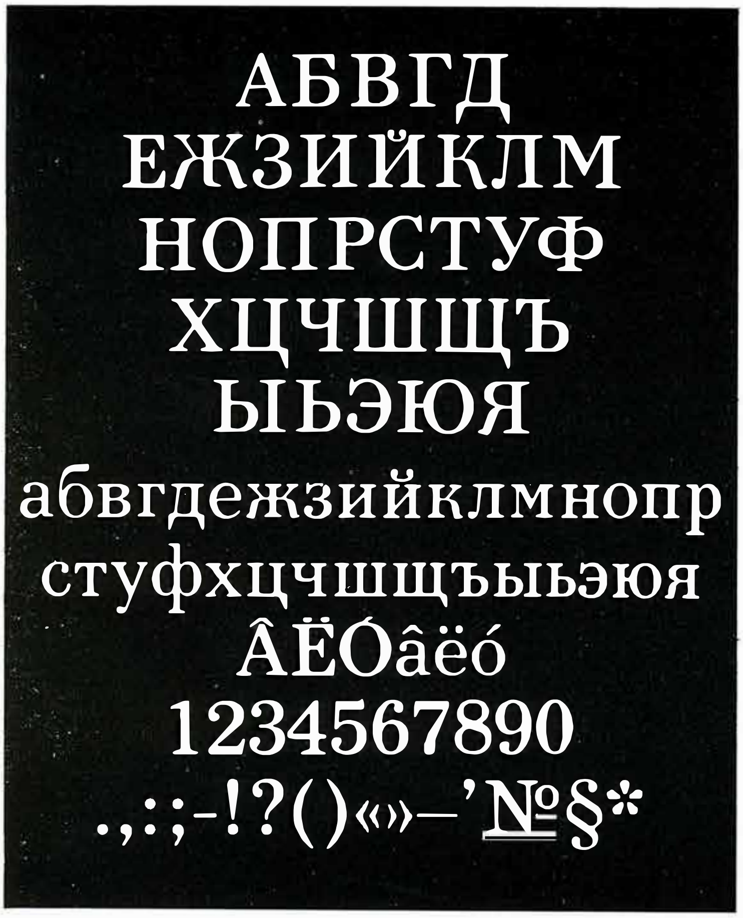
There are, in any event, shortcomings in the Latin and the Cyrillic script which urgently call for a solution. Could such corrections be so made that they might, in the future, lead to a gradual standardization or, at least, that they do not hinder a future unification of these alphabets?

Telingater's idea of standardization

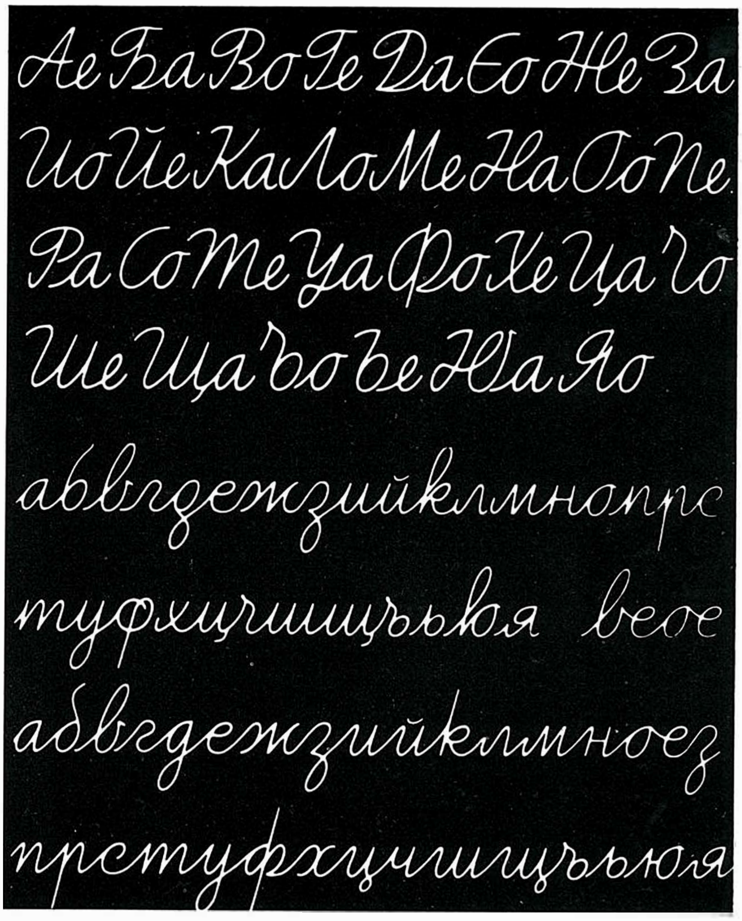
The reform of the Cyrillic alphabet which Peter the Great ordered in the year 1770, on the basis of proposals by Elias Kopievitch, represented a certain approximation to the Latin alphabet. In the civil script, the most complicated letters from the church=slavic alphabet were eliminated. Some archaic forms were also eliminated in the alphabet reform following the October Revolution.

Certain letters have different graphemes in type than they have in handwriting. Thus, in ordinary Russian writing the grapheme *D* is the same as in Latin writing. In type, however, the grapheme Д has to be used. The grapheme T is in use in over half of all handwriting and, universally in type. Officially, however, the grapheme m̅ should be used when

Design of a new Russian typeface by S Maksin in 1970. Designs from the Soviet Union tend to be rather more conservative than those from other parts of Europe. In this particular design the traditional forms of the Cyrillic alphabet have been maintained



Design of a new basic script for use in schools, developed by Dimiter Tendatilow, Sofia



writing. On the whole, there is a tendency to simplify, caused by the wish to write quickly and in an uncomplicated way.

Already in 1912, Eserky (22) proposed at an international congress in Rome, the introduction of a standardized alphabet of Latin and Cyrillic letters, in suitable combination.

Telingater, who knew several languages, among them Greek, Armenian and Hebrew, pointed out time and time again, that his concern was really a matter for philologists and linguists.
I quote: "Nevertheless, I would like to set forth as an idea, one of the problems, albeit in general form, because I am of the opinion that it can be described as a proposal, or rather a project, and that it can then be corrected or elaborated by experts. . . The subject is the standardization of graphemes of national alphabets which developed on the basis of the Latin and Greek alphabets. I cannot help but think that, in their historical development the various alphabets lost their initial advantages instead of retaining and further developing them, and that their uniform use thus became more complicated. The classical basis of these national alphabets, that is the Graeco-Latin basis, was such that each grapheme corresponded to a phoneme, or in other words that each letter represented a sound. . .

In my opinion, the standardization of the graphematic system of those alphabets which derive from the Latin and Greek alphabets, could represent a radical solution.
I am, furthermore, of the opinion that standardized graphemes for all alphabets derived from the Graeco=Latin or Graeco-Cyrillic basis should be obligatory. In principle, the system of diacritic signs should also be uniform."(23)

Telingater already designed the capital letters for such a standardized alphabet, and made suggestions for a phonetic method of writing. He repeatedly pointed out that this alphabet should only be considered as a first idea which should by all means be discussed and amended.
I believe it is important to include in due course, small letters and forms for the written alphabet, in the discussion. Telingater said additionally that the realization of his idea would take many generations and would have to proceed in stages.
"These stages could encompass: elimination of archaisms and of silent letters in alphabets, perfection of diacritic signs, standardization of individual letters in national alphabets, etc. In this endeavour a general solution according to territorial and language areas should be sought, as well as the calling of international consultative meetings.
It is easy to imagine the advantages which would flow from the realization of this suggestion: new possibilities for telegraphy, for typeface design, for mechanized information and for many other areas." (24)

It is obvious that Telingater's ideas presuppose a peaceful coexistence and close economic and cultural ties between peoples.
The ever more accelerated development of science and technology, the tasks shared by all the people of our planet with respect to communication, information services and space technology, provide objective motivation for the overcoming of disruptive factors, such as are caused by the lack of logic between graphemes and phonemes.
It is true that the time is not yet right for the immediate realization of standardization. In the Soviet Union, Bulgaria and Yugoslavia, the countries where the Cyrillic (Russian) script is in use, more important and more urgent problems have to be solved at present. Telingater's proposal was, after all, aimed at a solution in a more distant future. Right now, the purpose is to test the readiness for a clearing of the problems and to undertake the preparatory theoretical work.

Persisting forces and imponderabilia

One thing seems certain: the divergent factors in the development of writing have lost their influence. Convergent forces are, at present, noticeable only in isolated cases.
It would appear that most people are satisfied with the present situation. In the global discussion between capitalism and socialism, writing does not occupy an important place. Although neither the Cyrillic nor the Latin script can be characterized as the more advanced, and although religious factors may be assumed to have influenced their origin, the giving-up of a particular position with respect to writing would be impossible today and even a leaning towards the characteristics of the other alphabetic system would be met with political distrust.

The cultural heritage of a people, and along with it the traditional forms of writing, are in a complicated manner connected with the political aims of the present.
The heritage can be used for the forming and education of the people. It must be considered to what extent and at what time the harmonizing of the two alphabets could be discussed.

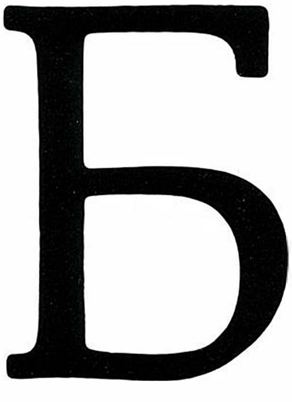
Over and above this, there are feelings and influences which cannot be measured but which are quite effective and hinder a reform of the alphabet. Most of these feelings can be substantiated, but they touch on national, conventional and religious areas which are not accessible to everyone.

Through historical examples it has been established that forms of writing were also, sometimes preponderantly, an expression of a religious creed and of belonging to a church. In some countries, the history of the church is closely tied to the history of the nation. In Bulgaria, for example, the Cyrillic script was a national symbol during the Turkish rule, and during the fascist occupation there were orthodox priests who, for national and religious reasons, collaborated with the communists. The socialist Bulgarian state celebrates each year, a Cyrillic Alphabet Day, and it should be noted that, at this time, Bulgaria makes available considerable public funds for its further development. The Cyrillic alphabet is tied in with books, architectural monuments, paintings and icons. A displacement of the deeply-rooted Cyrillic alphabet would be met with opposition from a large segment of the population.

In the Soviet Union too, and especially in the RSSR, the Cyrillic alphabet is seen as a national form, and some type designers and historians, with good reason, attach importance to its characterization as "Russian script."
During the great national defensive war against fascism, the Russian script was a uniting tie for all Soviet citizens. Not only Russian literature, but the works of Lenin and the documents of the Revolution have been handed down in the Russian script. Although most Soviet children learn a second language, mostly German, English or French, and therefore, the Latin script, they regard the Russian alphabet as their own, familiar form of writing.
No consideration can therefore be given to replacing it; only a slow, gradual harmonization and standardization can be considered.

Those who are at present using the Latin alphabet would, likewise, not easily understand an adaption or change of the phonetic meaning of some letters. Even a reform in the sense of writing phonetically met with opposition, for which Mark Twain is quoted here as spokesman: "La on, Makduff, and damd be he hoo furst krys hold, enuf!"
He thought that "To see our letters put together in ways to which we are not accustomed offends the eye, and also takes the *expression* out of words. . . It does not thrill us as it used to do. The simplifications have sucked the thrill all out of it." (25)
Mark Twain decided against a phonetic reform of writing and preferred a completely new alphabet.

In my opinion it would, however, be considerably more difficult to get used to the introduction of a completely new alphabet than to a phonetic alphabet, to be followed by a standardization of alphabets. The negative feelings cited by Mark Twain would only last a few years and, during the transitional period, older editions of Shakespeare could still be read if desired. After that, however, the young people would be negatively impressed by the obsolete method of writing. And if in the meantime, new Mark Twains were to be born to malign, first the new, and then the obsolescent method of writing, this would additionally enrich literature. In Bismarck's time fiery speeches were made in the Reichstag for and against the German alphabet, speeches which nowadays can only be read with a smile.
To be sure, there is in the FGR, especially in Bavaria, a small organization devoted to the revival of the German alphabet, but in the eyes of the public such endeavours are considered reactionary.
And nobody could be found who would consider the old way of writing "thumbe Thoren" * preferable to the modern way. Fortunately, it seems that common sense prevails, even if it does occasionally take a long time for the better arguments to win.



*thumbe Thoren=dumme Toren =stupid fools.

References and notes

1 Telingater, Solomon B: *Ueber das Grafem des Alphabets.*
Papier und Druck, 1965/1, p21ff

2 Telingater, Solomon B: *Die Vereinheitlichung alphabetischer Grafeme*
Papier und Druck 1968/5 p88ff

Parallel article, *The Standardization of Alphabetic Graphemes*
The Journal of Typographic Research, July 1968, p233-140

3 Plato, an English translation, VI. H N Fowler, London and New York, 1926

4 Op cit. p23

5 Boethius: *Librum Aristotelis de Interpretatione*
I Migne LXIV

6 Shaw sent out his well-known postcards with the following message: *From Bernard Shaw. A Forty-letter British Alfabet. The number of letters in our Johnsonese alfabet, minus x, c, and q (unnecessary) is* *23*

The following consonants are missing: sh, zh, wh, ch, th, dh, and ng. *7*

Also missing are the vowels and dipthongs; ah, aw, at, et, err, ot, ut, oot, yoot and the neutral second vowel in colour, labour, honour, etc. *10*
40

A quite phonetic British alfabet is impossible because the vowels of British speakers differ as their fingerprints do; but the 40 sounds listed above will make them as intelligible to one another in writing as they now are in speech. . . "

7 World Language Association, 17 Midland Road, Leeds 6, England

8 Grimm, Jakob: *Deutsche Grammatik.* Goettingen 1819

9 Duden, Konrad: *Die deutsche Rechtschreibung.* Leipzig 1872

10 *Kleines Woerterbuch der Sinnschrift.* Verlag Otto Schraml Starnberg/See, 1960

11 Another pasigraphic system is *Isotype*—International System of Typographic Picture Education. See also Neurath, Otto, *International Picture Language,* London 1936

12 Gelb, I J: *A Study of Writing. The Foundations of Grammatology,* University of Chicago Press 1952

13 Jesperson, Otto and Holger Pederson: *Phonetic transcription and transliteration*
Supplement to Maitre phonetique, Oxford 1926

14 It seems to me that this requirement could, perhaps, be met by Felix von Kunowsky's articulation writing. This shorthand is an attempt to reproduce in graphic form the movements of the organs of speech. On the basis of this phonetic shorthand, similar system could be standardized across the borders of language; but this is no substitute for typescript.
See Kunowsky, Felix von: *Kurzschrift als Wissenschaft und Kunst,* 2nd ed, Leipzig 1923

15 They were members of a Slav family and were born in Constantinople. Cyril, born in 826/27, studied at the Imperial University in Constantinople. He was fluent in several languages, later became Librarian at the Patriarchal church of Hagia Sophia and taught at the Imperial University.
Cyril, the philosopher, died in 869 in Rome, Methodius in 885 in Moravia.

16 See Kapr, Albert: *Schriftkunst,* Dresden 1971

17 Mieses, Matthias: *Die Gesetze der Schriftgeschichte,* Wien und Leipzig 1919, p190

18 Ph. Lukas Somal: *Quadra della storia letteraria della Armenia,*

19 Waitz, Georg: *Ueber das Leben des Ulfilas,* Hannover 1840

20 The genesis of the forms of some characters leads directly to Hebrew. A letter may also be mentioned in which in the year 865 Pope Nicholas addresses the newly converted Bulgarians;
You state that in your country many were baptized by a certain Jew of whom you are not sure whether he is a Christian or a heathen and you ask me what should be done with them.
The matter stands thus, if they were baptized in the name of Christ or the Trinity, as we read in the history of the Apostles, then it is certain. . . "

From: Nicolai Papae Responsa ad consulta Bulgarorum.
Patrologia es. Migne CXIX 1014 "a quodam Judaeo, nescitis utrum Christiano an pagano multos in patria vostra baptisados asseritis et quid de his sit agendum consulitis. . . "

21 Russian writing is used with modification also for the following languages: Ukrainian, Bielorussian Usbekian, Kasakian, Azerbaidjanian, Tadshikian, Turkmenian,

Tartaric, Tshumvashian, Mordvinian, Bashkirian, Ossetian, Kalmykian, Abchasian, Tshuktchian, etc.

22 Esserky, Th. *L'alphabet universal,* Rapport au X Congres Intern. de Geographie. Quoted from Mieses, p176

23 Telingater, Solomon B: see reference 2

24 Ibid

25 Twain, Mark: *A Simplified Alphabet.* In *What is Man,* and other essays. New York and London 1917 p263

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Probing pictures for a lingua franca

J B Deregowski

The author is a lecturer in psychology at the University of Aberdeen

A picture, in order to be recognized as portraying a particular object, must share some of the visual characteristics of the object; it must provide the viewer with a pattern of visual stimulation which, in part at least, is reminiscent of the object.

It could be argued that the task involved in recognizing depicted objects is essentially the same as in recognizing objects. And since recognition of objects is essential for survival, and is therefore universal, it follows that recognition of depicted objects is likely to be universal too. In short, pictures provide a *lingua franca,* free of all cultural and ethnic boundaries and they are equally comprehensible to all men.

This conclusion is strengthened by reflection on one's own experience with pictures. Admittedly, some pictures are puzzling and difficult to perceive. Some works of art fall into this category and so do some drawings made purposefully obscure, such as the puzzles familiar to most of us from boy's or girl's annuals, in which one is enjoined, say, to search for a rabbit which masquerades as a part of the general scenery, or to find in how many ways two seemingly identical pictures differ.

One experiences no difficulty, however, with either simple line drawings or unambiguous photographs. When presented with such a picture, one does not grope slowly in order to extract meaning as one does when confronted with a written sentence in a language with which one has but a slight acquaintance.
The recognition of a picture is instantaneous and lucid.

This subjective impression is supported by experimental observations. The evidence comes from the responses of an American child brought up with practically no exposure to pictorial materials and no instruction on how to interpret them. When this child, at the age of 19 months, was presented with photographs and drawings of objects with which he was familiar, such as a shoe or a car, he named them correctly. He had, it seemed, acquired the ability to perceive depicted objects although his experience was confined to objects only.

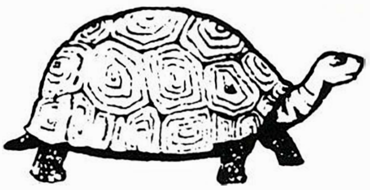
This suggests that, even in the cultures where pictures are unknown or rare, difficulties with pictorial interpretation should not occur; it also confirms that pictures offer a unique *lingua franca* with roots, unlike artificial languages, not in the common heritage of certain linguistic groups, but in the universal character of human perceptual experience.
This suggestion is, however, erroneous.

There is a body of evidence gathered by travellers, missionaries, anthropologists and psychologists which shows that members of certain cultural groups find interpretation of pictures difficult.

The following two quotations span almost a century and describe such difficulty in groups as geographically remote from each other as the peoples living near Lake Malawi and the people living in New Guinea.
The first comes from the work of a Scottish missionary, Dr Laws, a highly observant, shrewd and educated man; the second from Mr Anthony Forge, an anthropologist.

"Take a picture in black and white, and the natives cannot see it.
You may tell the natives: 'This is a picture of an ox and a dog'; and the people will look at it and look at you and that look says they consider you a liar. Perhaps you say again, 'Yes, this is a picture of an ox and a dog.' Well, perhaps they will tell you what they think this time.
If there are boys about, you say: 'This is really a picture of an ox and a dog. Look at the horn of the ox, and there below is his tail!'
And the boys will say:
'Oh! yes and there is the dog's nose and eyes and ears!'
Then the old people will look again and clap their hands and say, 'Oh! yes, it is a dog.' When a man has seen a picture for the first time, his book education has begun!"

"When shown photographs of themselves in action, or of any pose other than face or full figure looking directly at the camera. . .
(the Ablam of New Guinea) cease to be able to 'see' the photograph at all. Even people from other villages, who came especially because they knew I had taken a photograph of a relative who had subsequently died and were often pathetically keen to see his features, were initially unable to see him at all, turning the photograph in all directions."



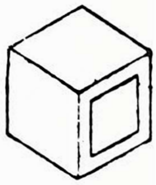
Responses made by Kenyan observers to this picture of a tortoise strengthen the impression made by these two quotations that the claim that drawings are a *lingua franca* is unjustified. The figure of the tortoise was used in a survey of comprehension of pictorial material run under the auspices of the South African Medical and Research Foundation and is reproduced her by their permission.

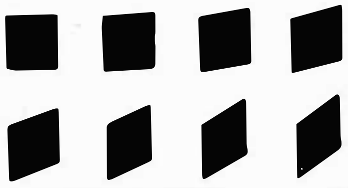
A small, but as far as the present argument is concerned, crucial, percentage of observers misidentified the figure, calling it an elephant, presumably because of the shape of its feet, a snake, presumably because of the shape of its head, and a crocodile, perhaps because its shell has a pattern of lines similar to the crocodile's scales. The observers, it seems, responded in a strange *pars pro toto* manner.

The important restriction illustrated by such a case has long been recognized in societies where pictures are used as a means of communication; for example, where the illiteracy rate is high or where the variety and heterogeneity of language calls for a *lingua franca.*

These difficulties were first systematically investigated in South Africa by Mr W Hudson, whose work proved seminal to all later investigations, both in theoretical analysis of the nature of the difficulties and in the work concerned with the applied aspect of the problem, such as the evaluation of the comprehensibility of safety posters used by industry, and of posters used for health education and in other public campaigns.

And there are other difficulties. For example, the extent to which various geometrical figures presented together affect the way each of them is perceived seems to vary in this manner. Given a drawing of a cube with a quadrilateral on one of its faces (see drawing below—figure 1), observers coming from different cultures perceive the quadrilateral differently.





This is demonstrated simply by presenting them with a series of quadrilaterals (figure 2) and asking them to choose the one most similar to that shown on the cube. The exten to which an observer is influenced by the drawing of the cube is reflected in his choice. If the cube is seen as realistically as the real cube would be, his choice response would be square; if the cube does not intrude upon the observer his choice would be the geometrically identical figure.

When Scottish and Ivory Coast schoolboys were compared on this task both tended to choose a figure intermediate between these two; the Scots tending to choose one nearer the square than their African counterparts. There is, therefore, a similarity of trends in both populations, but the strength of such trends differs.

The failure of pictures as *lingua franca,* it appears, may have deeper roots than those of a mere arbitrary convention. Not even in pictorially rich cultures do observers respond to pictures as if they were objects, even in cases where such responses would have been appropriate.

Aberdonian women, for example, found it easier to learn locations of objects than to learn locations of pictures of these very objects and were even worse at learning where cards bearing names of objects should go; American children mimed the act of using a tool with greater gusto when a real tool was placed in front of them than when a picture of the tool was displayed.
Pictures thus have some characteristics of objects, but the veil of unreality limits their effectiveness, and this veil varies in thickness from culture to culture.

Posters for Peace by Israeli graphic design students

Yarom Vardimon

Yarom Vardimon is Principal Lecturer in Graphic Communication, currently in charge of the Graphic Design Department at the Bezalel Academy of Art and Design in Jerusalem

When *Times Roman,* centred, is too nice and too organized to persuade, and when you are pressed for a clear commitment and the exposition of a basic stand on the subject of war against peace, you face a real problem: as a person and a designer.

Someone designs an extensive public image for a huge concern.
He researches its history
(to what depth?)
Studies its advertisements
(to what degree?)
Hears data (from whom?)
and deduces the obvious conclusions.
He knows "everything" about this huge company and about the market for its products and, of course, he is qualified by Divine Providence to solve its visual problems. . .
"The patient" will not die, have no fear.
Knowing "everything" is permitted.
It's possible to experiment with new approaches (or not) in order to nullify with confidence all that was designed in the past, and to scatter "scientific" evaluations about the effectiveness of the suggested solution.
We all know that *sometimes* these speculations might turn out right.
Then the ego is nourished and flourishes and "the somebody" is released from the inverted commas, he is simply a super-man.

Nevertheless, when my children urge me to find them a formula—for quoting, to praise and glorify my occupation—in order to identify with their father (it's my luck that they are still young and still identify), I'm confused and meditatative.
So what if I love to do beautiful things?
The hobby and the profession are combined, what a happy man. (?)
I deal with the quality of the environment and even the quality of life. . . right, it's important.

In 1973, the two sides in the Middle East found themselves engaged in another war. As an expression of normality we, here in the Bezalel Academy in Jerusalem, dealt with a design for the Philharmonic orchestra, packaging for paint producers, exhibitions, mapping, signposting, and other vital subjects.
We avoided digging into the dark memories or contesting our supreme problem.

Four years later I asked students in their fourth year to commit themselves and to communicate their commitment to students in American campuses.
The subject: Israel wants Peace.

What happened?
Let the students speak for themselves.

Haim's statement

One of the characteristics of dealing with such communication is the different degree of involvement required of the designer, whilst designing the information he helps to communicate.

Posters which are designed to convey a social message seem to be one of the instances where the design side has a second dimension, where not the 'how,' but the 'what' is important. What you want to say, what will be the reaction of the people whom you approach, how will they receive the information you transmit to them them, and will they identify with you?

Only after you clarify these basic points for yourself, do you begin to deal with the 'how.'
Designing propaganda on the subject of war and peace seems to me to be the height of this category.
In such a subject, the things you deal with take on a stronger, more personal dimension, especially if you are a party to this system.

For me, the beginning of this process is the designing of 'pretty' ideas, very graphic, when the 'what' that 'war is bad and peace is good,' takes on a very abstract, detached, almost philosophical meaning.
And then the moment of crisis, a moment when you feel that 'that's not it.'
"That is you primary problem" you say to yourself and sink, if not into mediocrity, then into helplessness, unable to transmit the strength of the problem.

You begin to understand and, in my case, for the first time since I began my studies at the Academy, that in such a design you must convey to the world the most burning point in your life; and this you must do straight, strong and fast.
You need the height of identification as a designer, and lots of faith.
You need to create credibility and to convey the idea that the subject is your 'credo,' with maximum explanation and minimum propaganda.

And then you feel like banging the table and saying: 'there is no room for playing. Aesthetics. No way to conceal details and merely beautify them.' When a state is in a constant state of war for its life, it is not 'pretty.' War is ugliness, evil and cruelty personified.
And this the observer must see in a poster. Instead, all the cards you were ashamed of and which you tried to hide, come to the surface.
Your strong cards are—reality.
And you go all the way, to the place where the truth lies.
Personally, I didn't want to bring death as a central motive in my work,

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Author's address:
Bezalel Academy of Arts and Design
10 Shmuel Hanagid Street,
Jerusalem 94592, Israel

because death is a suppressed subject with people, and whoever didn't experience it in his family or his close surroundings, finds it hard to grasp. Death, for people, is an abstract subject. But a wound, an artificial leg, is an easier reality, easier to understand, and can be interpreted.

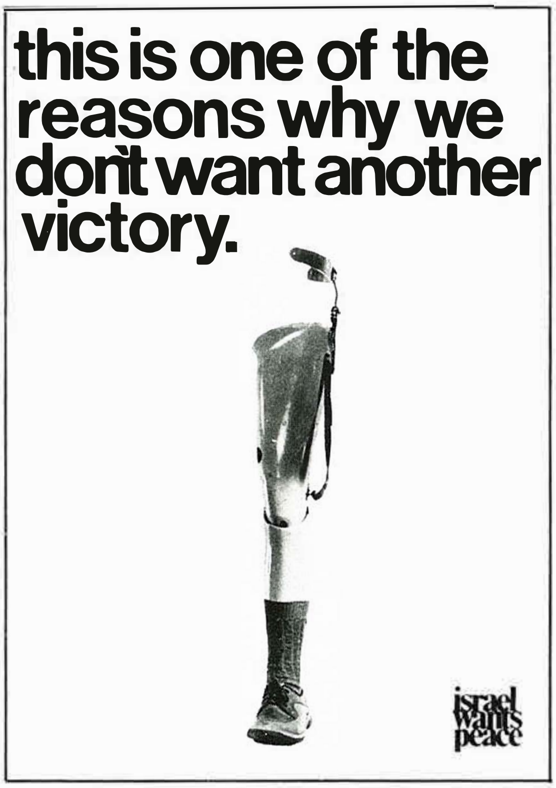
This is a discussion between living people. The words of those who remain with you and with their wounds and live like that for many more years.

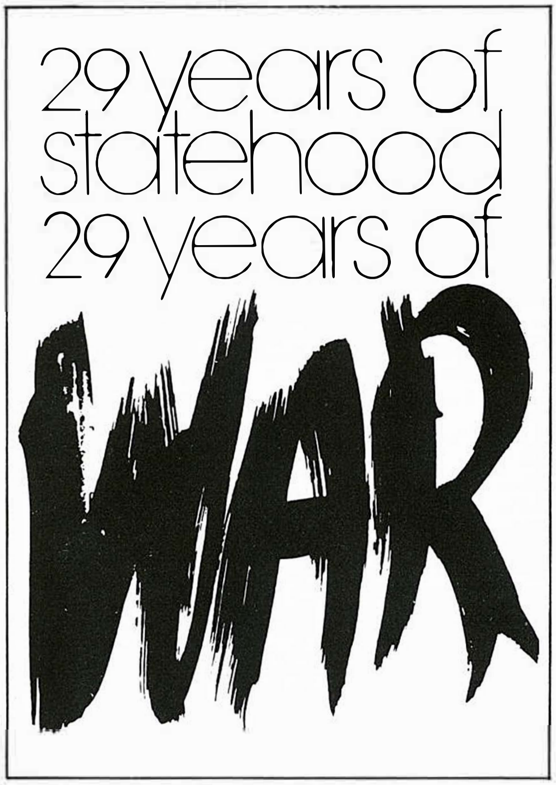
Fedella, who designed the poster at the bottom left, felt unable to contribute a statement concerning her work.

Hannan's statement

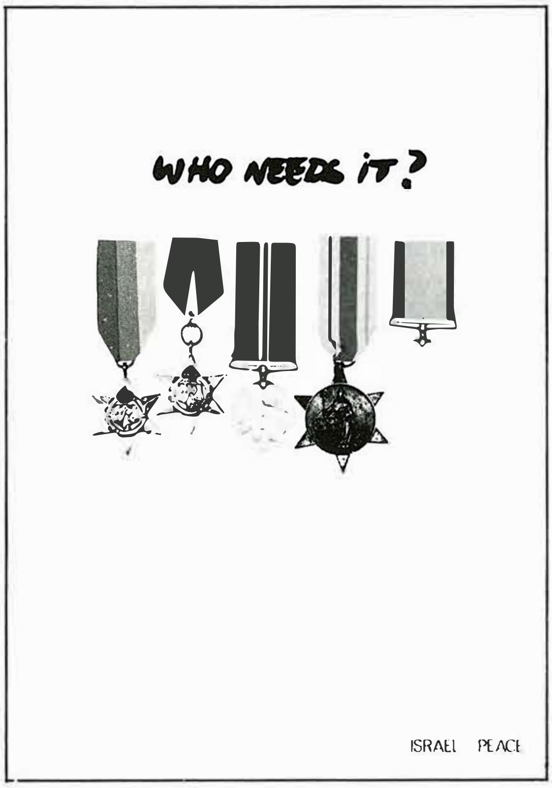
The subject of the project is very close to me; that is why there is a deep contradiction between the will to express personal feelings and the usual design process (an objective analysis of the problem).
The subjects we grappled with were partially demagogic and I found it difficult to find a common theme between my personal opinions and the establishment's opinions.
I did not succeed in sufficiently summarizing the relevant subjects without over-generalization.

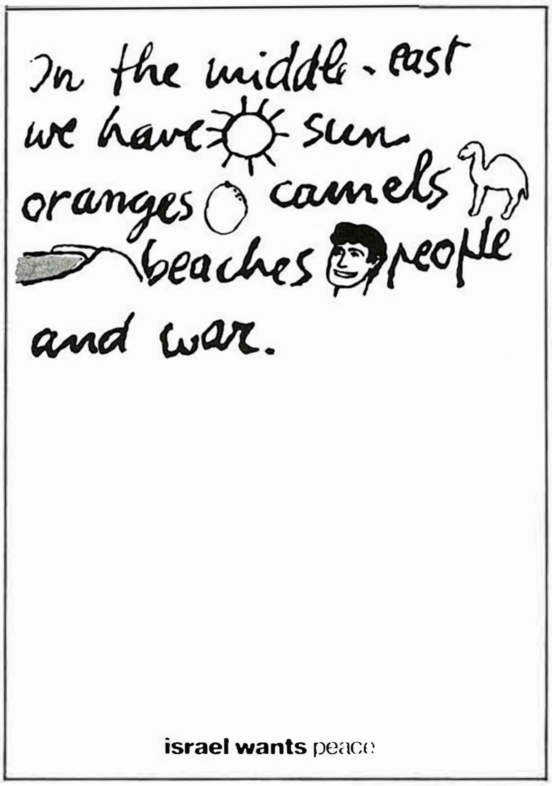
The personal failure was that I did not manage to communicate the Israeli problem concerning war, and when I tried to delve more deeply in one of my posters (the division of land, for example), I was left with a personal protest.
Perhaps posters which encompass the subject more universally would be more successful and maybe the war, or its negation, is a truly universal subject.


this is one of the reasons why we don't want another victory.
israel wants peace

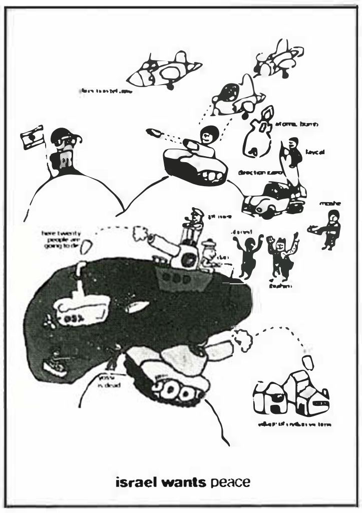

29 years of statehood 29 years of
WAR

Above; Poster by Haim
Below; Poster by Fedella


WHO NEEDS IT?
ISRAEL PEACE


In the middle-east
we have sun
oranges camels
beaches people
and war.
israel wants peace

Above; Poster by Hannan
Below; Poster by Ino

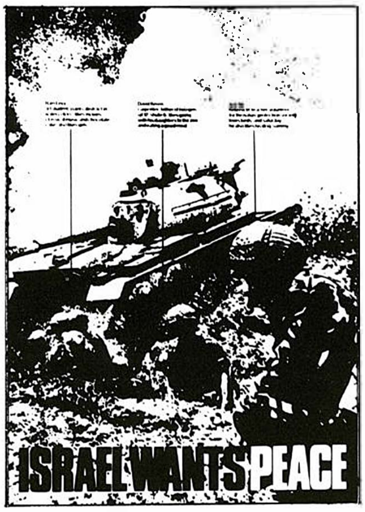

here twenty people are going to die
moshe
israel wants peace

Ino's statement

The posters on the subject "Israel wants Peace" must speak about peace, in my opinion. There are many ways of saying it. I decided to give the observer an immediate feeling of peace. The conflict between the atmosphere and the message creates a strong impression and leads to a reaction opposing war.
There were two possible ways to solve the problem of the series:
—to talk about the same subject all the time from three different angles;
—to show development from poster to poster.

The development could have been round: aggressive war to peace; or the development could be from the general to the particular.

I decided on this approach trying to reach the observer as an individual and that led me to a solution which divides into three situations;
—I talk about war generally;
—I talk about a certain group fighting, also in a general way;
—I talk about one individual, who can be anyone.
The next stage is that the observer sees himself in a state of war.



Dan's statement

It was difficult for me to work on such a project. In the first stage I tried to find a visual idea which isn't based on graphic elements directly tied to the subject of war. On the other hand, because I fought in the war and I live in this country every day, I could not avoid using visual means directly connected to the defence situation.
My final decision was to use photography in order to present the situation as it really is and, by certain changes, to give the feeling of unwillingness to return to the existing picture.

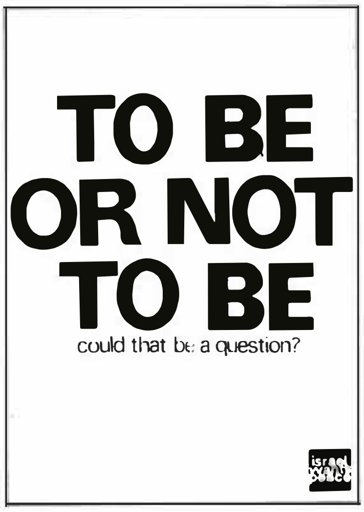
Handling the project didn't allow a differentiation between the Israeli-Arab and the Palestinian question and between the problem of the existence of the state of Israel.
I could not deal with those things, perhaps because I do not have a definite or clear idea of the subject. That's why I spoke only of the desire for peace, or better yet, the desire that there be no war.

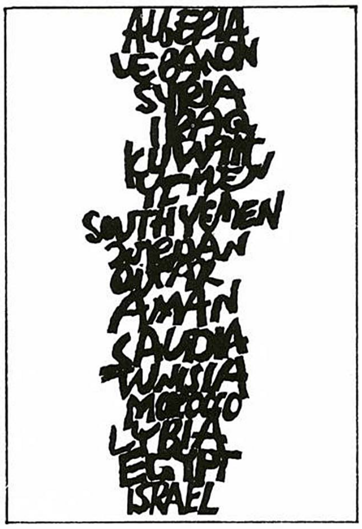
From a design point of view, I do not think that I succeeded in this project since the idea and thoughts occupied me too long and I'm still not satisfied with the result.

The copy on Dan's poster reads as follows:
"David Keren—carpenter, father of two girls, Gil 12, Shulie 6, likes going with his daughters to the Zoo and eating a good meal.

Arik Nir—Hebrew literature teacher, volunteers for the Nature Protection Society, loves birds, and Saturday. He also likes his dog Sammy.

Ram Levy—art student, paints abstracts in water colours, likes movies, classical music and chocolate cake. Also likes girls."





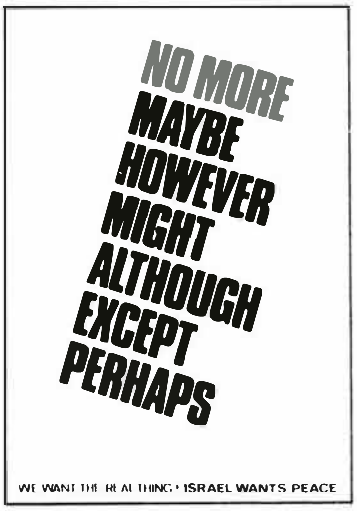
Judith's statement

(a) Israel is in a state of physical pressure (a fact that can be quantitatively proven).

(b) One should not express a one-sided opinion which will cause an argument, whether it is right or wrong but, at the same time, show the general idealistic willingness to achieve the desirable state of peace, anywhere, and with reference to any nation.

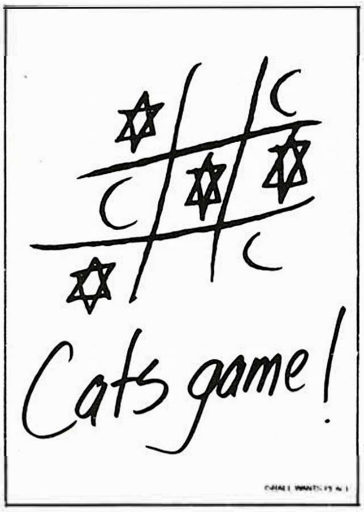
(c) Stressing the need of the country to exist.

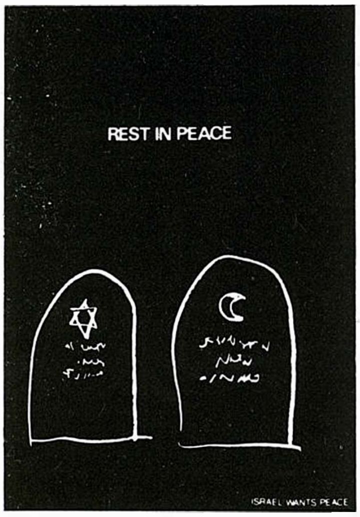
(d) It is difficult.



Carl's statement

"Israel wants Peace." Simple, and also very complicated.
In three posters I tried to express my views and my position on the subject. I concentrated on a positive point of view (ie, that the message will not be negative propaganda, representing one side as the right side, and the second party as guilty and responsible for the unfortunate situation).
In this project I found a certain difficulty in expressing myself.
It is possible that the closer you are to the problem, the more difficult it is to express it (like a doctor finding difficulties tending his own family?). I found that it is easier to deal with distant problems because of the perspective from which you can view them. Here the problem touched everyone. The slogan on which I based my design was "Israel wants Peace, we want the real thing." (a take-off on the Coca-Cola ad).

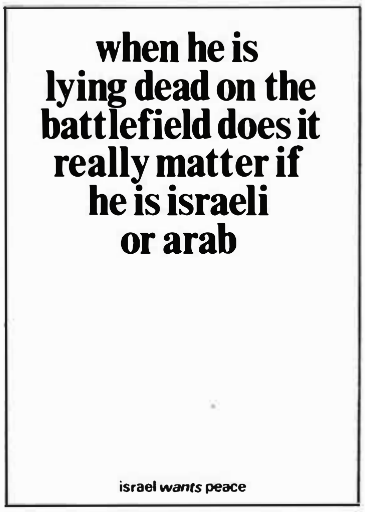




Doron's statement

The nature of the exercise and its meaning were a serious challenge for me, as an Israeli and a graphic design student: the attempt to create—for the 'information saturated' campus audience, which tends to be indifferent and apathetic—a will to relate to our problem of existence as a nation in a constant state of war, with all the sombre implications of that for me.

The limitations I set for myself—as a basis—was to avoid creating a feeling that we are dealing with propaganda which is basically one-sided (even if such propaganda might reach some people); to give the observers' full credit as a thinking crowd, which will use its understanding and common sense to try to digest the serious implications of the problem for us—as human beings (on both sides of the fence)— with all the seriousness and pessimism that I feel.



when he is
lying dead on the
battlefield does it
really matter if
he is israeli
or arab

israel *wants* peace

Susie's statement

The direction I took on these posters all came from an inner feeling and personal thoughts—rather than a direction based on facts—statistics and bias.

To solve this project was a somewhat difficult task as personally I really don't know too much about designing designing propaganda—and so I decided to follow my own feelings and solve it as best I could.

The first poster "Does it matter. . . " is a thought I've always had. Whenever I reflect on war—any war—the whole idiocy of such a war always shows itself strongest in the the empty human shells left behind. When a soldier dies—I find no glory in it such as one "dying for your country"—I find it so meaningless. And the labels placed on him in battle, such as Israeli or Arab, don't seem to matter very much or at all, after he is gone.
In fact, the whole idea of 'labelling' makes no sense to me while people are alive, let alone dead.
For geographic purposes, maybe I can accept it, but for anything else it always serves to turn one set against the other in an attempt to prove superiority—and that is what wars are usually compounded of.
Is it coming out clear as my feelings?

Etti's statement

One cannot lie about it. The subject is too big and serious. That's how I felt when I approached the project. Everything else seemed unimportant against the "truth"—reality.
I felt that my answer will be at least useful as a counter argument.
The ideas that popped into my head seemed trivial. I felt that I wasn't touching the subject itself but merely going round about it.
I must admit that the whole time I was working I felt terribly frustrated (as I had never felt before).
It seemed to me that someone who was hurt by the war, by the death of a close relative, sees peace in a different way than do others.
It seems that the most important thing is that the boys will live, that the children will not die in ten years time. When you want something like that, some say it is sentimental, and it does not answer the problem."
So what does?

These were my hesitations, so I could not succeed in doing anything.

Two years ago I had the pleasure of being Guest Lecturer to these students of the Bezalel Academy. As a result, I should point out that not all of them have a fluent command of spoken and written English, and most of them are more familiar with the Hebrew alphabet than with the Roman.
I was asked if I would tidy up their writings for the purposes of this article. On reflection, I felt it better to leave their words alone.
Their struggles seemed to be far more vividly expressed in their own words.

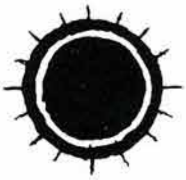
Editor

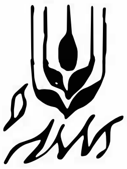
Begin difficult things while they are easy; do great things while they are small. The difficult things of the world must once have been easy; the great things must once have been smal. . . A thousand mile journey begins with one step.

Lao-tse

First steps on a thousand mile journey - part 2

Patrick Wallis Burke





sun
bread
son
bred

It seems likely that in some earlier period of its development, Chinese was a truly phonetic system of writing. We know that almost 3000 years ago, some bright scribes of the Chou dynasty thought of a way of expanding the use of the existing written characters to meet the growing demands of the spoken language.

The problem they sought to solve was that the number of words used in common speech was far greater than the number of characters available to write them down.

They had two options—invent more characters, or make more use of existing ones.

For a period they adopted this second strategy.

They began to borrow the written characters of well-known words to record other words that might have the same sound but lacked a written form.

To understand this better, imagine that present-day English is in the same situation as early Chinese, and that over the centuries our writers have developed numerous pictographic, diagrammatic and ideogrammatic signs.

We might have, for example, a pictogram meaning 'sun,' and an ideogram for 'bread' made from an ear of wheat and some flames to symbolise the act of cooking.

At some point it might occur to us that we could use these two characters to render the sounds of the words 'son' and 'bred.'

The words sound the same but their meanings are quite different.

And they are far enough apart in meaning and usage not to be confused when met with in a written text.

This, it seems, is what the ancient Chinese writers were doing when, for example, they took the character meaning 'peacock' and used it to stand for the sound of the word 'sail.'

And it was this process that led to the last, and most numerous class of Chinese characters—the phonetics, or *phonograms.*

女

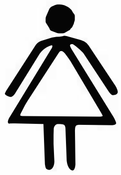
nyuu
'female'

昌

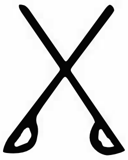
chang
'to prosper'

娼

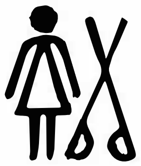
chang
'a prostitute'



female



war



a whore

Sadly, for anyone imagining that they've already got the hang of Chinese writing, this last group accounts for about ninety percent of all modern Chinese characters.

And this 'phonetic' stage represents the last great step in the evolutionary development of the Chinese writing system.

In each of the *phonetic* characters, one part (often, but not invariably, on the right) acts as the *sound* indicator, whilst the other indicates the *idea.*

In a strict sense, the phonetic part is included only to suggest, however vaguely, how the character is spoken.

It indicates the sound and that is all.

But in many cases the so-called phonetic helps to amplify the meaning of the entire character.

And it is difficult to imagine that the original inventors of the system made purely arbitrary choices for their sound components.

So how does the system work?

Earlier in this article I showed this character which means 'a prostitute.'

It is made up of two characters, both of which have meanings in their own right.

The left hand part means 'female' and so hints at the overall meaning.

The right hand part means 'to prosper,' and this certainly seems to have an appropriate ring to it.

In fact, however, it just happens that one word for a prostitute in Chinese is pronounced *chang.*

So also is the word meaning 'to prosper.'

Again, if we try to imagine English written in the same way, we might have something like this.

My crude pictogram on the left is supposed to mean 'female.'

The one on the right, with its two crossed swords, stands for the English word 'war.'

When we encounter them used in combination, our reasoning would have to go something like this;

"This is a word that we sometimes attach to a *female* and which sounds like the word *war.*
I therefore deduce that it must read *whore."*

This may be a rather crude analogy, but in one sense it is accurate.

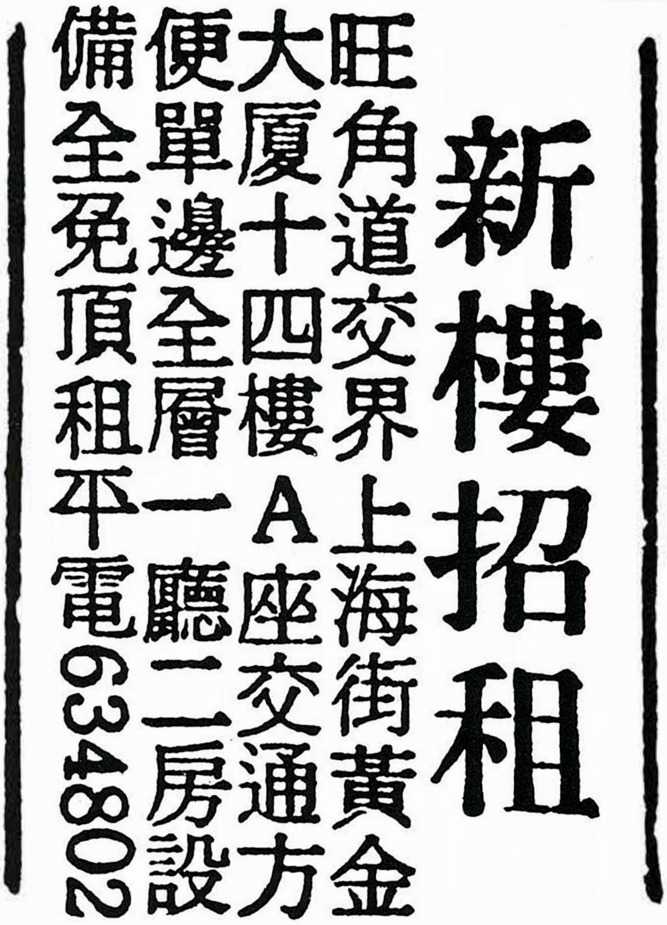
Because Chinese pronunciation has changed over the centuries, many phonetics now indicate only the approximate sound.

Some no longer indicate the present-day sound at all.

The effect is similar to the way in which the bizarre spelling of English echoes the way in which our language was spoken many centuries ago.

icographic 11, 1977, pp 14-21

Author's address:
7 Templeton Court
Radnor Walk, Shirley
Croydon CRO 7NZ
England



新樓招租

旺角道交界上海街黃金大廈十四樓A座交通方便單邊全層一廳二房設備全免頂租平電634802

Most Westerners tend to think that writing Chinese requires an artist's hand and eye.

Certainly, each of the many written characters is rich in visual subtleties.

And by tradition, of course, the Chinese have always regarded calligraphy as the highest of all the graphic arts.

But anyone who wants to try should not be put off by all this.

My Chinese students appear to write as well or badly as most of us who use the Roman alphabet.

And nowadays, genuine Chinese calligraphers are probably about as thin on the ground as genuine Western artists.

Nevertheless, all forms of Chinese writing stem from a basic idealized calligraphic form.

This 'pattern style' is the one familiar to anyone who has seen printed Chinese. And my own efforts in these articles are modelled upon it.

Chinese schoolchildren are taught this script from the beginning of their schooling.

It is almost as though English primary schools taught Trajan Roman, rather than their many crude copy-book styles.

Western children are taught a minimal basic shape for each letter of the alphabet.

Chinese children are taught a single, idealized form for each character.

Much later, when this correctly proportioned shape can be produced automatically, they move on to various styles of 'cursive' or running hands.

To any graphic designer, Chinese characters are a particular source of delight. All of them are designed to fit within a square.

As a result, when individual characters are combined, their components have to be condensed in either height or width.

No matter how different their form, they have an underlying modular structure which enables them to seem harmoniously related one to another.

Traditionally, Chinese was written in downwards columns, running from right to left across the page.

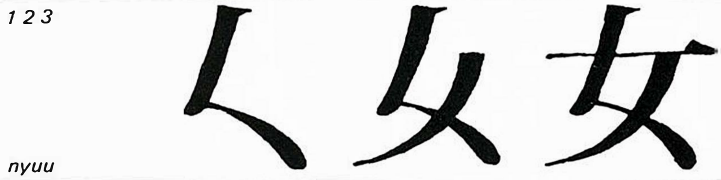
But under Chairman Mao, the Chinese government imposed the rule that printing and writing should read from left ot right in horizontal rows, just as my words are set down here.

Outside mainland China, however, and among the older Chinese, the traditional style still persists, but it is becoming steadily less fashionable.

This advertisement from a Chinese newspaper published in New York, for example, is set in the old form—vertical columns which are read from right to left.

Whatever direction the text takes, you may find it surprising that the correct direction taken by a pen or brush when making the individual characters is usually from left to right, and from top to bottom.

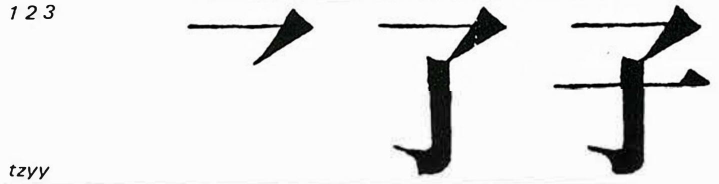
There are many other rules, of course, but the examples I show here may explain things rather better than words can.



Here is the character meaning 'female,' which is built up from three strokes. Reading from left to right, I show the approved order in which these strokes would normally be made.

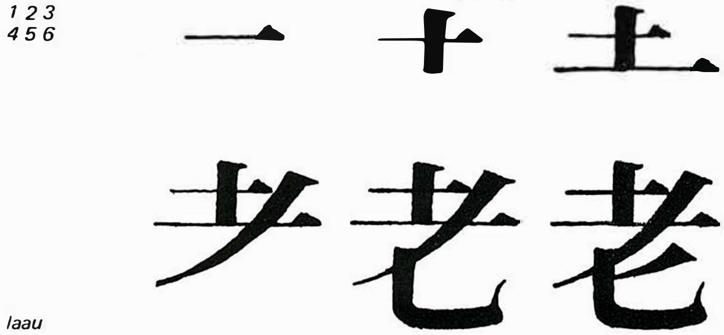
Each Chinese character comprises a number of 'strokes.'

Roughly speaking, a *stroke* can be thought of as a line, either straight or curved, that is completed each time the pen leaves the paper.



Here is another three-stroke character which means 'offspring,' 'seed,' or sometimes just 'child.'

Making the strokes in the right order, with the correct pen direction, plays a big part in achieving the 'balance' and correct geometry of each character.



And this is a slightly more complex character requiring six strokes.
It means 'old,' or 'old age.'

The forms of the many characters have been built up fairly unsystematically over the centuries.

Some are extraordinarily intricate, requiring thirty or more strokes to write.

Although the number of characters is large, there are only a limited number of components to each character. So that once one has learned some of these components, it becomes easy to recognize and write a great many characters.

The repertoir of strokes needed to construct any Chinese character is not extensive.

There are about twenty variations of dots, horizontal and vertical lines, left and right falling curves, rising strokes, hook-shaped strokes, and so on. And this collection of strokes is the nearest counterpart to the twenty-six letters of the Roman alphabet.

The radicals

一	number one, one, once	Radical 1	*yi*
二	number two, two, twice	Radical 7	*ehl*
人	human being/s	Radical 9	*rern*
入	enter, come in or into, join, admit	Radical 11	*ruh*
八	number eight, eight, eighth	Radical 12	*ba*
刀	knife	Radical 18	*dau*
力	ability, capacity, strength, power	Radical 19	*lih*
十	number ten, ten, tenth	Radical 24	*shyr*
口	the mouth	Radical 30	*koou*
土	earth, land, territory	Radical 32	*tuu*
士	scholar, the intelligentsia	Radical 33	*shyh*
大	big, large, great	Radical 37	*dah*
女	female, the female sex	Radical 38	*nyuu*
子	offspring, fruit or seeds of plant, pupil, disciple	Radical 39	*tzyy*
小	small in size, the young	Radical 42	*shiaau*
尸	corpse, dead body	Radical 44	*shy*
山	a mountain, a hill	Radical 46	*shan*
川	a river	Radical 47	*chuan*
工	a manual worker, skilled, dexterous, work	Radical 48	*gung*
己	oneself	Radical 49	*jii*
心	the heart, the mind, the intelligence, feeling, thinking	Radical 61	*shin*
戶	door	Radical 63	*huh*
手	the hand, done by hand	Radical 64	*shoou*
文	literature, writing, text	Radical 67	*wern*
日	the sun, day, daytime, time in general	Radical 72	*ryh*
月	the moon, a month	Radical 74	*yueh*
木	tree/s, timber, wood, wooden	Radical 75	*muh*
毛	hair, fur, down, hairy, furry	Radical 82	*maur*
水	water, transparent, clear or wet like water	Radical 85	*shueei*
火	fire, anger, rage	Radical 86	*huoo*
生	give birth to, create, life, living beings	Radical 100	*sheng*
用	to use, employ, use, function	Radical 101	*yuhng*

白	**white, clear, easy to understand, clean, pure, unused**	Radical 106	*bair*	見	**to see, look at, notion, idea, judgement**	Radical 147	*jiahn*
目	**the eye, to look**	Radical 109	*muh*	言	**speech, talk, spoken language, to speak, to say**	Radical 149	*yarn*
石	**stone, rock, made of stone**	Radical 112	*shyr*	足	**the feet, the lower limbs, enough, sufficient**	Radical 157	*tzur*
立	**to stand, remain erect**	Radical 117	*lih*	車	**a vehicle, any device that operates with wheels, to carry**	Radical 159	*che*
老	**old, old age, become old**	Radical 125	*laau*	門	**door, gate, opening, school of thought**	Radical 169	*mern*
耳	**the ear, to hear**	Radical 128	*eel*	雨	**rain, to rain**	Radical 173	*yuu*
自	**self, oneself, personally**	Radical 132	*tzyh*	馬	**horse**	Radical 187	*maa*
衣	**clothing, dress, garment, to dress**	Radical 145	*yi*	黑	**black, dark, secret, to hide**	Radical 203	*hei*

But there is nothing in the writing system of any other language quite like the units which are called 'the radicals.'

A *radical* makes its appearance in almost all Chinese characters.
Its function is to give some indication of the *meaning* of the character.
I suppose that the nearest we get to this in English is when we make use of words with Latin or Greek prefixes.
For example, the Latin word for a tree was *arbor,* and it crops up in a number of words like *arboraceous,* meaning tree-like, *arboreal,* tree-dwelling, *arborist,* one who studies trees, *arboriculture,* forestry, and *arboretum,* a botanic garden of trees.
Anyone who knows the meaning of this 'radical' or root word, *arbor,* can at least make a guess that all of these words have something to do with trees, even if he doesn't know their complete meaning.
To such a reader, the word *arbor* acts as a kind of visual label that hints at the overall meaning.

The idea of attaching these 'specifiers' to various characters must have occurred very early in the development of the Chinese writing system.
They were certainly in use some time before the Phoenicians began to teach the Greeks the trick of alphabetic writing.
In the early days they were simple and logical.
The character meaning 'the hand,' was included in all those compounds that involved some kind of hand activity.
The character meaning 'the mouth,' was included in those ideograms which stood for anything involving speaking or eating.

But sadly, things did not stay simple.
Throughout the long Chou dynasty (1050-221BC), central control was seldom strong.
There were several periods of revolt and disunity.
And there was a lot of poor scholarship. As early as 500BC, we can hear of Confucius bitterly complaining;

"When I was young, I still knew some scribes who left blank the characters which they could not write;
now there are no more such men."

Over the centuries, the number of Chinese characters has steadily increased. When the Chou dynasty collapsed and the brilliant and terrible first Emperor of China seized power in 221BC, his minister Li Ssu was ordered to straighten out the chaotic Chinese writing system.
Li Ssu clearly believed in making a fresh start, for he committed an act of barbarity that has earned him the undying hatred of all subsequent generations of Chinese.
He ordered the entire body of Chinese literature to be burned, apart from a few works on agriculture and medicine. And just in case anyone had a good memory, he ordered that any man caught quoting from Confucius would be executed.
Then Li Ssu compiled an index of all extant Chinese characters.
It contained just 3300.
This index was periodically updated.
During the next 200 years it had run to seven editions, and the number of characters had grown to 10,000.
By the eighteenth century, there was a dictionary containing 40,000 characters.

With the need to construct indexes and dictionaries, the radicals acquired a further function.
They became a device for classifying the growing number of characters.
In Western dictionaries, words can be arranged alphabetically, but if the writing system is not alphabetic, how do you manage to find a particular character?

Let us imagine that we want to look up the character that I showed on the previous page.
It meant 'a prostitute,' and it was pronounced *chang.*
But in a Chinese dictionary you can't turn to a section listing all those words beginning with C.
No, you would turn to that part of the dictionary which listed all those ideograms that include the 'female' character, since the lady happens to be one of the 'radicals.'
Each of the radicals is listed according to the number of strokes needed to construct it.
We already know that the 'female' radical takes three strokes, and we would find that she occurs in Section 38 of the dictionary.
There are 214 radicals altogether.
The simplest takes only a single stroke, the most complex, seventeen.
Having found the lady, as it were, we next have to work out how many strokes are needed to construct the rest of the character.
In our case, the two 'suns' one above the other, take a total of eight strokes.
We can therefore deduce that our sought-for character will occur about a third of the way through the section.
All of this may sound a bit long-winded, but once the system becomes familiar, words can be located with almost the same speed as with alphabetic ordering.

Word building with the radicals

一月	**January**	Radicals 1/74 (first) plus (month)	*yir-yueh*
二月	**February**	Radicals 7/74 (second) plus (month)	*ehl-yueh*
八月	**August**	Radicals 12/74 eighth) plus (month)	*ba-yueh*
十月	**October**	Radicals 24/74 (tenth) plus (month)	*shyr-yueh*

一日	**one day**	Radicals 1/72 (One) plus (day)	*yirryh*
一生	**lifetime, whole of life**	Radicals 1/100 (one) plus (lifetime)	*yihsheng*
生日	**birthday**	Radicals 100/72 (to be born) plus (day)	*sheng-ryh*

It is probably safer to think of the radicals as a useful reference system, rather than as reliable guides to the possible meaning of any character in which they appear. But they make a good starting point for anyone thinking of learning something about written Chinese. And many of them give double value for the effort, since they can be combined to make a number of more complex expressions.

Here are some of the radicals from the previous page which can be paired up to form further expressions. This group, for example, relate to concepts of *time.*

No other nation has a longer recorded history than China. Historical accounts were being written from the ninth century BC, and from that point Chinese history can be accurately dated. And they were quick to devise ways of measuring time. Three centuries before the birth of Christ they were using a calendar of 365½ days. They had a fully developed counting system a thousand years before the Romans. And over two thousand years ago they knew about quadratic equations and were using algebra to solve problems in geometry.

女人	**a woman**	Radicals 38/9 (female) plus (human being)	*nyuurern*
大人	**a grown-up**	Radicals 37/9 (large, big) plus (human being)	*dahrern*
白人	**white man**	Radicals 106/9 (white) plus (human being)	*bair-rern*
黑人	**negro**	Radicals 203/9 (black) plus (human being)	*heirern*

土人	**local man, native**	Radicals 32/9 (earth, land) plus (human being)	*tuurern*
女士	**educated woman**	Radicals 38/33 (scholar) plus (female)	*nyuushyh*
工人	**labourer, manual worker**	Radicals 48/9 (worker) plus (human being)	*gungrern*
工力	**a work force**	Radicals 48/19 (worker) plus (strength)	*gunglih*

Here is a group which describe men and women—black or white, adults or locals. Confucius would have disapproved of the very idea of an 'educated' woman, for he once wrote; "The woman with no talents is the one who has the merit." But then in his day, men and women had to walk on opposite sides of the street.

I should mention here that the numbers which have been attached to the various radicals is strictly a procedure devised for Westerners. They mean nothing to the Chinese. If anyone asked you to say which letter of our alphabet is the sixteenth, you would be unlikely to know. You recognize each letter by its total shape. The Chinese reader recognizes the radicals in just the same way.

木工	**carpenter**	Radicals 75/48 (wood) plus (manual worker)	*muhgung*
石工	**stone mason**	Radicals 112/48 (stone) plus (manual worker)	*shyrgung*
文人	**a writer**	Radicals 67/9 (literature) plus (human being)	*wernrern*
手工	**handiwork, handicraft**	Radicals 64/48 (hand) plus (manual worker)	*shooukung*
老手	**experienced person, an old hand**	Radicals 82/64	*laurshoou*
水手	**sailor**	Radicals 85/64 (water) plus (hand)	*shueirshoou*
門人	**disciple, gate-keeper**	Radicals 169/9 (gate, school of thought) plus (human being)	*mernrern*
力士	**strong man, prize fighter**	Radicals 19/32 (strength) plus (scholar)	*lih-shyh*
山人	**a recluse**	Radicals 46/9 (mountain) plus (human being)	*shanrern*
生手	**inexperienced hand**	Radicals 100/64 (newborn) plus (hand)	*sheng-shoou*

In this group I have listed various trades or professions.
The stone mason and the carpenter stand as visual reminders of China's long tradition of skilled building. Pride of place must surely go to the Great Wall, constructed in 221 BC, that still snakes across 16,000 miles of the valley's and mountains of north and western China. Twenty feet high, with forty-foot towers at intervals, it was one of the few man-made objects that could be clearly identified from outer space.

The characters meaning 'a writer' speak of a written language with a literary continuity across many thousands of years.
Although the sounds of the language have changed considerably over the centuries, the written characters have changed little.
A modern Chinese man would not be able to understand the spoken language of Confucius. Yet he can read and understand Confucius' written characters just as they were set down over fourteen centuries earlier.
On the other hand, few Englishmen could translate even a twelfth-century English text, since they would be faced with a phonetic rendering of an unfamiliar language, much closer in character to German than is their present-day speech.

One of my favourites in this group is the 'strength scholar,' the strong man or prize fighter.
He reminds me irresistably of the Chinese Boxers who figured in the terrible violence of the Boxer Rebellion. They gave themselves the wonderfully Chinese-sounding title of 'The Society of Harmonious Fists.'

小人	**the common people**	Radicals 42/9 (little) plus human being/s)	*shiaaurern*
人文	**human culture**	Radicals 9/67 (human beings) plus (literature)	*rernwern*
文言	**the literary language**	Radicals 67/149 (literature) plus (speech)	*wernyarn*
人言	**human speech, public opinion, rumour**	Radicals 9/149 (human beings) plus (speech)	*rern-yarn*

Metaphors for human experience often seem to have a universal quality. The first one in this group—'the common people'—finds a parallel in English when we talk of 'the little man.'
And in the previous group, you may have noticed, the use of the expression 'old hand' for an experienced person, again is identical to something we say in our own language.

Word building with the radicals

人心

one's inclination, one's conscience

Radicals 9/61 (human being) plus (mind)

rernshin

用心

concentrated effort

Radicals 101/61 (employ) plus (mind)

yuhngshin

小心

to take care, careful

Radicals 42/61 (little) plus (mind)

shiaaushin

心力

mental exertion, will, energy

Radicals 61/19 (mind) plus (strength)

shin-lih

心目

in the mind's eye

Radicals 61/109 (mind) plus (eye)

shinmuh

心火

tenseness, nervous excitement

Radicals 61/85 (mind) plus (fire, anger)
shin-huoo

In this group the 'heart' radical features prominently.
Like ourselves, the ancient Chinese must have seen the heart as being at the centre of things—the seat of both reason and emotion.
In our own language we still make use of many expressions which imply a distinction between the head (reason) and the heart (emotion).
I'm very fond of the heart radical, and it's the most distinctive of all the Chinese characters.
Having once attended a Catholic primary school, it always reminds me of the 'sacred heart' that used to decorate our school gates.

For quite a long time the Chinese believed that the human heart was sited on the right hand side of the body. In the seventeenth century, the Jesuits, who had acquired some knowledge of anatomy, tried to tell them it was on the left.
Since they wanted converts, this was a bad opening move, for the Chinese were then able to argue that Europeans must be built differently and that this meant that no Chinese should ever become a Christian.

自大

self-assertive, assumed superiority

Radicals 132/37 (self) plus (big)
tzyh-dah

自用

self-willed, headstrong

Radicals 132/101 (self) plus (employ)

tzyh-yuhng

見小

narrow minded, discerning

Radicals 147/42 (to see) plus (little)

jiahnshiaau

自己

one's self

Radicals 132/49 (self) plus (self)

tzyhjii

大言

to boast, boastful

Radicals 37/149 (big) plus (talk)

dah-yarn

Next, we have a small selection of expressions to do with self-assertiveness.
Here again, narrow-minded—'see little,' and boast—'talk big,' have their metaphoric twins in English.

自力

do by one's own efforts

Radicals 132/19 (self) plus (strength)

tzyh-lih

立足

stand on one's own feet, be independent

Radicals 117/157 (to stand) plus (the feet)
lihtzur

目力

power of judgement, vision

Radicals 109/19 (eye) plus (strength)
muhlih

So too, do these three expressions.
But we have no counterpart in our alphabetic writing for the extraordinary *formal* properties of these unique characters.
Our orderly letter-strings seem a pale substitute for these exotic calligraphic tiles.

足心

sole of the foot

Radicals 157/61 (foot) plus (heart)

tzur-shin

手心

palm of the hand

Radicals 64/61 (hand) plus (heart)

shoou-shin

Now for a couple of parts of the body—the sole of the foot and the palm of the hand.
There is a parallel in English, of course, in the use of the heart to signify the centre of something.

I suppose that metaphors and similes are among the most powerful descriptive devices in any language. Certainly they are the most important means by which languages develop, change, adapt and grow.

山水

landscape

Radicals 46/85 (mountain/s) plus (water)

shanshueei

山川

mountains and streams; general topography

Radicals 46/47 (mountain/s) plus (river/s)

shan-chuan

火山

volcano

Radicals 86/46 (fire) plus (mountain)

huooshan

山口

mountain pass

Radicals 46/30 (mountain) plus (mouth)

shankoou

耳目

sights and sounds, spies

Radicals 128/109 (ear) plus (eye)

eelmuh

This next group represent 'sights and sounds' in the world of nature.
To me, it always seems that Chinese characters wear their etymological origins more openly than European words. As my eye takes in the two characters 'fire' and 'mountain,' the effect is quite different from recognising that our own word 'volcano' is derived from the Roman's fire-God, Vulcan.
Both name-tags are beautiful in their own way.
But somehow the two little pictures seem more vivid and alive.

Primitive man may well have made little distinction between animate and inanimate objects, so that mountains could acquire 'mouths.' But then neither do we in our everyday speech.
We all drive motor cars with tyres that 'squeal,' engines that 'roar' or 'idle' and occasionally 'die.'

生水

fresh water

Radicals 100/85 (fresh) plus (water)

sheng-shueei

水力

water power

Radicals 85/19 (water) plus (strength)

shueeilih

水文

water ripples

Radicals 85/67 (water) plus (writing)

shueei-wern

水門

floodgate, watergate

Radicals 85/169 (water) plus (gate)

shueei-mern

This group all make use of the character for 'water.'
You don't have to be a poet to appreciate 'water writing' as an expression for ripples.
Metaphor is the poetry of everyday experience.
And in Chinese writing, such metaphor is turned into a form of 'concrete poetry.'

大衣

overcoat

Radicals 37/145 (big) plus (clothing)

dahyi

雨衣

raincoat

Radicals 173/145 (rain) plus (clothing)

yuuyi

毛衣

woollen sweater

Radicals 82/145 (hair) plus (clothing)

mauryi

耳衣

earflaps

Radicals 128/145 (ear) plus (clothing)

eelyi

Finally, some expressions for various items of clothing.
Incidentally, the 'hair' character shown here, pronounced *mau,* may be more familiar to you as the surname of the late Chairman Mao.
Maybe Chairman Hair doesn't sound quite as imposing as Chairman Mao.
It gave me a bit of a surprise when I first learned what it meant.
But nothing to match the disappointment I experienced when I realised that the great Guiseppe Verdi's name could be translated into English as plain Joe Green.

Article continues in the next issue

The inadequacies of the Roman alphabet and a proposed phonetic alphabet with concept-related phonograms

Anthony J Rozak

The problem

In an effort to prepare youngsters for the often frustrating experience of learning to read and write we go out of our way to devise countless methods of making it look like a game, or a lot of fun.
Surely it's good to start them off early, and it does not have to be a terrifying experience.
But all that these efforts seem to indicate is that learning to read and write under our present methods is a difficult challenge for most first-graders, and for many of them it continues to be distasteful.
experience for several years after.
What causes this problem?
This paper will only deal with one area of this complex question.
Nonetheless, it is a substantial part of the problem, namely the Roman alphabet itself.

For the most part the Roman alphabet has remained unchanged for 2000 years. Though it can be said that the alphabet has conquered the world, its own development is sometimes obscure and not impressively logical.
It has not developed sufficiently to keep up with advances in science and technology. Since the development of type, western man has developed an excessive, if not sacred, respect for this traditional set of symbols.
The Latin system has not been expanded upon as needed by the countless other languages it has been applied to.

The problem with the Roman alphabet is threefold.
First, it is not a complete phonetic system.
Second, it is not a thoroughly worked out visual reading system.
Third, it is not an efficient kinetic system for handscript or lettering.

Symbol to phoneme inconsistencies

As a phonetic system, the 26 letters of the Roman alphabet are not enough to cope with the sound systems of many languages—especially English.
In English, only 23 of the existing symbols count—the symbols *c, q,* and *x* are phonetically useless.
Yet English has 40 meaningfully distinct sounds or phonemes.
Handling the differential of 17 phonemes with consistent pairings of letters complicates the system enough, notwithstanding the gross inconsistencies imposed by our present spelling system.

Inconsistencies of sound to visual symbol relationships can be broken into two categories: (1) the use of one symbol for different sounds, for example, the letter *o* as in *go, do, dog, women,* and *one;* and (2) the use of many symbols for one sound as, for example, the *u* sound in *ruby, rule, do, move, fruit, bruise, group, troupe, through, moon, wooed, ooze, rheumatism, flue, maneuver, grew, canoe,* and *two.*
This totals 18 different spellings for one phoneme. This is not all.
examine the various configurations for the word *dog.* Evidently we expect the child to learn, not just one alphabet, but several:
(1) all upper case letters, (2) combinations of upper and lower case letters, (3) all lower case letters, (4) Upper and lower case hand script or longhand, (5) lowercase longhand, and (6) and (7) different uses of *g* and other letter forms, depending on type variations.
In 1845 A J Ellis made a thorough analysis of the alternative spellings of English phonemes. On this basis, although all the sounds in English may be satisfactorily analysed into 40 phonemes, there are over 2000 ways of spelling these 40 basic units of speech, taking into account capitals and script characters, (Downing, 1965)

Similar problems of the inadequacy of the Roman alphabet extend to other languages.
English is but one of many languages which employ more than twenty-six phonemes. One would think the widespread acceptance of the Latin alphabet would have led to some kind of unity. However, that is not the case, because there are cross-lingual inconsistent uses of phoneme to symbol relationships.
For example, the Turks use the symbol *c* for the sound *j* as in *jig.*
Also for seventeen different languages there are seventeen different ways of spelling the name of the Russian writer Chekov. (Gelb, 1952)

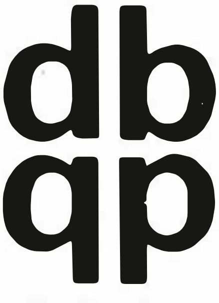
Visual inadequacies

Not only is the alphabet an inconsistent phonetic system, it is also problematic as a visual system.
Based on purely visual considerations, the Roman alphabet presents difficulties in reading and in learning to read as well. We have already encountered one visual problem, the use of capital and lower case letters as well as longhand.
In reality we are demanding that children learn four different visual pattern associations for one sound. This is a major problem in the "look-say" method of teaching reading, where a child is taught to relate the overall configuration of a group of letters with a spoken word.

The alphabet is a learning problem for another reason. It is not a consistent visual *symbol system.*
Sounds which are related according to articulatory categories are not represented by visually related symbols. The only exceptions are the *p* and *b* which phonetically are two variations of stops made by the upper and lower lips; the *g* which is also a stop but articulated by the back of the tongue and the velum; the *m* and *n* which are both nasals; the *s* and *z* which are unvoiced and voiced variations of the same fricative. The *o, a,* and *e,* which are visually related, are also roughly related phonetically as vowels.
Ten letters out of twenty-six is a small proportion of consistency for a phonetic system.

Another related learnign problem is the fact that alphabet symbols are almost totally arbitrary phonograms.
The origins of these configurations begin in some remote borrowing from image-related symbols or pictographs. The learning problem lies in the fact that the alphabet letters bear no conceptual relationship to the sounds which they symbolize. We cannot tell our youngsters why we use a single vertical line to represent the *l* sound.
It can be argued that expecting the alphabet to be a set of concept-related symbols is superfluous.
However, based on educational research, and the writings of Jerome Bruner (1960), teaching structure and concepts of a subject rather than facts, rules and manipulations, is important in learning.
It simplifies a subject, makes it more understandable, ensures greater recall and increases pupil interest.

Still another learning problem is the difficulty with specific recognition and retention features of symbols.
John Money describes this as the three laws underlying the harmonious development of reading.
"The first is the law of *object constancy* in which an object is the same regardless of its position.
That is we see a rocking chair regardless of the position in which the chair is placed. [For example, the letters *d, b, q,* and *p,* are the same object, but they are rotated, flopped or reversed. Also the same is true with the *n* and *u.]* However, this law is modified by the law of *directionality.* That is, a *b* has to be a *b* if it is facing the proper direction.
It is not a *b* but a *d,* if it is facing the opposite way, or breaking the law of directionality.

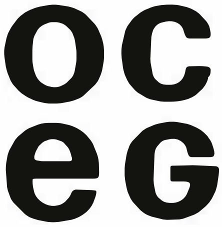


Directionality allows the same 'object' to be used as several different symbols, but with difficulty for beginning readers.

The law of *form constancy* points ou that a *c* may be small or large, but it must be without the little hook which makes it a *q* or a *g.*
If we can differentiate these three laws we can become good readers." (Kenney and Kenney, 1968)

It seems that the law of directionalit creates peculiar reading problems.
It is common for first and second grade writers to mistake *b* for *d.*
In designing a new alphabet it would be wise to avoid using *d–b* configurations which demand a great deal from one's directional sense.

Another visual problem is that of reading ease. This depends on certain visual arrest features. A particular difficulty with the Roman alphabet is the fact that it employs too much similarity of size and shape of lower case bodies, as well as upper case letters. Then there is the notorious example of discriminating capital *I* from lower case *l.*



Sign variations allow a geometric form to be used as several symbols but with poor readability

Kinetic deficiency

Finally there is a kinetic problem with the alphabet.
Since the Roman alphabet was not designed for handwriting, a longhand system had to be adopted.
Why couldn't one system be designed to operate both as a type system and as a handwriting system?

Shorthand

Before considering the possibility of developing a faster writing system it is worthwhile to examine shorthand systems.
Even during Roman times shorthand systems were in use. Since the beginning of the seventeenth century over one hundred systems have been invented.
Probably one of the most practical and efficient systems was devised by Isaac Pitman in 1840. Still in use today, Pitman shorthand is remarkable for its phonetic efficiency, concept-related symbols, and optimum kinetic efficiency.
The efficiency of Pitman shorthand was demonstrated in the 1922 National Shorthand Reporters Association contest, by a writer who reached 349 words per minute.

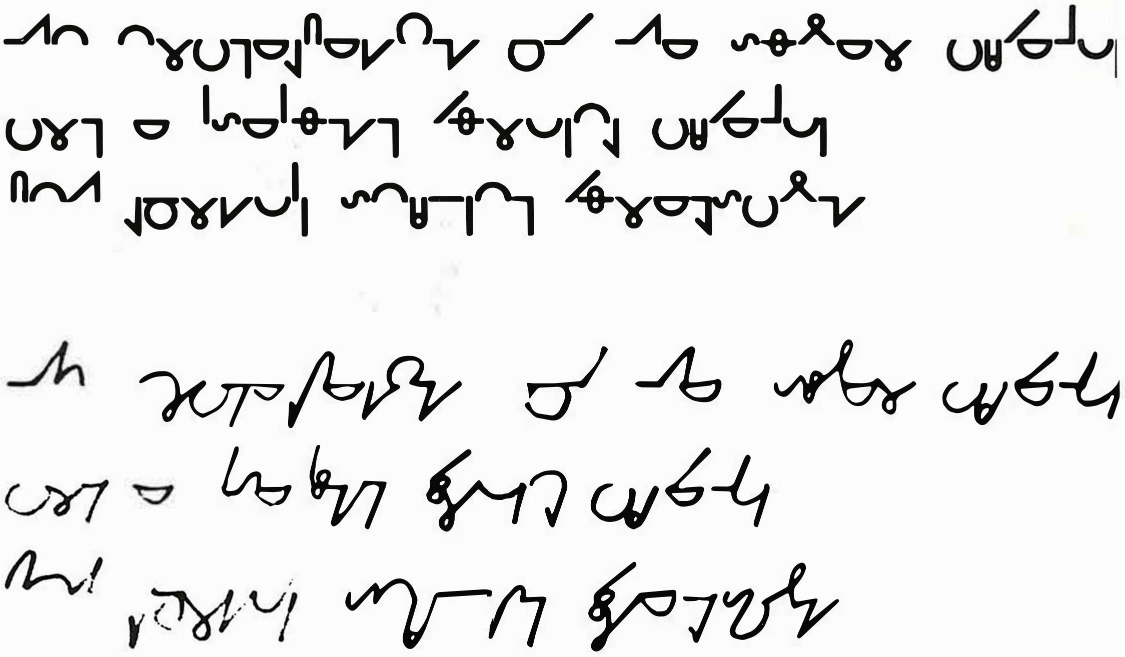
A proposed phonetic alphabet

icographic 11, 1977, pp 22-27

Author's address:
Department of Art,
State University of New York
at Buffalo
2917 Main Street Buffalo,
New York 14214, USA

Admittedly, this is an extreme case. Nevertheless, the average high school student averages 80 to 100 words per minute after two years of shorthand training. This is well in excess of longhand writing or hand printed Roman lettering, which adults can rush through at 20 to 30 words per minute with minimum readability. Why then doesn't the use of shorthand extend beyond stenography?

A survey of shorthand readability (George Phipps, 1936), offers an answer. Second year shorthand students and even experienced stenographers were observed to read shorthand much slower than they read type. The average oral reading time of shorthand was 40 words per minute, as opposed to 120 to 200 words per minute for oral reading of typewritten material.
Not only that, reading accuracy was much lower for reading of shorthand. Shorthand reading depends on subtle visual discrimination, such as the positions of characters, or the thickness or thinness of strokes. Clearly shorthand is designed for rapid writing and not for speed of reading. Rather strong visual cues are necessary for effective reading systems, and though it might seem desirable to model a new alphabet on a shorthand system, we cannot employ the extremes prevalent in shorthand.



Two examples of the Proposed Phonetic Alphabet—typeset and hand written.
The text is, in fact, a transliteration of the title of this article.

Design goals

Based on the above investigation of the deficiencies of the Roman alphabet, we can define the following goals for designing an improved alphabet.

Readability

can be defined in terms of minimum strain or concentration required to read and comprehend a given number of words within a given length of time. Readability includes the problems of legibility. Legibility, in turn, is limited to the perception and discrimination of visual symbols. Its variables are scale, colour, configuration variation, configuration complexity, exposure duration, and exposure intensity. Improved legibility would allow one to put more words into a given space, as well as allow one to read given copy at greater distances and with minimum lighting. Not limited to legibility, readability also deals with the problem of associating visual symbols with sounds and concepts.

Learnability

includes increased retention and reduced discrimination difficulty for the earliest possible developmental stage of a child. It is readily observed that arbitrary symbols do not aid retention. Also unnecessary inconsistencies retard learning. Learnability and readability are obviously related: nearly all the design devices used to improve readability automatically improve learnability.

Writability

is simply the goal of reducing handwriting time and difficulty. Writability cannot be considered as important as readability, because given copy, though written only once, can be and often is, read many times. Also, the common use of typewriters, photo and metal typesetting devices, and computers, reduces many applications of handwriting. However, mechanical and electronic devices will not totally eliminate writing, and neglecting the problem of writability in designing type for current technology would be an oversight. Though historical awareness constantly points out the influence of technology on graphic communication, we cannot ignore the kinesthetic limitations of man. Understanding the advantages of new technologies points out the ridiculousness of programming computers to print out metal-type styles, such as Caslon or Bodoni. All too often, attempts at designing computer type faces overlook some of the human factors involved with readability and writability.

Design devices

The following devices were used in an attempt to achieve the above goals.

Phonogramic efficiency

means employing only one distinct visual configuration for each phoneme. The full range of possible human articulations can be conceived as a total continuum with an infinite number of variations. Each language employs its own system for dividing portions of the continuum into distinct parts. These phonemic distinctions are based on that specific range of subtle sound variations which phonetically separates one word from another.
Within any language we can hear variations within phonemes; however, the efficiency of a phonogramic communication system does not require symbols for variations within phonemes.

One hundred percent phonogramic efficiency is an impossible ideal. Not all speakers of a given language use the same phonemes for the same words. Several sounds within our own phonemic system defy clear classification. Nonetheless, our present understanding of phonetics allows the development of a phonogramic system that would be a considerable improvement over the Roman alphabet.

Therefore, to eliminate the countless spelling variations of English we need to design 40 distinct visual symbols. Maximum phonogramic efficiency also requires elimination of capital letters, since they are not necessary for effective visual representation of verbal communication. Also required is the elimination of the need for an auxiliary longhand system.

Phonogramic efficiency is by far the greatest need for the Roman alphabet, especially for English.
It is particularly an advantage for learnability. Not only does it alleviate retention difficulty, it also improves readability and reduces writing time by actually eliminating 10% of the characters. The sample Roman alphabet employs 178 characters, while the sample proposed phonetic alphabet paragraph uses only 147 symbols to cover identical verbal material.

Concept-related symbols

Before we can evaluate the appropriateness of concept-related symbols, we might consider the definitions used by Rudolph Modley:

image-related graphic symbols (often called pictographs), refer to real objects by resemblance. [Man would be symbolized by a silhouette or stylized drawing of a man. Obviously such a symbol is easily recognized or learned] . . .

Concept-related graphic symbols refer to perceptual objects rather than to real objects. Thus, one or two parallel, horizontal wavy lines may represent water; an arrow pointing right may indicate that one should turn right; the Roman numerals I, II, and III are evidently concept-related.

The concept-related symbol may not be as easily recognizable as the image-related one. However, because its graphic form portrays the perceptual content of the object or concept which it represent, it is easy to learn. Once learned, it is easily retained. . .

Arbitrary graphic symbols do not resemble real objects; nor are they related ot the objects or concepts which they represent. Their shape is arbitrarily assigned to them.
Because of this lack of reference, arbitrary symbols are more difficult to teach, more difficult to learn, and harder to retain.
They have to be learned by rote.

Regardless of their possible origin as image-related or concept-related symbols, the graphic symbols in current use—letters, numerals, punctuation marks, and mathematical operators—are all arbitrary symbols. (Modley, 1966)

Since the arbitrary symbols of the Roman alphabet are difficult to learn, it would seem natural to redesign these symbols as image=related phonograms.

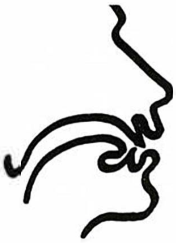
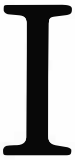


Image-related graphic symbols (often called pictographs), refer to real objects by resemblance. Obviously, such a symbol is easily recognized or learned. . .

Concept-related graphic symbols refer to perceptual concepts rather than to real objects. Easy to learn, once learned, easy to retain. . .



Arbitrary graphic symbols do not resemble real objects; nor are they related to the objects or concepts which they represent. They have to be learned by rote.

However, I reject this option, because image-related symbols for phonemes would develop into diagrammatic cross sections of the mouth and tongue. Though such symbols would be very descriptive, they would be too complex visually and kinetically to be of practical use as phonograms. Also, the differences between many phonemes are created by very slight adjustments of the articulatory apparatus, and any diagrammatic indications of such changes would be visually imperceptible.

Rationale of the proposed symbols

The rationale for the concept=relatedness of the proposed symbols is as follows. Though sound waves travel in all directions, we can readily conceptualize speech as sounds travelling in a horizontal line from the mouth of the speaker to the ear of the listener. Thus, I choose to string symbols along a horizontal line. This practice coincides with many existing alphabet systems. There is no conceptual reason for choosing left-to-right directionality.
However, I choose to do so because the majority of humans, being right=handed, find it slightly easier to draw a writing instrument from left to right. Also there is some advantage in not covering already written material with the writing hand.
For the same reason I choose to write lines from top to bottom.

Since vowels are relatively unconstricted voice, they can be symbolized by horizontally based (visually flowing or unconstrained) lines. For all vowel symbols we use lines which begin and end on the horizontal axis line. They are varied only by curving above or below the axis line.
In contrast is the class of consonants called "stops." They are sounds created by the release of air pressure by two articulators which have momentarily obstructed voice or air pressure. Since vertical lines are obstructions of the visual flow of horizontal lines, stops are symbolized by vertical configurations.

The affricates and fricatives are actually the friction sounds of breath forced through two constrictive articulators.
Since breath is not totally obstructed, we could appropriately symbolize these phonemes by using diagonal lines which do not completely obstruct the flow of horizontal lines.

The stops, affricates, and fricatives have voiced and unvoiced pairs.
The symbols for the voiced and unvoiced members of each pair are identical except for a short horizontal line which is attached to the leading central corner of the voiced symbol.

The nasals, laterals and glides, are frictionless consonants.
They are emitted through the nose and mouth with relative freedom from constriction. These sounds are perceived as vowel-like sounds, explaining the choice of vowel-like visual symbols.

Elimination of horizontal reversals

Since beginning readers find it difficult to perceive or remember the differences between pairs of horizontal reversals, such as *b* and *d*, one way to insure maximum symbol learnability would be to avoid the use of any horizontal reversals.
There is evidence that young children perceive vertical reversals more easily than horizontal reversals.
(Di Meo, 1969). Therefore, in specific cases where other options would decrease readability and writability, I chose to employ vertical reversals. However, I avoided any possible horizontal reversals, even at the expense of writability.

Maximum uniqueness of word units

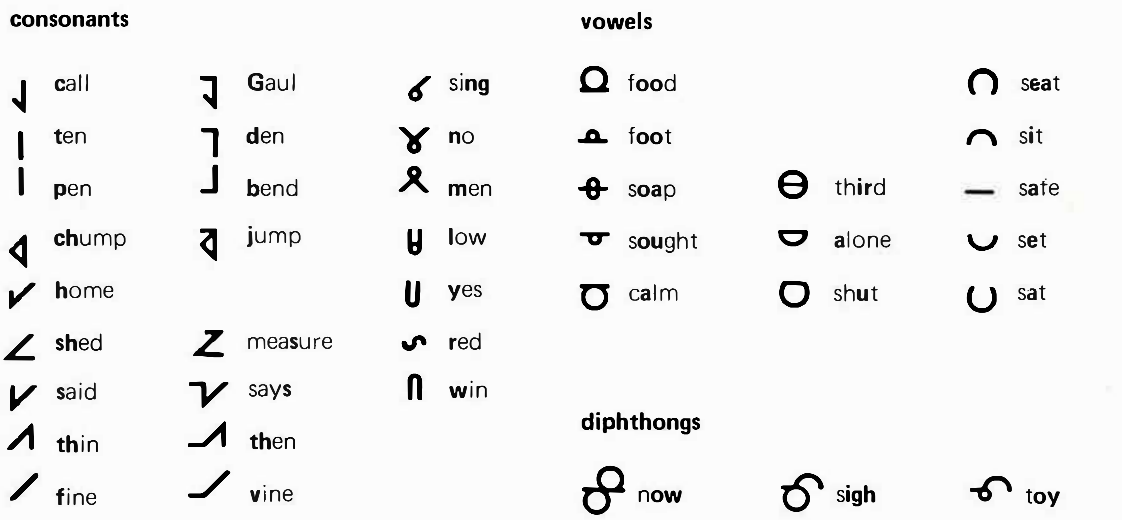
The best examples of traditional typ design demonstrates letters which have been meticulously designed to function visually when combined as word units. However, primary emphasis has been on individual letter units. In reality, mature readers do not perceive letters (except when deliberately slowing down for new words), but the total, over-all configurations of words. We need to stress each word unit as a symbol configuration because words are the basic conceptual units of language. Roman alphabet characters are inadequate for this goal because of the similar height, width, and configuration of lower-case bodies. The regularity of upper-case letters is even worse. Roman letters achieve word uniqueness best in words containing a favourable distribution of ascenders and descenders.

Another problem with the Roman alphabet is symbol complexity.
The visual configurations of most characters are not as simple or as strong as they could be.

The perceptual problem of embeddedness (which relates to the law of form constancy mentioned earlier), is also caused by symbol complexity and lack of uniqueness in word units. In general, it can be defined as a failure to keep distinctive features of characters away from crowded or enclosed environments. It appears that the perimeter of a word configuration supplies the strongest visual information.
We more readily perceive the outline features of words than we do internal features.

To avoid embedding and to insure maximum word uniqueness, we set

The proposed phonetic alphabet. The new symbols are paired with their respective English phonemes. Phonemes are indicated by bold letters within the traditionally spelled sample words



up a system whereby the heavy horizontal clustering common with the Roman alphabet is avoided.
Whenever possible, distinctive features are kept away from the central horizontal axis.
All characters start on a horizontal line in order to establish a fixed horizontal axis with which the distinctive features can contrast.
Besides individual configurational differences, characters contribute most to a word configuration by the character's degree of contrast with the horizontal axis.

In order to guarantee the connectability of characters, I tested symbol pairings for each of the possible consonant pairs in English.
Doing so presented some interesting implications for readability.
Out of a mathematical possibility of 576 prevocalic pairs with the 24 English consonants, only 27 pairs are actually used in speech.
Also, out of 576 possible postvocalic pairs, only 51 are used.
Only three prevocalic and postvocalic pairs overlap. For all the other pairs, those which are used immediately before vowels within syllables will never be used after vowels.
Noteworthy, is the limited number of pairs actually used, as well as the consistency of the English phonetic system. Herein is an implication for further design and research.
If we emphasized the visual uniqueness of the 75 usable consonant pairs, wouldn't we be taking greater advantage of inherent phonetic consistency, thereby improving learnability and increasing readability?

Kinetic efficiency

simply means the reduction of hand motions or strokes per character, to a minimum. Also implied is usability as a longhand system.
The latter is accomplished by reducing the strokes per character and by designing characters which can be connected without the addition of extra strokes. All symbols for the proposed alphabet begin on the horizontal line—the majority of symbols terminate on the same line.
When used with connected symbols this alphabet has a kinetic efficiency of two average strokes per character.

Another kinetic requirement is built in usability as metal or photographic type. This is done by retaining a constant relationship for each symbol to the horizontal line and by avoiding overlapping.

A tool for analysing kinetic efficiency is the concept of average strokes per character (ASPC). It is an attempt to avoid the time-consuming group-test testing of actual writing speeds.
It avoids the difficulty of controlling the personal variables of age, amount of training, and effectiveness of training (Sherman, 1945).
Not only that, until an alphabet has been designed and is actually ready for testing, ASPC provides a useful guide.

Unmodified ASPC is not an accurate indication of kinetic efficiency.
Observations of comparative stroke speeds point out the following.
It is easier to draw unconnected vertical lines than connected vertical lines. However, it is considerably harder to draw unconnected closed circles than connected closed circles.
We can generalize that not every motion which can be defined as a stroke employs the same amount of energy and time. On the other hand, we might particularize our conclusion by saying that the jump stroke (any necessary motion which does not leave a visible trace for any time the pen or pencil is lifted after the termination of one stroke and carried to the initial position of the succeeding stroke) before any vertical down-stroke, is easier than an upward stroke which might replace it.
Also, it is better to take advantage of connecting strokes before and after closed circles or loops, since these connecting strokes are actually an automatic continuation of the clockwise or counter clockwise motion used to create the loop.
With these observations in mind, I have modified my application of ASPC to various writing systems.
Also, these observations were used to advantage, in selecting specific configurations in the proposed alphabet.

Comparative kinetic efficiency

Initial Teaching Alphabet	4.7ASPC
Upper case Roman	4.3ASPC
Lowercase Roman	3.6ASPC
Lowercase longhand	3.0ASPC
Proposed alphabet/printed	3.0ASPC
Proposed alphabet/written	2.0ASPC
Average shorthand system	0.7ASPC

Careful application of ASPC does not account for all the factors of writability. Because the ASPC of longhand version of the proposed alphabet is one half the ASPC of Roman capital letters, we cannot automatically expect the actual writing speeds for the proposed alphabet to double the speed for lettering in Roman capitals.
There appears to be an intervening mentla selection and feedback process which decreases the expected potential potential of reduced ASPC.
This appears to account for the relatively close writing speeds for upper-case Roman alphabets and longhand, even though the ASPC for upper-case Roman characters is considerably higher than the ASPC for longhand.

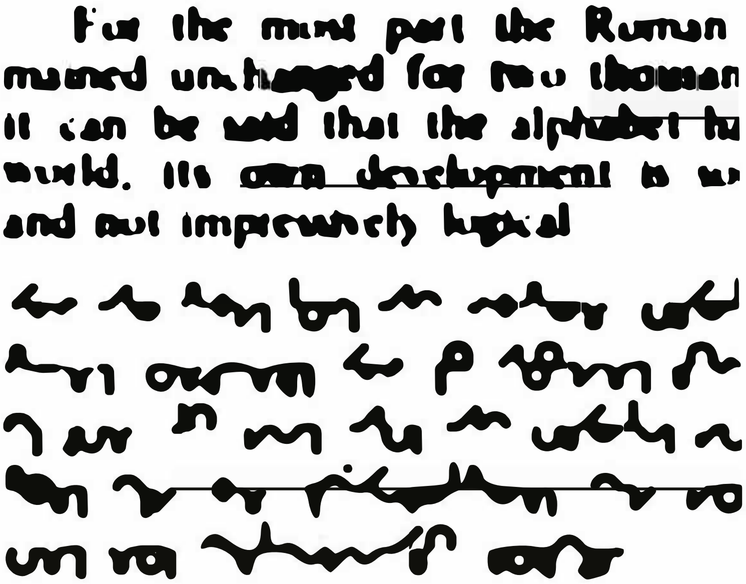
Kinetic efficiency of 1.0ASPC would be ideal; however, the demands of readability makes this impossible.
My first attempt at a phonetic alphabet approximated to 1.0ASPC, but it closely resembles shorthand systems. It also possessed the poor readability and learnability of shorthand. Since then I find it necessary to stress readability and learnability.
This is necessarily at the expense of writability, because the design devices used do not always parallel each other. For example, the simplest and strongest visual configurations are not necessarily the most efficient kinetic configurations.

Conclusions

Accepting traditional Roman orthography as unchangeable has prevented designers from dealing with some of the deeper problems of reading and writing. Challenging this tradition opens a broad field for serious research and design.
I am not discounting ongoing research in legibility and learning problems, because such research influenced my own conclusions.
Conceivably we could redesign the Roman alphabet and greatly improve its readability and writability.
We could also add 14 compatible symbols and employ a consistent spelling system, thereby maximizing phonogramic afficiency.
However, for the sake of developing a concept-related system it is necessary to totally abandon the Roman alphabet; Its illogically developed, arbitrary symbols, make it ridiculous, if not impossible, to readjust it into a concept-related system.

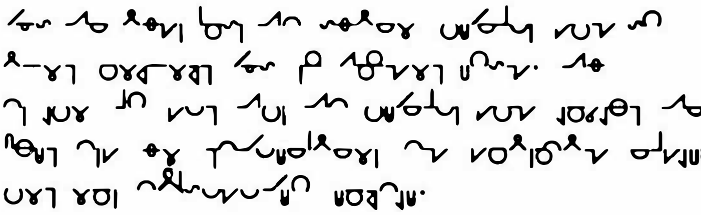
Assuming that we could develop an alphabet which would be an indisputable improvement over the Roman alphabet, how would we implement its use?
I cannot offer a simple answer.
Besides, the unwillingness of people to accept innovations, especially one as difficult as this, the mere cost of translating the bulk of existing printed material would be staggering.
However, change is inevitable.
Whether it takes 5 years, 50 years, or 500 years, the Roman alphabet will change. Technology and insights into perception and learning will demand it.

Out of focus Roman type and out of focus Proposed Phonetic alphabet type demonstrate a possible solution for reduction of embeddedness and thereby an increased word uniqueness.



Identical copy set in traditional Roman type and in the Proposed Phonetic alphabet. The Roman paragraph requires 178 characters, while the Proposed alphabet paragraph needs only 146 characters.

For the most part the Roman alphabet has remained unchanged for two thousand years. Though it can be said that the alphabet has conquered the world, its own development is sometimes obscure and not impressively logical.



Meanwhile, we struggle with a cumbersome system. Children still find learning to read a much harder challenge than necessary. Many hours of our lives are wasted in looking up spellings in dictionaries, in the mechanics of handwriting, in unnecessarily slow reading, and in learning to read foreign languages. The sooner we can come up with a well developed alternative to the Roman alphabet, the sooner we will be able to alleviate these problems.

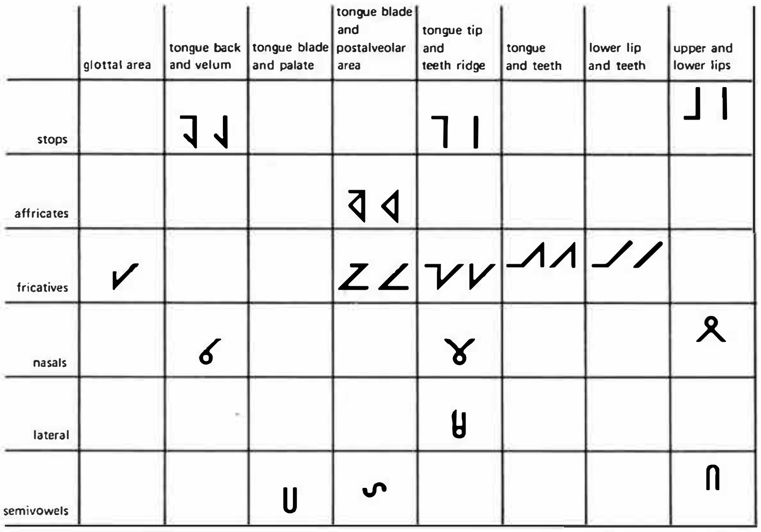
Adult aversion to innovations, the success of the Initial Teaching Alphabet, and the improved retention of concept-related symbols, all suggest that the greatest advantages of a new concept-related alphabet would be in early childhood education.

After extensive testing and redesigning as needed, such a system could replace ITA as a beginning reading and writing system. After two or more years the beginning reader would be taught the Roman alphabet to enable him to read material not yet printed in the system. These students would be encouraged to retain this system for writing, since it will already be an efficient longhand system.

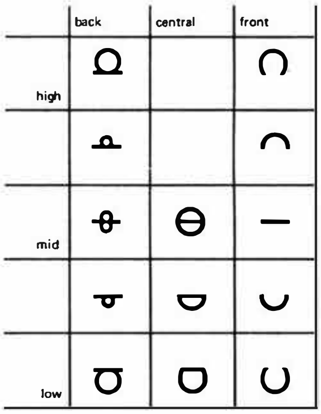
Undeniably, the difficulty of transfer from the proposed phonetic system to the Roman alphabet presents a learnign problem. Many children now transfer from ITA to the traditional alphabet with ease; some do it without special instruction. Transfer from the proposed alphabet will be more difficult, but could be accomplished during the time now spent in learning penmanship and spelling.

Proposed symbols are concept-related for concept-association learning. Each symbol relates horizontally and vertically to the accepted two= dimensional system of articulatory classification devised by phoneticians.

Proposed phonetic alphabet/consonants


glottal area
tongue back and velum
tongue blade and palate
tongue blade and postalveolar area
tongue tip and teeth ridge
tongue and teeth
lower lip and teeth
upper and lower lips
stops
affricates
fricatives
nasals
lateral
semivowels

Proposed phonetic alphabet/vowels


back
central
front
high
mid
low

Furthermore, the advantages of the proposed phonetic system should far outweigh the cost of transfer. Maximum phonogramic efficiency and the conceptual retention features, will substantially decrease initial learning time. In addition, there will be the advantage of rapid writing, improved readability and the benefits of a well-established understanding of the English phonemic system.

Further research and testing

The following tests should be conducted before a system of this type is presented to a large group of beginning readers.

1 A sampling of students should be taught a 100% phonetically efficient system, such as the International Phonetic Alphabet and their scores compared with ITA readers at the same level.

2 Another sampling of students should be taught a concept-related system, like the proposed system, and their scores compared with the IPA readers to see if the concept-related feature is an advantage.

3 Readability experiments would be conducted for variations of the proposed system. This appears to be the most allusive aspect to test, since the simultaneous testing for comprehension and reading speed would be misleading.

4 Actual comparative speed writing tests should be initiated.

5 Careful tests should be set up to measure the transfer from IPA to the Roman alphabet, also from the proposed system to the Roman alphabet, and compared with transfer rates of the presently used Initial Teaching Alphabet.

The proposed phonetic alphabet is not a final solution. It began as an attempt to explore a design approach suggested by the possibility of a concept-related phonogramic system. I believe these attempts have produced demonstrable improvements over the Roman alphabet. The predominant improvements are concept-relatedness and phonogramic efficiency. The proposed alphabet is not a radical innovation. It simply attempts to do what any alphabet does, except with more logic, consistency and efficiency.

Bibliography

Bronstein, A and Jacoby B, *Your Speech and Voice,* Random House, Inc, New York, 1967

Bruner J, *The Process of Education* Cambridge, Harvard University Press, 1960

Di Meo K P, *Visual-motor Skills: Response characterisitcs and predicting behaviour,* Journal of Typographic Research, April 1969—181

Downing J, *To Bee or Not to Be,* Pitman Publishing Corporation, New York, 1962

Downing J, *The Initial Teaching Alphabet Reading Experiemnts,* Scott, Foresman and Company, Chicago, 1965

Fry E, *First Grade Reading Instruction using a Diacritical Marking System, the ITA and a Basal Reading System,* Rutger, New Brunswick, New Jersey, 1965

Gelb I J, *A Study of Writing,* University of Chicago Press, 1952

Kenney A H and Kenney V T, ed, *Dyslexia,* C V Mosby Company Saint Louis, 1968

Mazurkiewicz A J, *First Grade Reading using Modified Co-Basal vs the ITA,* Lehigh University, Bethlehem, Pennsylvania, 1965

Modley R, *Graphic Symbols for Worldwide Communication,* in Sign, Image, Symbol, Gyorgy Kepes, ed, George Braziller New York, 1966

Moses E R, *Phonetics,* Prentice-Hall Inc, New Jersey, 1964

Noel-Armfield G, *General Phonetics,* Cambridge, W Helfer & Sons Ltd, England 1931

Phipps G, *An Experimental Study of Reading of Shorthand,* University of Chicago Libraries, Chicago, 1936

Pitman, Sir Isaac, *A History of Shorthand,* Sir Isaac Pitman & Sons, Ltd, London, 1884

Sherman M, *Some Principles for Evaluating Shorthand Systems,* Morningdale Heights, New York, 1945

Warburton F W & Southgate V, *ITA: An Independent Evaluation,* John Murray & W & R Chambers, 1969

Book review

Peter Kneebone

Handbook of Pictorial Symbols: 3,250 examples from international sources
Rudolf Modley (with the assistance of William R Myers)
Dover Publications Inc. New York
$3.50

If the incredible muddle and lack of cooperation that has so far characterised communication by public signs is to stop it will be thanks to a small number of patient and dedicated individuals.
This book, published shortly after his death last year, is one more proof of Rudolf Modley's very considerable international contribution to this study, rationalisation and development of graphic symbols.

A man of great personal quality and public devotion he had been a leading figure in the public symbol field for several decades. An early collaborator of Otto Neurath he established *Pictorial Statistics* and the *Pictograph Corporation* in America in 1934. Since the war he had been co-chairman, with Margaret Mead, of *Glyphs Inc,* whose invaluable newsletter shed light on a chaotic subject. A contributor to many publications, including *icographic,* he was a close collaborator and friend of Icograda.

How does *Handbook of Pictorial Symbols* represent Rudolf Modley's work (for it is inevitable that we should ask ourselves this question)? On one level, very well.
It does not either illustrate or amplify the range of his thinking, but this was not his aim. At the end of his introduction Rudolf Modley "hoped that the symbols collected in this volume will help pictographers as well as those at work on public symbols in their tasks."
"Help" was one of his dominant preoccupations, with modesty and method, and help is what the book offers.

It will, naturally, be compared with the last book of another dedicated man—*Symbol Sourcebook* by Henry Dreyfuss. While the Handbook does not, as in Dreyfuss, catalogue several categories of symbols, make an inventory of graphic forms or analyse colour, it is in one important respect superior and a better tool for public information designers.

The first part is of historical and graphic interest. It contains many *Pictograph Corporation* symbols as well as symbols designed by Gerd Arntz for the Vienna Social and Economic Museum and the Netherlands Statistical Foundation.
The second, and longer, part is based on and extends the 1974 study *Symbol Signs* prepared by the American Institute of Graphic Arts for the US Department of Transportation. This is where the book will prove invaluable. One of the weaknesses of *Symbol Sourcebook* was the lack of method in the presentation of public information symbols, and their limited range.
Here, as in the AIGA study, a wide selection of national and international symbol systems is presented with clarity and method in two ways. Firstly by classifying according to referents (eg 'Telephone') with anything up to 24 examples for each. And secondly, which is of considerable importance, by classifying according to systems (eg German Airport Authority). This method has sometimes been adopted on a more limited scale (in the special Icograda issue of *Print:* International Signs and Symbols, 1969) but in previous publications it has, too often, been the former method that was used in the *Handbook* we are offered 58 pages showing how 30 public information systems work *as systems.*
In other words are they coherent?

In the long-term work being currently carried out by ISO this approach will, after all the image-content tests have been made, be a critical methodological point in the development of coordinated public information symbols. If the work is successful, Rudolf Modley will have been one of the main architects.

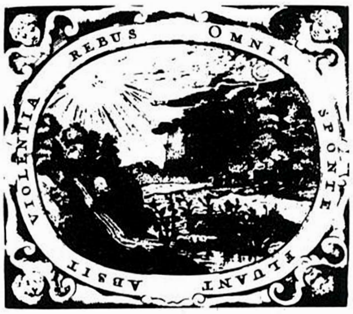
Below, the signature of Jan Amos Komensky and a period portrait, dated 1642, by G Glover

The emblem at the beginning of this article is Comenius' famous motto—'Omnia sponte fluant, absit vilentia rebus' (Let everything flow naturally, let any violence be absent from objects).
This motto introduced most works by Comenius

Comenius and visual education

Jan Rajlich

Jan Komenský:



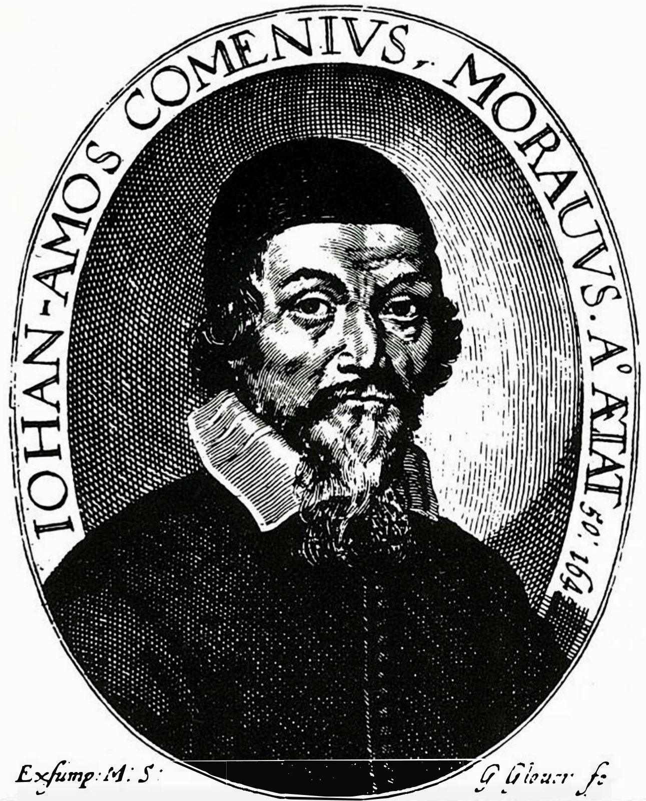
REBUS OMNIA SPONTE FLUANT ABSIT VIOLENTIA

A short magazine article which concentrates solely upon the pictorial aspects of the work of Comenius is no substitute for a detailed study of his entire output.
Nor can it offer deep insights into this particular aspect of his work.
The objectives that I set for my work are far more modest.
Neither would I like to draw your attention to the personality of the Czech thinker and scientist of the 17th century in more than general terms.

Some years ago his work was commemorated by Unesco, which is rightly considered, because of its mission, as the heir of Comenius' progressive, reforming ideas in the field of education, enlightenment and society as such.
In areas far from Comenius' native country and, moreover, in a journal of professional interest covering the field of visual communication,
I would rather like to mention that Comenius was not only a famous pedagogue and philosopher who, by putting sensuous education to the forefront of human education, initiated the modernization of education as such, but that he belongs among the pioneers in the field of a purposeful drive for expansion of the visual forms of education.
I would also like to remind graphic designers of the fact that Comenius discovered the significance of graphic representation as the fundamental means of communication which tries to obtain new knowledge and description of the world.
By reprinting the period illustrations to Comenius' writings I intend to bring the visual aesthetic charm of this graphic expression nearer to contemporary book and graphic designers.
This aesthetic charm is often outside the scope in which these designs were made by their authors, so that for a modern observer, they have the additional attraction of a certain "charm of the unwanted."
Both the text and the related pictures have one common objective: to remind us of the desirability, and the inspiring expedience of every artist's descent from proper sources.

The years 1592 and 1670 mark the beginning and the end of Jan Amos Komensky's life (Comenius in Latin). These dates are separated by a gap of almost eight decades full of relentless and fruitful work, at which Comenius experienced, not only personal pleasures and sufferings, but also a persistent struggle for the well-being of his endangered church—the Unity of Czech Brethren, and the whole Czech national community.
Eight decades, of which Comenius spent less than one half in his home country, while the remaining part he spent in exile abroad, were full of untiring literary, scientific, cartographic and pedagogical work, as well as that of a preacher.
Comenius took great organising pains, political efforts not excluding.
He is that type of polyhistorian formed by the Renaissance and Baroque periods.
His literary and theoretical works, written in Czech and Latin, are so vast that their contemporary critical edition issued in Czechoslovakia, consists of about 45 volumes.
Yet a substantial part of Comenius' work *Pansophia*—together with some other manuscripts—got burnt in a fire in one of his temporary retreats.

Today, in spite of the barrier of three centuries, the heritage of Comenius' work is alive and close to us—the people of the 20th century.
According to Comenius' ideas, education and culture serve as the guide for man to understand the complexities of life and the world.
How could Comenius' ideas about man's education throughout his life be a matter of indifference to us?
It is worth mentioning how Comenius developed this idea.
In his *Common Deliberation,* Comenius divides human life into individual periods convenient for education and forming a coherent system; in each stage, a man should learn something new, throughout his life. It should be emphasized that these individual stages are tied together in Comenius' concept, and that each stage conditions the next, and vice-versa, and that nothing from the preceding stage is allowed to lie fallow.
Man possesses all the necessary tools for him to be brought up through education and take the position in the world he deserves.
These tools, which are "intellect, tongue, senses and heart," should be refined by education.
Senses enable man to understand nature in an inductive way, whilst the intellect provides for an understanding of fundamental principles.
Since sharpness of the senses is a precondition of successful intellectual development, Comenius starts the educational system with sensuous education in general and visual education in particular.
According to his concept, moral



IOHAN-AMOS COMENIVS, MORAUVS. A° ÆTAT 50. 164
Exsump: M: S:
G Glover fc

Loe, here an Exile: who to serue his God
Hath sharply tasted of proud Pashurs Rod
Whose learning, Piety, & true worth, being knowne
To all the world, makes all the world his own.
F.Q.

icographic 11, 1977, pp 28-32
Author's address:
The Moravian Gallery,
Husova 14, Brno, Czechoslovakia

education is also based upon sensuous education, which is a dependable basis for further maturing and development of human individuality.

Visual communication in the second half of the 20th century, looks for further possibilities of consonance between the artist and the world in the variable game of symbols which represents, above all, an experiment to line up the human world in a new chain of events, not only in his interior, but also in the world outside man himself.
This means a necessity for finding new ways of speaking, new descriptions of individual objects, a new form of communication.
Although this objective seems to be highly topical, it is far from being new. In the history of Europe we can meet it in the philosophy that has been related to direct observation of the world, in the philosophy of Francis Bacon—and also in works by Comenius. At mid 17th century, Comenius wrote a book entitled *Orbis Sensualium Pictus* (The World in Pictures as Perceived by the Senses), which first appeared in Nurenberg at M Endter's printing house in 1658. The aim of the book was, in conformity with the author's theoretical postulate that man must be directly acquainted with objects (see *Didactica Magna*), to represent a series of objects as perceived by human senses in the world so that each of them was depicted and described. God, world, nature, elements, materials, objects, animals, plants, man and his work, man—the maker of material goods and mental values.
Instead of a singular picture which would mediate the feelings of meeting the entirety of the world, Comenius, by getting acquainted with objects, heads towards understanding of the world in its variety of forms and universality.
Description of objects starts in a vivid manner by making the learner acquainted with the way of speaking and its connection with concrete sounds.
And similarly, concepts are formed as to the unity of visual perception of objects and their universal significance.
In *Orbis Pictus,* woodcut pictures were the mediators of comprehension of the world, since Comenius frequently used to mention that sight is the most important of all the senses.

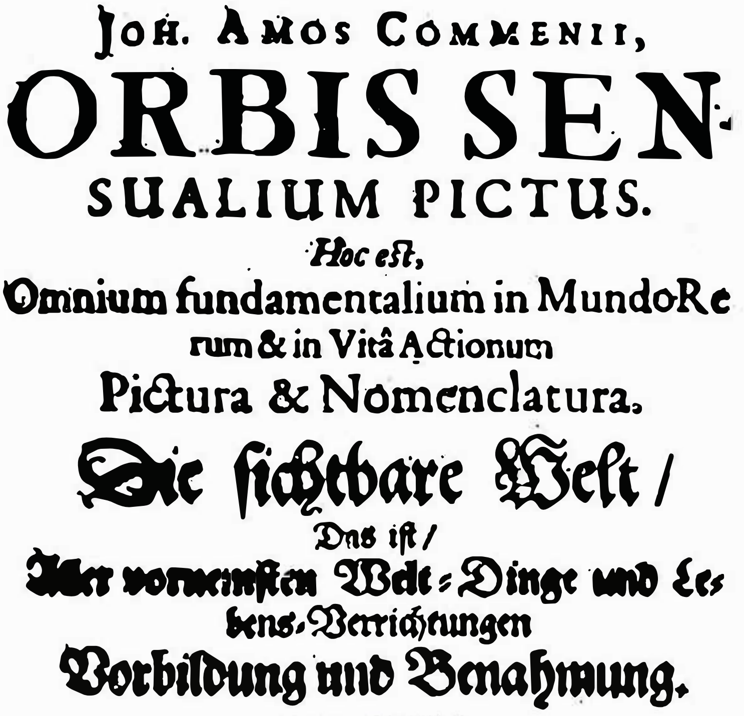
Shortly after its first appearance, *Orbis Pictus* became one of the most popular picture books, and almost immediately attracted the attention of its contemporaries all over Europe.
As a result, many further editions were printed, not only in Nuremberg, but also in London, Copenhagen and other cultural centres of the Europe of that time.

Orbis Pictus was virtually a great breakthrough in educational practice, at a time when the system of teaching was primarily verbal. Even though illustrated textbooks had appeared sporadically before the time of Comenius, *Orbis Pictus* is the first textbook in which pictures and text form an integral part. The picture enables the student to form in his mind a concrete idea about the objects explained in the text, and vice-versa.
For whole decades from the 17th—19th centuries, *Orbis Pictus* was used as the fundamental textbook in Europe. Many giants of world culture were brought up according to this book, among them being Goethe, Lermontov, and many others.
And *Orbis Pictus* appeared in almost all European languages.
The foreword to the new edition issued in Brno in 1929 tells us that that there are editions even in Persian and Japanese.

Jan Amos Komensky is known to the general public primarily as a reformer of school education.
His didactic books took a pioneer position in the then pedagogy.
Comenius' didactics (*Opera Didactica Omnia*—Collected Didactic Works, Amsterdam, 1658), proclaimed very daring reforms for that time which, incidentally, have not been realized in many a country even today.
Above all was his requirement for uniform, compulsory education, open to all children with no privileges referring to estates, social class, property, race or sex.
Education, he believed, should be based on a well considered method; the syllabus and the organization of the school system should be natural and spontaneous.
Classes should cultivate both rational and sensuous development, they should be based on a knowledge of objects—so that teaching aids, such as pictures, models, diagrams, etc, play a fundamental role in Comenius' teaching system.
The teaching system is to proceed from fundamental and simple notions to higher and more complicated ones, from the well-known to the unknown, from the concrete to the abstract.

Being in permanent contact with school education, Comenius wrote many textbooks, the most important of which are those in the field of philology, and he applied to them many pedagogic and didactic postulates formulated previously in theory. By writing these books, Comenius achieved permanent success and international renown.
It was the first edition of his Latin textbook *Ianua Linguarum Reserata* (Open door to Languages), published in 1631, that brought immediate high repute to Comenius.
Since then this textbook has been republished, rewritten and arranged several times, being modified in

Below, the title page of 'Orbis Pictus,' from the 1st edition published in Nurenberg in 1658

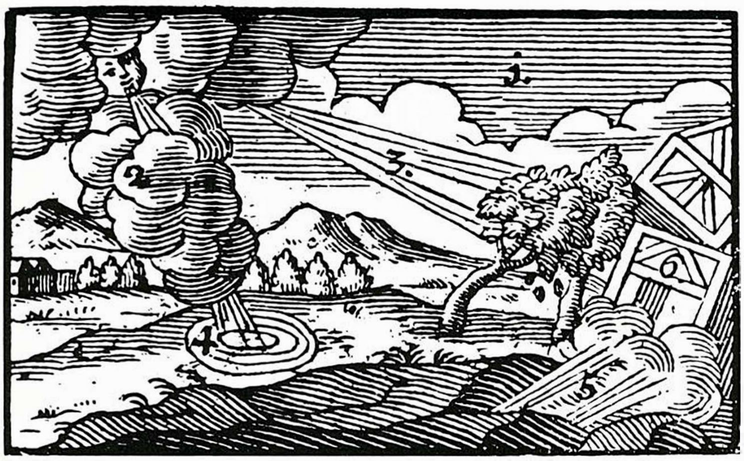


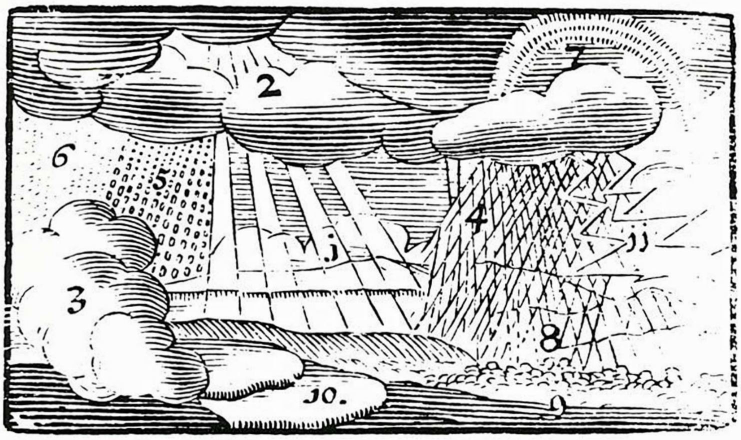
JOH. AMOS COMMENII,
ORBIS SENSUALIUM PICTUS.
Hoc eſt,
Omnium fundamentalium in Mundo Rerum & in Vitâ Actionum
Pictura & Nomenclatura.
Die ſichtbare Welt /
Das iſt /
Aller vornemſten Welt-Dinge und Lebens-Verrichtungen
Vorbildung und Benahmung.

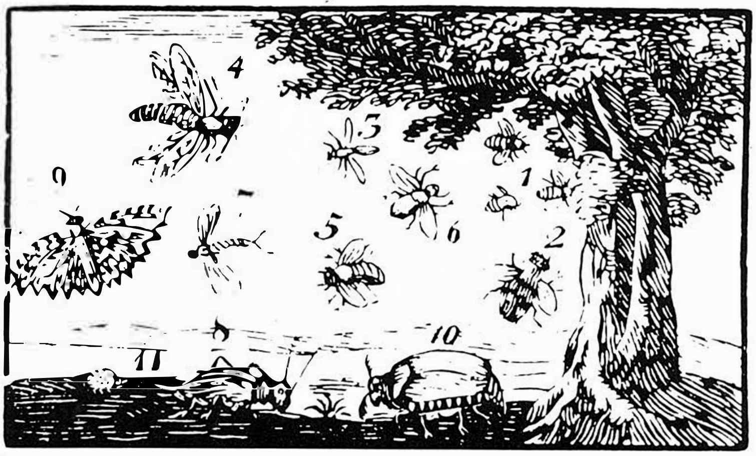
OMNIA SPONTE FLUANT ABSIT VIOLENTIA REBUS

NORIBERGÆ,
Typis & Sumptibus MICHAELIS ENDTERI,
Anno Salutis cIↃ IↃC LVIII.

All the illustrations on this page are from various chapters of 'Orbis Pictus,' and are taken from different editions of the book





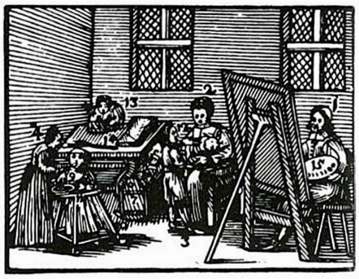


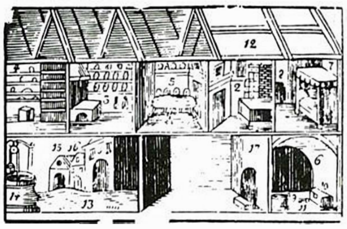
Illustration—Air
Illustration—Skies
Illustration—Flying insects

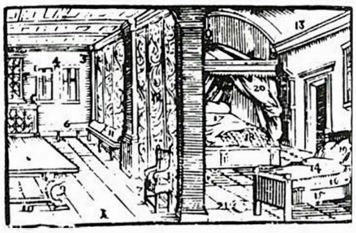
different ways and translated into almost every European language.

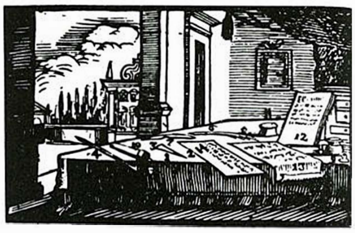
In this work, Comenius proceeded from the principle that a language textbook, if it is to be useful, must not only try to teach individual words, terse sentences and grammatical rules, but also objects, whilst at the same time it must inform the student about the real world he is inhabiting.
This is the crux of the success of this extraordinary textbook.
Keeping to this principle, Comenius carefully considered the selection of words and grouped them in subject-oriented and enclosed chapters.
Their sequence was chosen such that the book, side by side with language lessons, showed in a clear way the creation of the world, living and inanimate nature, especially man, his body and mental life, different occupations and manifestations of social and cultural life, such as school, art, morality and religion.

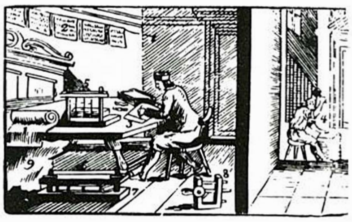
In terms of success *Ianua Linguarum Reserata* was urpassed only by *Orbis Pictus*—published in 1658, in which individual chapters are based on pictures, in conformity with the principle of objectivity, and education and the processes of comprehension proceed from visual to auditory perception, in a close relationship and unity.
Apart from his principles of objectivity, Comenius also applied his other principles of spontaneity, simplicity and amusingness of education.
Thus Comenius used every effort, not only to ease the teaching process, but also to make learning attractive for students by means of the teaching methods used—and his textbooks alike.
He estimated, correctly, that one thing conditions the other.

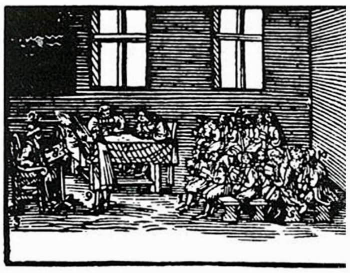












Illustration—Family tree

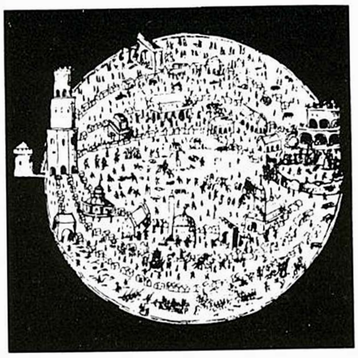
Illustration—House interior

Illustration—Sitting room and bedroom

Illustration—Writing

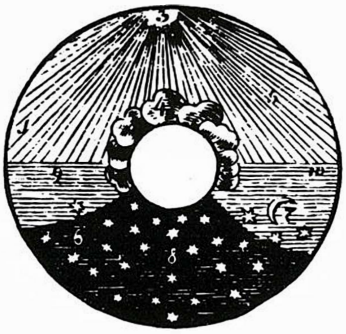
Illustration—Book binder

Illustration—School

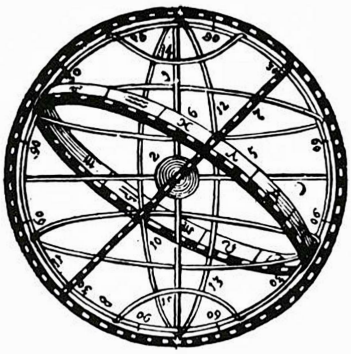


One of Comenius' own drawings meant as an illustration for his book 'The Labyrinth of the World and the Paradise of the Heart.'

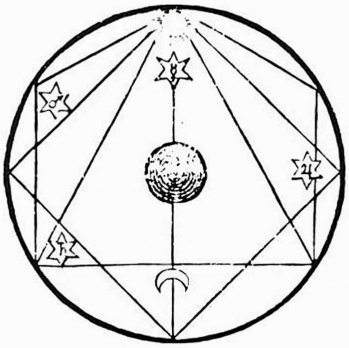
Illustration—Heaven



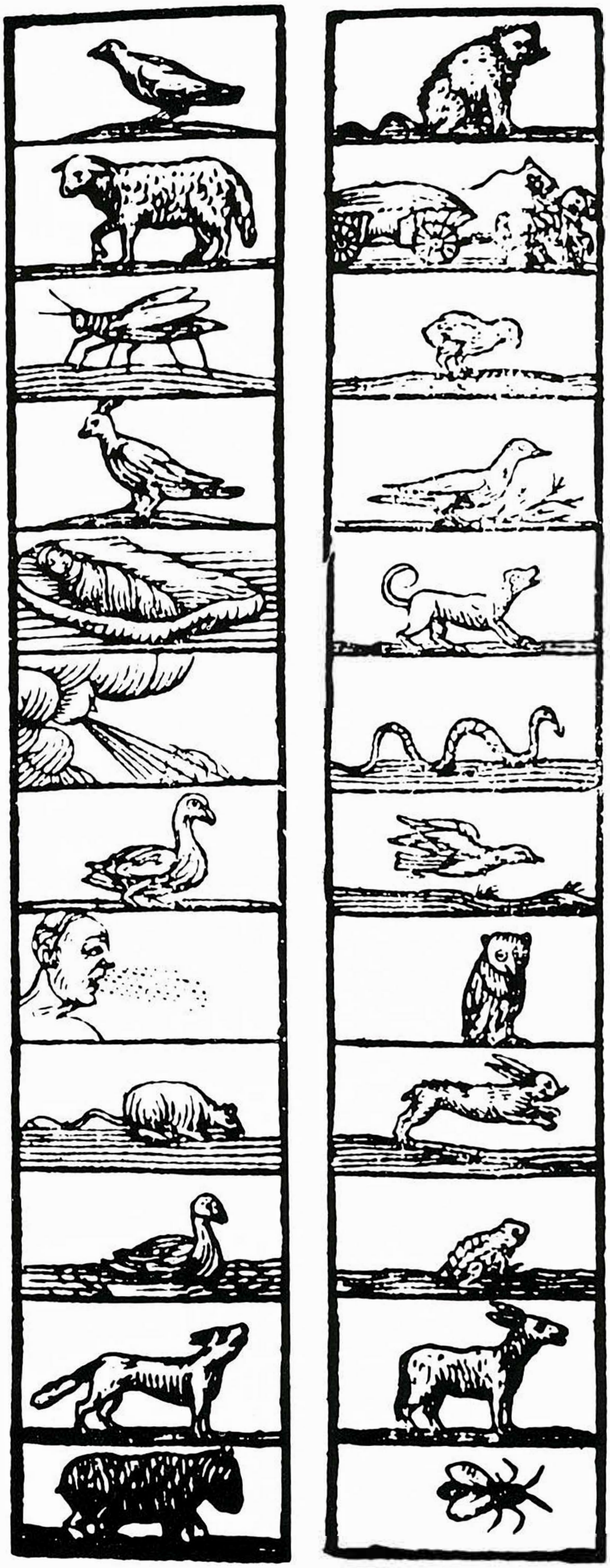
Illustration—Celestial Sphere



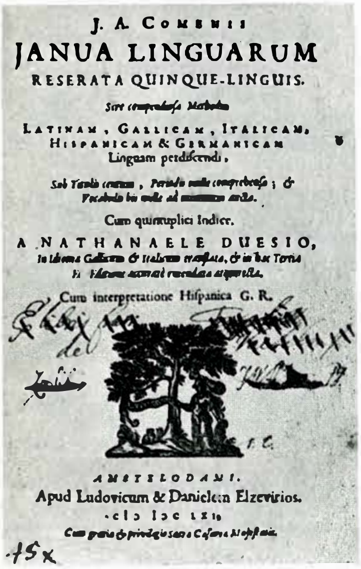
Illustration—Position of the planets



Below, illustrations to individual letters of the alphabet—taken from the introductory section of 'Orbis Pictus.' They are derived from concrete sounds in nature and in man's environment

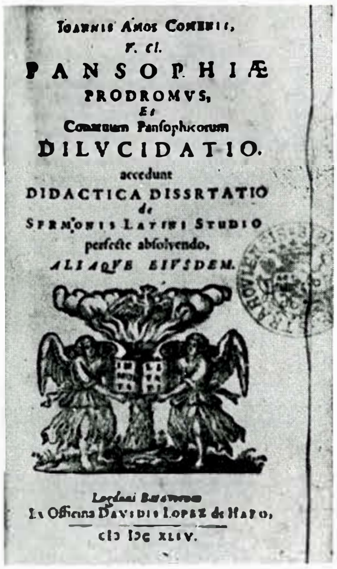


Below, the title of pages of 'Janua Linguarum reserata' (The Key to languages) and the philosophical treatise 'Pansophiae Prodromus'

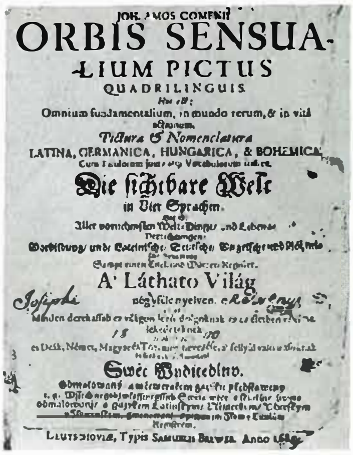


J. A. COMENII
JANUA LINGUARUM
RESERATA QUINQUE-LINGUIS.
LATINAM, GALLICAM, ITALICAM, HISPANICAM & GERMANICAM
Linguam perdiſcendi,
Cum quintuplici Indice.
A NATHANAELE DUESIO,
Cum interpretatione Hiſpanica G. R.
AMSTELODAMI.
Apud Ludovicum & Danielem Elzevirios.
cIↄ Iↄc lxi.

15x

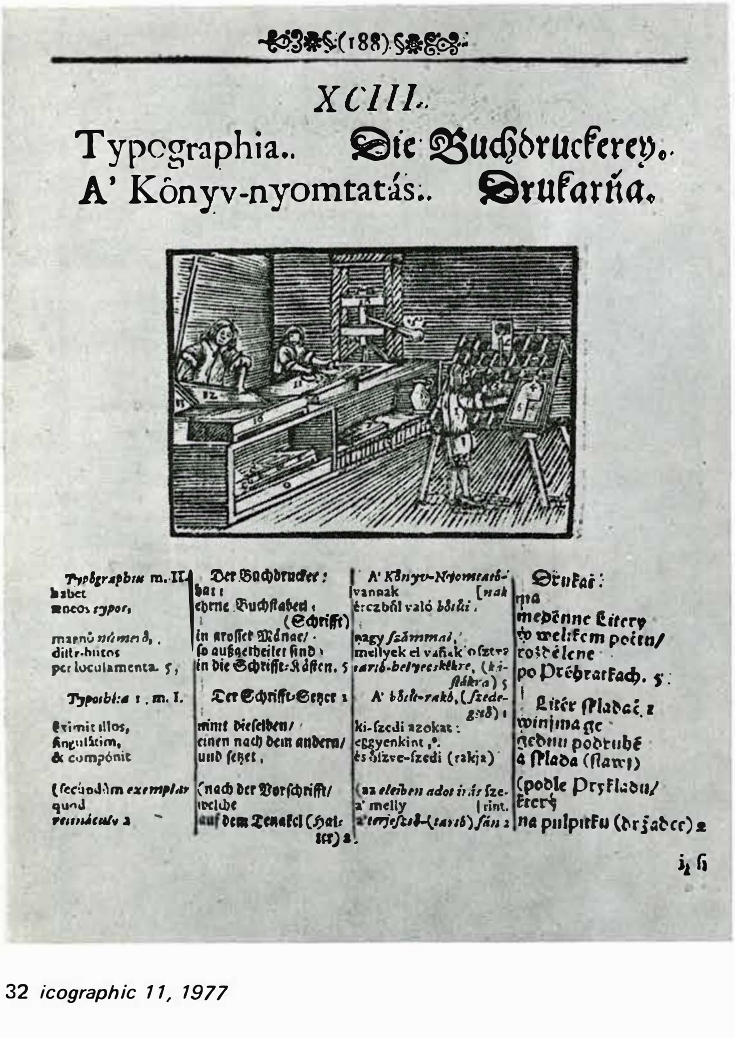


IOANNIS AMOS COMENII,
V. Cl.
PANSOPHIÆ
PRODROMVS,
Et
Conatuum Panſophicorum
DILVCIDATIO.
accedunt
DIDACTICA DISSRTATIO
de
SERMONIS LATINI STUDIO
perfecte abſolvendo,
ALIAQVE EIVSDEM.
Lugduni Batavorum
Ex Officina DAVIDIS LOPEZ de HARO,
CIↃ IↃC XLIV.



JOH. AMOS COMENII
ORBIS SENSUA-
LIUM PICTUS
QUADRILINGUIS
Hoc eſt:
Omnium fundamentalium, in mundo rerum, & in vitâ actionum,
Pictura & Nomenclatura
LATINA, GERMANICA, HUNGARICA, & BOHEMICA.
Die ſichtbare Welt
in Vier Sprachen.
A' Láthato Világ
négy ſéle nyelven.
Swět Widitedlnỳ.
LEUTSCHOVIÆ, Typis SAMUELIS BREWER. Anno 1685.

Above, the title page to one of the numerous editions of the 'Orbis Pictus'—Levoca, 1685



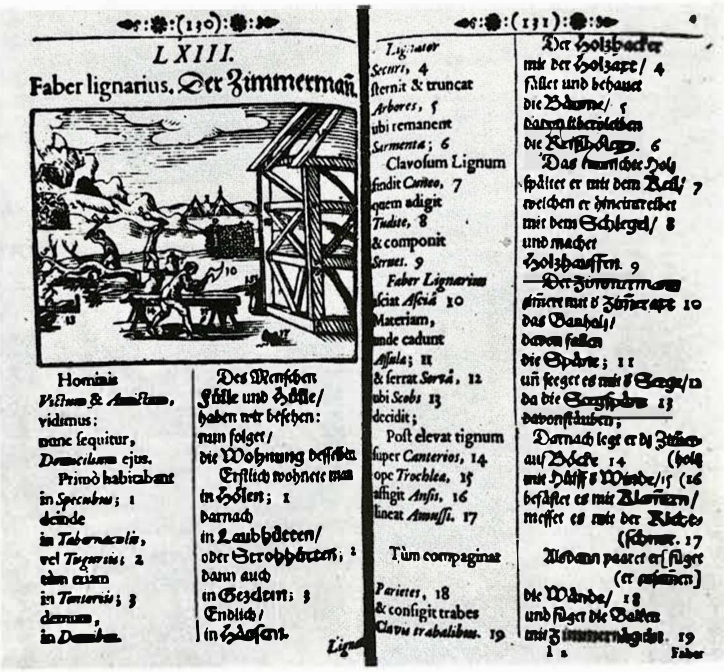
(188)

XCIII.

Typographia. Die Buchdruckerey.
A' Kônyv-nyomtatás. Drukarňa.

Typographus m. II. habet aeneos typos,	Der Buchdrucker: hat ehrne Buchſtaben, (Schrifft)	A' Kônyv-Nyomtató-[nak] vannak érczből való bötűi,	Drukař: má měděnné Litery
magno numero, distributos per loculamenta. 5,	in groſſer Menge/ ſo außgetheilet ſind in die Schrifft-Käſten. 5	nagy ſzámmal, mellyek el vannak oſztva rakó-belyecskékre, (ki-ſtákra) 5	w weliké m počtu/ rozdělené po Přehrádkach. 5
Typotheta 1. m. I. eximit illos, ſingulatim, & compónit	Der Schrifft-Setzer 1 nimt dieſelben/ einen nach dem andern/ und ſetzet,	A' bötű-rakó, (ſzedegető) 1 ki-ſzedi azokat: egyenkint, és öſzve-ſzedi (rakja)	Litér ſkladač 1 wyjjmá ge gednu podruhé a ſkladá (ſtawj)
(ſecundum exemplar quod retinaculo 2	(nach der Vorſchrifft/ welche auf dem Tenakel (Halter) 2.	(az eleiben adot írás ſzerint, a' melly a' tartóſzék-(tartó) ſán 2	(podle Přikladu/ kterỳ na pulpitku (držadle) 2

i2 ſi



(130)

LXIII.

Faber lignarius. Der Zimmermañ.

Hominis Victum & Amictum, vidimus:	Des Menſchen Fülle und Hülle/ haben wir beſehen:
nunc ſequitur, Domicilium ejus.	nun folget/ die Wohnung deſſelben.
Primò habitabant in Speluncis; 1	Erſtlich wohnete man in Hölen; 1
deinde in Tabernaculis, vel Tuguriis; 2	darnach in Laubhütten/ oder Strohhütten; 2
tum etiam in Tentoriis; 3	dann auch in Gezelten; 3
demum, in Domibus.	Endlich/ in Häuſern.

(131)

Lignator Securi, 4 ſternit & truncat Arbores, 5 ubi remanent Sarmenta; 6	Der Holzhacker mit der Holzaxt/ 4 fället und behauet die Bäume/ 5 [illegible] 6
Clavoſum Lignum findit Cuneo, 7 quem adigit Tudite, 8 & componit Strues. 9	Das [illegible] Holz ſpaltet er mit dem Keil/ 7 welchen er hineintreibet mit dem Schlegel/ 8 und machet Holzhauffen. 9
Faber Lignarius aſciat Aſciâ 10 Materiam, unde cadunt Aſſulae; 11 & ſerrat Serrâ, 12 ubi Scobs 13 decidit;	Der Zimmermann zimmert mit d' Zimmeraxt 10 das Bauholz/ davon fallen die Spähne; 11 und ſeget es mit d' Sege/ 12 da die Sägſpähne 13 davonſtäuben;
Poſt elevat tignum ſuper Canterios, 14 ope Trochleae, 15 affigit Anſis, 16 lineat Amuſſi. 17	Darnach legt er das Zimmer auf Böcke 14 (hebt mit Hülff d' Winde/ 15 (16 befäſtet es mit Klammern/ miſſet es mit der Richtſchnur. 17
Tum compaginat Parietes, 18 & configit trabes Clavis trabalibus. 19	Alsdann paaret er [füget er zuſammen] die Wände/ 18 und füget die Balken mit [illegible] 19

I 2 Faber

Above, a double spread from 'Orbis Pictus,',2nd edition, Nurenberg 1659

Left, a page containing the chapter on 'The Printing House,' reprinted from the Levoca edition of Orbis Pictus dated 1685

ICOGRADA

The International Council of Graphic Design Associations was founded in London in April 1963.
It is registered in the Netherlands.
Icograda is an association of independent Member Associations.
Membership is open to societies of professional graphic designers and organisations concerned with the training of designers and/or the raising of graphic design standards.
There are 28 Member Associations in 20 countries and Corresponding Members in 19 other countries.
Icograda has consultative status with Unesco and the Council of Europe and full liaison status with several ISO Technical Committees.

Icograda's principal aims are:

1
to raise internationally the standards of graphic design and its professional practice, and the professional status of the graphic designer.
2
to improve and expand the contribution of graphic design and visual communication technology towards a greater understanding between people everywhere, and towards a better solution of social, cultural and material problems.
3
to act as an international forum for cooperation and exchange of views, information and research between designers, and with professionals from allied and related fields and those of industry and commerce.
4
to improve the theory and practice of graphic design training, and to encourage the interchange between countries of designers, teachers and students.
5
to act as the representative and advisory international voice for the graphic design profession.

Secretariat:
7 Templeton Court
Radnor Walk, Shirley
CRO 7NZ, England

Printed in England