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The Alphabet. Pattern, History and Perspective of the Earliest Classification System

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Some theoretical considerations on the alphabet as a system of signs, including a new theory of the sign, its interdisciplinary localization, its historical unfoldment as a system of spoken sound and suggestions for future approaches. The paper argues that language-development is approaching the level of conceptual speech - passing through pictorial, sound and sign phases - and that investigations leading to a universal conceptual language as instrumentalization of a universal classification system most likely will have to focus on pictorial means of "verbalization" (this for reasons of internationalization and standardization of such a desirable concept language). - Although the paper does not explicitly deal with classification, most of its concern can easily be transcribed to fit e.g. the problem of concept clarification, and systematization and related terminological, semantical and notational areas. (Author)

0. General remarks

Before conducting any special historical or viewpoint-oriented investigation into alphabets we will first try to outline the interdisciplinary and phenomenal context, in which we have to see the alphabet as a carrier of symbolism, an instrument of communication and an important phenomenon in the historical development of language. Usually we find a differentiation into three levels:

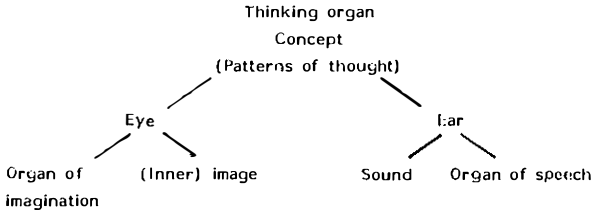
Diagram 1

concept	*spoken sound*	*sign*
intellectual understanding	verbalization	symbolization

In making this distinction the circle generally is not completed - meaning that it is assumed that between symbolization/designation of signs and conceptualization we always find the stage of verbalization. This predetermination has drastic consequences for any linguistic theory. Linguists: please note, that "sign" here is not understood traditionally, i.e. according to Saussure.

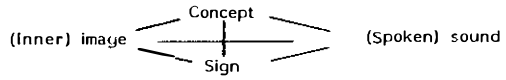
Here we will attempt to approach this complex in a more comprehensive fashion, equating to this end spoken sound with the (inner) image, analogous to the respective functions of ear and eye as respective organs to those of our speaking and imaginative equipment as productive organs within the communicative process. Unlike our speaking ability, which possesses in the verbalization tools (organs of speech) a direct link to the partner in communication, our imaginative capacity is dependent on the mediation of other media for visualization. The complex thus emerging initially takes the following shape:

Diagram 2



The key point within this construction - which clearly intended to sketch the communicative process along the eye/ear symmetry-line, lies in the fact that both halves of the scheme meet in what constitutes the topic and object of this paper: the sign, which occurs both as the representative of speech and as that of inner visualization.
This first of all completes the circle:

Diagram 3

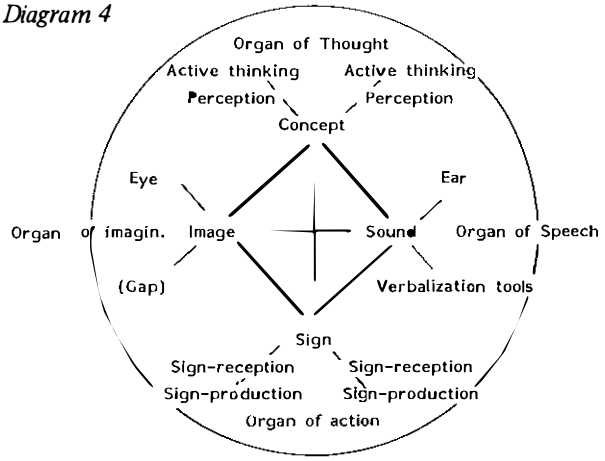


At this stage one naturally would have to define what is meant by "sign" - as opposed to e.g. "image". But before we can do this, the other components, too, need to be clarified a bit.

To acquire a proper perspective, moreover, we need to distinguish between, (1) phenomena, (2) their instrumentalization and, (3) their theoretical description.

On the level of the phenomena we find the elements already mentioned: "concept", "sound", "image" and "sign". On the level of their instrumentalization we first find the realms of the organs of thought, speech and imagination as well as of the organ or organs of action. These realms are composed of a receptive and a productive part - in the case of speech of the ear and the verbalization tools. For the organ of imagination we find the eye and a still open gap, and for the organ of thought the complexes "perception" and "(active) thinking" (with the latter complexes, in their turn, permitting of being subdivided into various other realms: e.g. those of the auditive, visual, tactile senses etc.). For the organ of activity we simply designate the realms "sign-production" and "sign-reception". The complex thus emerging is patterned as shown in Diagram 4.

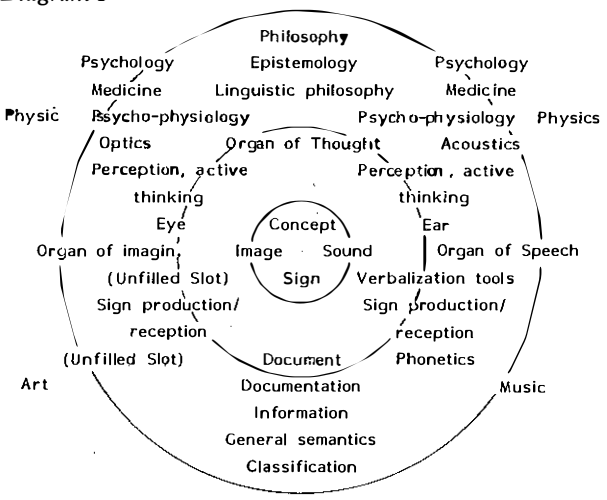
Diagram 4



In Diagram 4, reasons of symmetry cause "Perception" and "Active thinking" to occur twice. The same is true of "Sign reception" and "Sign production".

Beyond this level of instrumentalization we find the one of theory formation. For the organ of thought it comprises: linguistic philosophy, epistemology and general philosophy; also neurology and psycho-physiology of eye and ear. For the organ of speech we can mention acoustics and phonetics; for the organ of imagination optics and, at some remove, art - something corresponding to phonetics is still lacking here. In analogy to art we find on the acoustic side music, of course. Insofar as the mechanics of optics and acoustics are concerned, physics will have to be included, if, again, at some remove. Instead of designating the organ of action, which (not yet having been defined in detail) comprises any form of sign formation, including e.g. that of movement (dance etc.), we simplify things by merely designating a segment limiting the phenomenon "sign" to the instrument "document". Behind this segment (which of course is only one of many possible ones) we then find documentation, information and classification sciences in their natural sequence. The overall complex looks as follows (see Diagram 5):

Diagram 5



Here the three levels of phenomena, instrumentalization and theory formation are clearly apparent. Against this horizon the topic of this paper can be pinpointed at the location of the "Sign" and its implications, the latter being therefore:

a) The sign as a phenomenon.
b) The sign in its instrumentalization, especially as related to the neighboring areas of the organs of speech and imagination.
c) The sign in its possible theoretization.

These points will be further developed below, with point a) primarily emphasizing the phenomenal, b) the historical and c) the linguistic-philosophical viewpoint.

1. The sign as a phenomenon

In the scheme as developed above, the sign is initially of indeterminate nature - it may be regarded as a symbol of acoustic and/or pictorial nature. When using this general approach it is possible to regard anything objectifiable (in the epistemological sense of object - Gegenstand) as a sign. Since the general context of this presentation should be regarded, however, as relating to the communicative process, this vast scope is reduced to the objective realm of the sign as intended for communication purposes (else the subject immediately fans out into metaphysical border areas, e.g. "language of nature" etc.): communication should pressuppose individual human beings. Sign reception is thus restricted by sign production - anything intended as a sign (in the communicative sense) can be received as such.

Reception of a sign, however, is basically interpretation. Interpreting a sign restricted in such a way means reconstruction the contents put into it. This content appears in the sign in a succinct, veiled, (usually) simplified, condensed way. To be able to distinguish, moreover, the sign from paraphs and glyphs of any nature it is necessary to characterize it as an element of a system in which it occupies a specific system position. This given system position, together with the contextual meaning in the given case, will then allow the sign to be interpreted with a precision as required for communicative purposes.

Definition From this characterization we thus find it possible to define the sign as an element of a symbol system for the representation of certain contents which must be reconstructable from the element and its possible relations to other elements.

Definition All sign-systems which can be comprehended as totalities of such signs shall be understood as "alphabets" in a wider sense. All relations of such signs among one another, insofar as they show regularities within a functional system of application, shall be understood as "grammars" in a wider sense.

The expression "1 + 2 = 3" comes from the sign system or "alphabet" of mathematics, its "grammar" follows the rules of logic and expliciteness of expression; its interpretation makes use of the knowledge of both "alphabet" and "grammar" in reconstructing the contents. The foolproof identification of each sign therefore requires a precise knowledge of the sign system and the grammar used. The above example also shows, however, that a sign does not necessarily have to be a symbol of an audible or visual value but may also be a direct concept representation which only secondarily is transposed into images and sounds. The sign may thus be imaginal (pictorial), audible or conceptual - and similarily "alphabets", in a wider sense, may be imaginal, conceptual or sound systems.

The approach presented here will endeavour to find instances of correspondence between such systems. A first such instance would be found if we were to succeed in proving that in the beginning there was a clear-cut correspondence between the conceptual, auditory and visual values of the language. Such proof can, of course, only be adduced with a certain plausibility. A further instance might be inferred from the more recent efforts in the various fields concerned: here, too, the most we can hope to do is to identify trends.

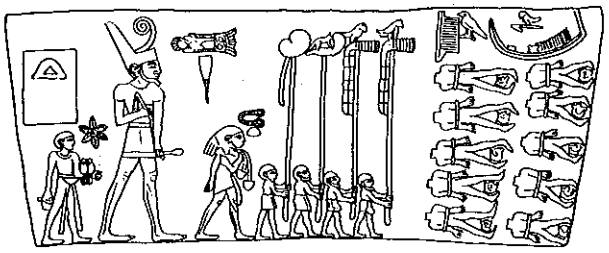


Fig.1: Early hieroglyphic signs, Egypt

2. The sign in its instrumentalization

a) History

The historical evolution of the alphabet has been ably presented in the work "Vom Felsbild zum Alphabet" (From cave-paintings to the alphabet) by Földes-Papp (1), who made admirable efforts to illustrate the gradual transition from rock and cave paintings to magical symbols and to pictorial signs. This evolution took place - one assumes - within a time span of many thousands of years. It is hard to conceive that during this time language should not also have existed as an acoustic phenomenon. In addition, these early pictorial signs reflect:

1) a closeness to a magical imaginal picture-world
2) a closeness to objects of sensual perception in unison with 1).

From these apparent similarities we can at least assume a closeness and correspondence of sign, image and concept. However, just of what value sounds were in this early phase of the evolution of communication is an open question. It also deserves to be pointed out at this juncture that "communication" in those days was not what it stands for today: the "partners" in communication were all forms of natural beings such as air, water, rain, mountains, animals as well as cosmic beings such as gods, demons, spirits of all kind. This means of course a conceptual field of archaic simplicity, radically different from anything we know today; and, in line with the stock of signs employed, we should conceive of a similarly simple system of sounds. This is not to say, however, that there was a one-to-one correspondence of signs and images on the one hand and sounds on the other hand - such unequivocal systems were developed only much later in history.

It is in ancient Egypt that we find the earliest evidence of consistently systematic alphabets. But even here we must assume that one (pictorial) sign could correspond to various levels of imagination, sound and conceptual values from which the recipient had to make a selection on the basis of the context and his or her personal reading style. On the other hand, however, this variety of possible interpretations should not necessariliy be regarded as being without underlying intent. In the case of an image, a picture, we can discern various levels of symbolic understanding - in the conceptual field this can be understood as meaning in a narrower or a broader sense. Relevant analogies exist also in the realms of sound and signs, and a sound may be modulated by a number of sounds related to it.

These observations are of interest, since at least in the ancient Egyptian example we find the next step to consist in the sign and sound values becoming tied to consonants, with the vowels simultaneously remaining "indefinite". This manifests itself e.g. in the fact that in the oldest Bible recordings in ancient Hebrew vocalization was left open; it was only in a relatively late epoch that the language acquired definite vocalization and, with it, definite conceptual shape.

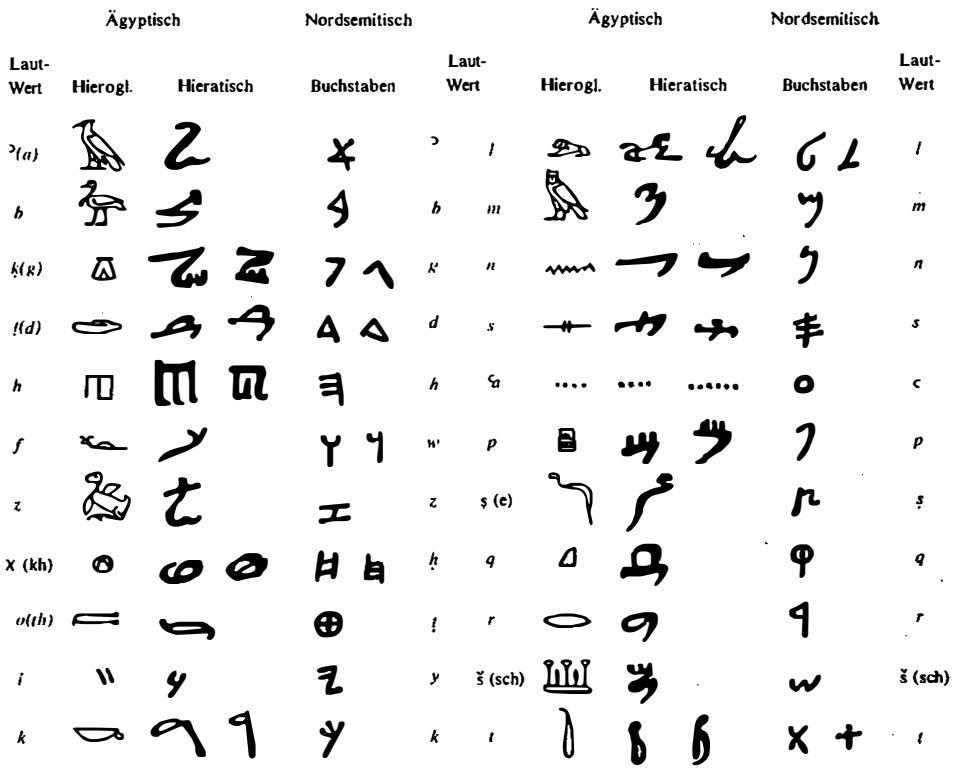


Fig. 2: Egyptian alphabet and Hebrew correspondences (1)

Something similar can be assumed for the fixation of the consonants. In Egypt, for example, the signs tied to a recognizable phonetic value were still accompanied by a variety of signs serving as image or conceptual complexes, and it may even be assumed that there once was a phase in which next to a "popular", phonetic character script a more symbol-oriented "esoteric" one was in use.

Now the generally interesting thing in this phase of the development of communication consists in the fact that within the different cultures quite different ways of projecting signs, images, concepts and sounds onto one another and tying them to one another were employed. Whereas in the Egyptian-Hebrew-Phoenician-Greek-Roman line of scriptural tradition the mutual tying of sign and sound values to one another was predominant, the development in China took a completely different course. There we find a mutual tying of, on the one hand, images or concepts and, on the other hand, characters to one another, with the phonetic value of a given character varying widely. It was not until quite recently that a phonetic script was developed from the Chinese script, a transition the Japanese script had gone through some time earlier. Some archaic scripts such as those of the Easter Islands and the Hindus culture as well as the ancient priest script of the Mayas never seem to have come to a projection onto a system of sounds.

Fig. 3 Early Chinese characters, so-called "Seal-script"

Here a general surmise can be expressed. If it is correct that in archaic days image, sign, concept and sound were proximate and closely related to one another, then assuredly the development of the world of images and concepts confronted the development of signs and sounds with a problem: because of the limited number of possible sounds, sound combinations were needed, and for mnemotechnical reasons sign combinations were needed as well. In this connection, the combination of signs may be regarded as the hour of birth of script - and the combination of sounds correspondingly as the hour of birth of the word. Word and script had to remain in step with the evolution of imagination and thought. The course pursued in China testifies to the consequences to which the tying of conceptual and pictorial evolution to the character had lead. The path - pursued in the Middle East - of tying characters to sound values proved in this phase to be mnemotechnically superior, as may be seen from the fact that it has prevailed.

This development toward a mutual tying of sound and sign to one another therefore seems to have been inevitable, given the degree of complexity of the world of images and concepts. The emergence of a strictly limited set of characters for giving expression to a limited set of sounds (be this latter limitation physiological in nature or likewise dictated by usage) can be regarded as the birth of the alphabet in a narrower sense. The "invention" of this alphabet in a narrower sense is usually ascribed to the Phoenicians. This first alphabet, if presumably reflected with far-reaching structural similarity in contemporary Hebrew, clearly gives evidence of its proximity to archaic imaginal and conceptual values.

The cabalistic Hebrew alphabet is marked by exact projection of the image, sound and number values onto the given character. On the other hand, the early Hebrew alphabet does not show the clear representation of vowels which we find in the Phoenician development. Alphabets in the narrower sense therefore need to be categorized, as a matter of principle, into pure consonant alphabets, complete alphabets and syllabic alphabets (e.g. Japanese).

Almost simultaneously with the Phoenician first "complete" alphabet the Devanagari script emerges in India, with the transition from the - still preserved - Proto-Devanagari characters to the (nearly perfectly equipped) Devanagari script taken place at drastic speed. What strikes us even today is the near-perfect correlation of the sign and phonetic values, coupled with the normative tendency as perfected later by the grammarian Panini: to adapt the pronunciation to the sign value, with the manner of pronunciation and depiction being modulated according to the given sign combination (Sandhi).

On the other hand, the Proto-Devanagari characters still have some similarity with pictorial signs, suggesting that they developed from an early pictorial script. One might assume that the Aryan invaders possessed a highly evolved phonetic language without written tradition which they developed only out of their contact with the aborigines of India.

b) Formal Interpretation

This latter consideration may now lead to the question which of the four basic phenomena identified in the above might be regarded as the most important one for the communicative process.

Visualization of the conceptual realm is limited by lack of a corresponding productive organ - transformation into sound is limited by nature of the tools of speech. The sign needs regulation by convention etc. which likewise restricts its use. On the other hand the number of possible sounds is much greater than any given natural (= phonetic) language makes use of. There may be many possibilities of pronunciation of, for example, a given word, which come close to the real multitude of produceable sounds. But the linguistical norm is much narrower. One could compare this with signs produced by typewriting and handwriting. The tendency within the evolution of communication ever since the invention of bilateral correspondence of sound and sign is institution of orthography and orthophony (e.g. Panini). A similar tendency we find in the realm of thinking by systematic clarification of concepts within the framework of the sciences. All these tendencies

become apparent via the normative element in concep--tual thinking.

In order to answer the question about the leading phenomenon, we need to differentiate the communicative process into the levels of its evolution:

After a hypothetical beginning veiled to investigation

0. in which we can assume an analogous unity of image, concept, sound and sign,
1. a pictorial language emerges which becomes manifest in symbolic signs and is supported by imaginal experience;
2. parallel or in turn an audible (phonetic) language develops which is shaped by auditory (sound-related) experience (early music, musical language), in order to merge with 1. into
3. a language correlated with sign-characters which either
   a) show a closer relation to imaginal thinking or
   b) a closer linkage with auditory (phonetic) thinking.
   A turn-in-turn evolution with the result of the stepping-back of the reflection of the conceptual within the sign comes into place.
4. A conceptual language evolves currently out of the existing linguistic systems.

Parallel to this evolution the sign undergoes development from pictorial via auditory (phonetic) to conceptual sign.

According to this viewpoint each of the basic phenomena takes the lead as the key phenomenon during the evolution of communication at its time. The general tendency is increase in degree of abstraction. Setting aside this way of looking at language as a hypothesis for explaining the change of linguistic feeling carried by image and sound in contrast to surrendering those under the force of conceptualization, we can also evoke some considerations concerning the problem of sign and sound, sign and concept as well as sign and image.

c) Sign and sound: orthophony vs. orthography

Phonetics deals with the first relation. After early beginnings in the 13th century it evolved quickly to ever greater exactness which gave rise to some extremes using ever more complex notations for the transformation of sounds into signs (e.g. Jespersen, who needs an 8-digit notation for a single "d" (2)). Concerning the precision of notations like that, one can state that they are useful only for descriptive purposes, but by no means necessary for a written explication of spoken language. Rules for the description of a given spoken language and derivation and construction of an "alphabet" in reducing the multitude of given sounds to some limited number of structural components have been set up (3). These considerations are interesting, since one may see in this way the limited number of really structurally important sounds. Out of the impressive number of 70 sounds listed in the International Phonetic Alphabet, within the given languages only a few are structurally used - although seen from the purely phonetic point of view the number increases by means of pronunciation and dialect. But these are of minor interest for the construction of alphabets. Rules have been developed to discern those linguistically differentiating sound elements which show the above mentioned structural capacity. The rule states that they would lead to real changes in meaning when they are altered - such sounds are called "phonemes". Herewith we come to a relation not of sound and sign but of sound and concept. Most modern languages show lack of precision concerning the relation of sound and sign which they re-install via numerous additional rules and conventions. In German signs like "c", "k", "q", "z" are sometimes ambiguous and interchangeable. Here we face the tradition of scriptural and auditory (phonetic) languages which have come to us via different paths. The whole problem scenery of orthography and orthophony unfolds as seen in differing spelling and pronunciation even of concepts coming from the same source. The real reason for this in my opinion lies in parallel use of script on the one hand as a medium of conceptual tradition and as a medium of phonetic tradition on the other. In Tibetan, for example, this has lead to great aberrations. In modern languages we can follow this in the alternation of Latin and Greek concepts or names of places within the different languages. Orthography, orthophony and "orthoeidy" (conceptual constancy) are working against each other. In addition to this the dynamics of conceptual shift, development and creation come into play.

From a purely phonetical point of view one would have to call for orthophony which would be possible in clear correlation of somewhat "normative" sounds with signs. From the point of view of signs one would like to call for orthography in clear reproduction of those through differing ways of pronunciation. Both viewpoints have influenced each other correspondingly with corrections of pronunciation and spelling. From the conceptual point one would like to see a reflection of differing conceptualization within significance and utterance. The closeness of clusters or families of meaning should be able to manifest itself. This is the case to a certain extent within the natural languages.

d) Sign and concept: universal language

For the conceptual side overruling the sign- or sound-oriented peculiarities of individual languages, it is most likely to provide a basis for universal language (see also 3.b). On behalf of the phonetic aspects of this question one could point to phonetic radicals which are common among all languages. Trubetzkoy (4) and Mangold (5) have provided a survey for this. From a semiotic point we cannot expect any result, if only the general acceptance of a sign-system with precise correlation of sign and sound. To a certain extent, the International Phonetic Alphabet has reached this objective already.

e) Sign and image: pictography

One possibility which was left out so far but seems promising is the recaptured correlation of sign and image with respect to a conceptual meaning behind. Here we "imagine" a major field of research, which may be compared to phonetics, but in the visual realm (c.f. diagram 4, "gap"): "pictography". Pictorial signs, so-called "pictograms", attain growing importance in the process of internationalization which may be seen in traffic signs, airport signs etc. (6). Research which could comprise the certainly not infinite number of fundamental images into an "International Pictogram

Alphabet" has to my knowledge not yet been undertaken - with one remarkable exception: The Blissymbolics studies of C.K. Bliss (7). One plausible argument for the limitation of the number of images we might derive from the psychological fact that the number of archetypes within inner experience can clearly be estimated (8). Similar to the phonetic modulation of phonemes one might suppose a broad scope of modulations of such "pictemes".

Therefore a theory of the sign would not only have to start with the correlation of sound and sign which has been highly developed - but would endeavor to elaborate this correlation of sign and image for purposes of correlation of concept and sign as a result of greater precision of concept clarification.

3. The sign in theoretical formulation

a) Foreword

In the most general sense the theory of the sign is a subfield of general semantics, meaning sign-ificance - as one of the most general activities - is to be found within any conceivable content, insofar as it appears in communication - and as such is already preconceived or at least prepared. This hinders isolation, as we know of theories of concept and conceptualization which, for example, are totally grounded in spoken language. On the other hand it is precisely this kinship of conceptual content and imaginal/auditory and signal values which allow a general approach to this question.

Above we have characterized the sign as a phenomenon by its status as an element within a system. Each alphabet as a system-resource of such elements surely contains within its nature as a system categorial structures. In the natural language alphabets we can follow this to some extent in the onomatopoeic character of the old languages - in modern languages in the word-families and the structures of script beyond the alphabet; in German, for example, the capitalization of words; interpunction; phrasing etc. The sign system of scriptural language is no more limited to the traditional alphabet as spoken language is only the utterance of the necessary sounds: pronunciation, style of speaking, expression, gesture form the frame. All these are important system characteristics without which the intended content would not be correctly interpretable. The accompanying frame places the word into referential relationships.

Here we see a clear limitation of spoken language and to some extent also of scriptural language when facing complex contents: audible language is only able to unfold a thought within a successive line, as a thought-chain so to speak; in great contrast to images which are able to express complex and many-leveled contexts at once. Script makes use of both features (e.g. diagrams, surveys, text etc.). Some modern approaches try to communicate a topic more extensively using "media packages" (e.g. text, photos, sound material etc.). This illustrates that there is a vast number of signs which generally can be made interpretable via imaginal or sonal relations.

b) Sign and conceptual language

Things are different with respect to the conceptual sign. There are a number of conceptual sign systems in use in varying areas of science, see for instance mathematics and chemistry. A general conceptual script so far is nonexistant - apart from a possible tendency in audible language development in the derivation of ever-more complex word-configurations with a tendency for erosion of sound - giving rise to the interpretation that spoken language is developed increasingly by its written correspondence in which this tendency takes place for reasons of a necessity for conceptual language.

Development of a precise conceptual script presupposes systematization of concepts in terms of classificatory totalities. Indeed, notations of universal classification systems may be understood as approaches to conceptual scripts. The mode of notation in numerical or alphanumerical order demonstrates on the other hand just the same disadvantages as seen on behalf of linear (one-dimensional) audible language and script.

A more promising method would be the further development of pictorial signs in standardized or sequenced form. For this one would first have to formulate an alphabet of "pictemes" as a common basis. Following the example of sonal language development, the following desiderata may be set up:

1. A small set of unchanging sign-radicals in correlation to similarly fundamental conceptual and categorial radicals.
2. A "small grammar" for the coordination of these radicals to basic and special concepts and super-signs which would be operable in broader means.
3. A "great grammar" for the coordination of these super-signs and concepts to statements, descriptions etc.

In contrast to the limitations in which all attempts of sonal language formulation of universal language have been trapped (c.f. Volapük, Esperanto etc. - being based on existant phonetic language), the advantage of a pictorial-based concept-language would be its formation independant of sonal language tradition.
In (7) C.K. Bliss tried to set up such an alphabet, using 11 basic sign-radicals (without categorial reference). These were then used to form 100 pictorial signs by no special grammatic rule which provided quick and easy reference due to their pictorial concreteness. These 100

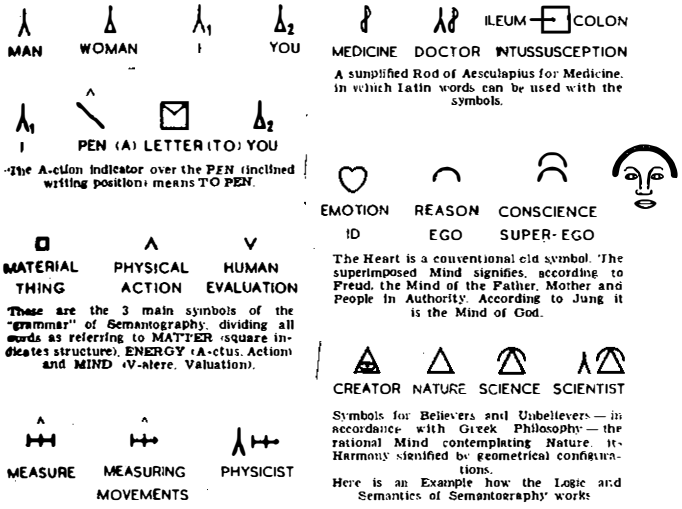


Fig. 4 Some examples of Bliss' 100-picture-alphabet (7)

macro-signs in turn were also permitted to combine in various ways, thus representing concepts and phrases. Bliss postulated that with his invention, the language "Babel" could be overcome, for all misunderstanding between nations and people was due to unclear or misused language. The idea of pictorial script is convincing and although his approach may seem somewhat naive it provides some initial ground for future research.

The program of a universal sign-system for overcoming the language barriers naturally presupposes that a conceptual universality can be achieved correspondingly. Investigations of Hoppe (9), who, starting from spoken language, has explored the semantic basic structures, beginning with German - later including languages like French and English - seem to indicate that this correspondence can be found within the fundamental structures. Even the often cited (categorial) alienness of, for example, American Indian languages in their approach to objects may in turn appear as coming from the linearity of spoken language expression - and in turn a likewise linearity within the conceptual realm. Modern philosophical approaches discern the "illness" of our civilization as rooted within the logical linearity of Western Thinking - in contrast to the multi-leveled approach of network logic, dialectic, synergetic, holistic thinking etc. (10,11).

c) Holistic approach

The strength of the pictorial approach to a solution of the problem of concept classification and communication and understanding of meaning as a whole may lie in the fact that our own psychology has the same two-sided pattern - one being abstract-analytical and sequential, the other concrete-synthetical and aggregative. The images of myths and legends, of stories and phantasies, the whole world of dreams proclaims a reality of its own, suppressed and forgotten in our culture. It is this more emotional, inner, (in a non-sexist understanding) "female" aspect of our understanding of the world which comes into play when using images for description. Classification and communication of content has to be seen not only from the aspect of breaking down totalities into segments of classes and clusters which can be isolated and sequentially arranged, but also the other way around as a process of synthesis of such segments into the whole. Without taking into account the necessity of strengthening the whole and the holistic approach even in language and classification theory as well as conceptualization of our world we will not be able to save it from falling literally apart into (radioactive) fractions.

Now with this rather metaphysical and political statement in mind we can see that all the phenomenal areas mentioned must be thought of as being interrelated with each other as network. The conception of the first alphabets (in the narrow sense) namely were governed by conceptual and cosmological ideas (12) in just the same manner as sign, sound and pictorial design have influenced concept development within the different cultures. For this reason a theory of the sign has to be seen related to a similarly general formation of the concept, the image, the sound. With respect to sound, phonetics has succeeded in describing the sounds human verbalization tools are able to produce. The horizon of a more general consideration would have to ask for a further broadening toward a description of any conceivable sound. Acoustics shows the necessary width, but focusses only on the mechanical-technical aspect and neglects the semantical. With devolopments of modern sound-creating tools such as wave synthesizer and sound-analyzing computers the possibility of a classification of basic sound types has become somewhat more realistic.

d) Towards a general conceptual script

In facing the complexity of a task as the conception of a general conceptual script would ask for, success can only be expected with maximum simplicity of a system. For any systematics this means: maximal thoroughness with minimal apparatus of rules. What this means, an alphabet demonstrates in exemplifying manner: the Devanagari-alphabet already mentioned.

In principle, this could be put into a 5 x 10 matrix. The minimal categorization with maximal thoroughness is apparent (sounds in usual transcription):

Diagram 6

k	kh	g	gh	ng	ya	r	i	î	ha
c	ch	j	jh	ñ	ra	ŕ	e	ai	ś
ṭ	ṭh	ḍ	ḍh	ṇ	ḷa	ḷ	a	â	ṣ
t	th	d	dh	n	la	̣	o	au	s
p	ph	b	bh	m	va	.	u	û	:

The International Phonetical Alphabet aims at a similar matrix-wise systematic structure without reaching this systemic roundness while being more complete with respect to possible sounds.

Thus the difference between the Devanagari-Alphabet and the International Phonetic Alphabet is that the latter only endeavors to come to a description of sounds while the former includes a cosmology which likewise can be found in the Hebrew Alphabet for reasons of its origin.

Fig. 5 Devanagari-alphabet as Shiva-Linga (symbol of being) (author)

"Cosmological content" thus means nothing less than the correspondence between conceptual systematic and a system of signs and sounds! *Here we indeed find the early alphabets to be the earliest classification systems!* From these old examples we should be able to learn something about the possibilities and problems of such correlation of sign, sound and concepts. In Arabic e.g. as well as in Hebrew, the verbal roots are built generally

using three letters, laying down an example for the "small grammar" proposed above (2.).

Concerning the set of radicals proposed above, the historical examples can also provide some hints: Surely 5 are not enough whereas 500 are too many. Probably even 50 are too many; for in using the proposed method of visualization ("pictorialization") on the basis of 2-dimensional projection much greater possibilities can be used. Imagine the signs x and o in the following diagram to be letters:

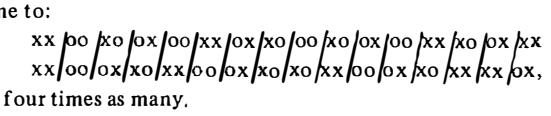
Diagram 7

x o

in contrast to I-dimensional ordination

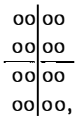
→ x o, x x, o x, o o:

we come to:



that is, four times as many.

When assuming e.g. the Aristotelian number of fundamental categories (9, resp. 10), one is able to form approx. 10 000 complexes of the above square pattern. If one conceives these "words" to be assembled in a "phrase":



we come to 10^{16} = 10 Quadrillion aspects of expression! This number should not impress very much, since natural language expression shows similar numbers for alternative modes of expression for a single simple sentence (10^7) (c.f. (13)).

e) Perspectives. Universal language - universal alphabet

With these considerations in mind we are aiming at a radical turn away from sonal language tradition; for all correlation of these into signs is secondary and can only take place within the limitations of sonal language. But it is precisely these limitations which universal language, a universal alphabet would have to bridge. On the other hand a concept-sign-alphabet could not be the single communication tool, as long as man does not succeed in producing sign-projection tools analogous to the verbalization tools, e.g. on the forehead (third eye). How can the problem of retranslation of a universally understandable sign-concept-language into sound be solved?

- Either via a corresponding computer-automated transformation into the multitude of natural language sounds - which could prove to be a practical step. The technical qualities of modern automatic translations depend largely on the univocal nature of the given concept language. These would therefore have to be able to enhance the multitude of conceptual worlds prestructured by natural language.
- Or in automatic modulation of signs into a "musical" artificial language. The general comprehensiveness to be reached possibly - whether humans would be capable of speaking such a "language" is an open question. The German artist, musician and writer Michael Vetter (14) currently is conducting extensive research which points in the direction of musical language - linguistic music.

If one asks for an articulatory pattern which all cultures could speak, it would have to be a very simple one. The papers (4,5) already cited give the following pattern:

Diagram 8

k		j	i		
			e	ai	
		l	a		s
t	n		o	au	
p	m	w	u		

(Pattern re-ordered in relation to the order given for the Devanagari-Alphabet above, diagram 6).

With a given small number of categorial radicals a correlation on the basis of this number could be practicable. The complexity of the "small grammar" should then not exceed a certain degree, for the re-projection of the pictorial-sign-script being more complex would cause difficulties.

With simple methods - including all four basic phenomena of communication mentioned - the conception of a universal pictorial-sign-based conceptual language should at least come into the reahn of technical practicability; that it is desirable we do not have to mention; that this task will ask for the imagination and labor of generations should also be clear. In the beginning attempts at the formulation of a conceptual basic alphabet have to stand - but these need to keep the possible projection onto the other three aspects in mind. With the considerations above we have endeavored to gather some aspects for a preliminary clarification of the problem-field.

References:

(1) Földes-Papp: Vom Felsbild zum Alphabet. Bayreuth: Gondrom-Verlag 1975

(2) Laziczius, Julius: Lehrbuch der Phonetik. Berlin: Akademie-Verlag 1961

(3) Pike, Kenneth L.: Phonemics. Ann Arbor, MI: University of Michigan Press

(4) Trubetzkoy, N.S.: "Wie soll das Lautsystem einer künstlichen internationalen Hilfssprache beschaffen sein:" In: Plansprachen. Ed.by Reinhard Haupenthal. Darmstadt, DE: Wissenschaftliche Buchgesellschaft 1976.p.198-217

(5) Mangold, Max: "Die phonetische Überlegenheit künstlicher Sprachen". In: Plansprachen. Ed.by Reinhard Haupenthal. Darmstadt, DE: Wissenschaftliche Buchgesellschaft 1976. p.320-30

(6) Larisch, Richard; Dey, Wilhelm: Die Entstehung graphischer Zeichen. In: DIN-Mitt. 60(1981)No.8, p.439-50

(7) Bliss, C.K.: Semantography (Blissymbolics). A logical writing for an illogical world. Sydney, AU: Semantography Publ. 1965

(8) Jung, C.G.; Franz, Marie-Louise v. et al: Der Mensch und seine Symbole. Olten, DE: Walter Verlag 8.1979.

(9) Hoppe, Alfred: Grundzüge der Kommunikativen Grammatik, Teil I. Bonn: Dümmler 1981

(10) Pflughaupt, Knut (Ed.): Andere Wirklichkeiten. München: Trikont-Dianus 1984

(11) Bennet, J.G.: The Dramatic Universe. London, GB: Hodder & Stoghton 1956-1966

(12) Kahir, M.: Das verlorene Wort. Bietigheim, DE: Turm Verlag 1960

(13) Hoppe, Alfred: "Klassifikation innersprachlicher semantischer Komplexe". In: Kooperation in der Klassifikation I. Studien zur Klassifikation, Bd.2. INDEKS-Verlag, Frankfurt 1981 (1978), p.47-60

(14) Vetter, Michael: "Overtones". "Tambura Preludes & Provocations". Compositions released on WERGO-Spectrum Label, Schott Musikverlag, Mainz 1983