Kristóf Nyíri:

Pictorial Meaning and Mobile Communication

"Words make division, pictures make connection."
Otto Neurath, *International Picture Language* (1936)

A picture, as the saying goes, is worth a thousand words. Words are of course often spoken hurriedly when voiced through the mobile phone, and they have to be used sparsely when composing an SMS message. The assumption that in mobile communication pictures could be usefully employed should then not come as a surprise. But why, exactly, would a picture be worth a thousand words? Sometimes, indeed, the opposite seems to be the case. Words are needed to index, explain, and disambiguate pictures, as well as to express abstract concepts, logical relations, and linguistic modalities.

In this paper I will, first, present arguments for the view that images, not words, are the primordial stuff of thought. This view, never doubted in everyday thinking, was practically forced underground by the psychology and philosophy of the first half of the twentieth century, but it is a view to which science is returning. Once more the hypothesis sounds convincing that in the course of human phylogeny and ontogeny it was *the language of gestures*, and not verbal language, which introduced conceptual order into the episodic imagery of pre-linguistic thought; verbal language, pervaded by metaphor, builds on the meanings and semantic relationships created by the language of gestures. But if the dimension of verbal language is not so much the foundation of thought, as rather, merely, a more abstract framework of the same, then words supplemented by pictures, indeed sometimes pictures by themselves, could be better suited as vehicles for *communicating* thought, than words alone.

Secondly I will argue that although pictorial communication is seldom entirely successful if not accompanied by words, and any visual language needs the background of convention, pictures can indeed function as *natural symbols* due to their resemblance to the objects and facts represented. Thirdly I will stress that, precisely because they resemble what they represent, pictures are eminently suited for conveying visual infor-

mation. However, the employment of pictures for the communication of knowledge was impeded, throughout the millenia of alphabetic literacy, by the limited means for the creation and duplication of graphics. This has changed dramatically with the new capabilities we enjoy thanks to computers. As I will attempt to show fourthly, even the dream of *iconic languages*, it appears, can now be realized. And with the advent of multimedia messaging, I will then point out, devices capable of creating and communicating pictures will become ubiquitous. By way of conclusion I will suggest that with visual elements re-entering the process of communication, and with communication remaining continuous even over great physical distances, personal relationships can retain or regain an intimacy that has been largely lost in the world of modern communications, an intimacy recalling the condition of close communities.

Thinking in Images

The story commences with Plato and Aristotle. Important new beginnings occurred with the so-called "imagery debate" in the late 1960s and early 1970s. I will mention some of them further below, but let me here start by referring to the book *Descartes' Error* by a leading neurophysiologist, Antonio Damasio, published in 1994.[1] It is in the form of images, Damasio holds, that the factual knowledge required for reasoning and decision-making is present to our minds. Images are not stored as facsimile pictures of things, or events, or words, or sentences. We are all aware, writes Damasio, that in recalling a face, or an event, we generate not an exact reproduction but rather some sort of re-interpretation, a new version of the original which will in addition evolve over time. On the other hand however we all equally have the sensation that we can indeed conjure up, in our mind's eye, approximations of images we previously experienced. Images form the main content of our thoughts. Of course "hidden behind those images, never or rarely knowable by us", there are numerous processes that guide the generation and deployment of images. "Those processes ... are *essential* for our thinking but are not a *content* of our thoughts."[2]

---

[1] Damasio, *Descartes' Error: Emotion, Reason, and the Human Brain*, New York: Putnam, 1994.

[2] See *Descartes' Error*, pp. 96–108. – Images, mental pictures, are subjectively experienced, are however not accessible to the external observer. Neurophysiological research today is in the process of discovering certain correspondences between visually experienced impressions on the one hand and topologically organized neural patterns on the other. (Stephen Kosslyn, the main protagonist on the "pictorial" side of the imagery debate,

Recall that throughout the twentieth century the view that visual images play a substantial role in rational thought, and that pictures are important carriers of information, was a minority position in philosophy. The position was defended by Russell, who in 1919 wrote: "If you try to persuade an ordinary uneducated person that she cannot call up a visual picture of a friend sitting in a chair, but can only use words describing what such an occurrence would be like, she will conclude that you are mad." To which he added: "The 'meaning' of images is the simplest kind of meaning, because images resemble what they mean, whereas words, as a rule, do not."[3] Russell's views were taken up by H. H. Price – Professor of Logic in the University of Oxford – in his *Thinking and Experience* (1953). Price insists that some of us do indeed use images in our thinking. Images, says Price, have a superiority over words, in that "they come *nearer* than words do to being instances of the concepts brought to mind by means of them". The mental picture of a dog is more dog-like than the word "dog". Mental pictures are *quasi-*

---

could refer to an interesting example as early as 1994, in his *Image and Brain*, Cambridge, MA: The MIT Press; a recent publication on the topic is the paper by James V. Haxby et al., in *Science*, Sept. 28, 2001, where one reads: "the pattern of response in ventral temporal cortex carries information about the type of object being viewed".) However, it is obvious that the ontology of cortical patterns is very different from that of conscious images. The issues here opening up lead into the depths of the philosophy of science, and of course cannot be pursued in this essay. I must restrict myself to a reference to one of the first contributions to the imagery debate, Allan Paivio's *Imagery and Verbal Processes* (New York: Holt, Rinehart and Winston, 1971). Paivio represents an entirely clear methodological position. "Mental images", writes Paivio, belong to the order of "postulated processes", they are "theoretical constructs", "inferential concepts", i.e. entities or processes themselves not observable, but having observable aspects and implications. Introspective experiencing of visual images on the one hand, and the objective recording of neural phenomena on the other, are empirical observations of a very different sort, but they refer to one and the same theoretical construct of a "mental image". Paivio contrasts his own methodology with "the classical approach to imagery" in which "the term image was used to refer to consciously-experienced mental processes". (*Imagery and Verbal Processes*, pp. 6–11.) This contrast became blurred again in the later discussions.

[3] "I see no reason whatever", concludes Russell, "to reject the conclusion originally suggested by Galton's investigations, namely, that the habit of abstract pursuits makes learned men much inferior to the average in the power of visualizing, and much more exclusively occupied with words in their 'thinking'." (Bertrand Russell, "On Propositions: What They Are and How They Mean" [1919]. *Aristotelian Society Supplementary Volume* 2, pp. 1–43. I am here quoting from J. G. Slater [ed.], *The Collected Papers of Bertrand Russell*, vol. 8: *The Philosophy of Logical Atomism and Other Essays, 1914–19*, London: George Allen & Unwin, 1986, pp. 284 f. and 292.)

instantiative particulars, "whereas words ... are completely non-instantiative particulars. Thus when we think in images, thinking in absence comes much nearer to perceiving in presence than verbal thinking can." However, Price also insists that although mental images are quasi-instantiative particulars, they are not the only ones. "Models, diagrams, pictures drawn publicly in the light of day with nothing 'mental' about them, ... public cinematographic reproductions ... all these entities and occurrences have the same quasi-instantiative function as images have." Now the quasi-instantiative function of both mental images and physical replicas clearly relies on *resemblance*. Price does not believe that the notion of resemblance is unproblematic. However, he points out that where the single picture fails to convey an unambiguous meaning, a series or a *temporal sequence* of pictures might well succeed to do so. Let me add, also, that Price has provided some profound analyses on the issue of mental images as carriers of *concepts*. He emphasized that precisely because mental images are often fleeting, blurred, sketchy, can they represent *generic meanings*.[4]

"We have the misfortune", wrote Price, "to live in the most word-ridden civilization in history, where thousands and tens of thousands spend their entire working lives in nothing but the manipulation of words. The whole of our higher education is directed to the encouragement of verbal thinking and the discouragement of image thinking. Let us hope that our successors will be wiser, and will encourage both." Price here also made the telling remark: "some people are almost incapable of drawing".[5]

A philosopher who was certainly capable of drawing was Ludwig Wittgenstein. His full work has become available only recently, with the publication of a CD-ROM edition.[6] The *printed* corpus, as published during the decades after Wittgenstein's death in 1951, only partially conveys the richness, complexities, continuities of, and changes in, his ideas on pictorial representation. And it fails to convey the significance of the later Wittgenstein's method of explaining philosophical points with the help of drawings and diagrams – his *Nachlaß* contains some 1300 of them. Wittgenstein's later philosophy was for many years regarded as the decisive formulation of the doctrine of imageless thinking. But if his complete corpus is taken into consideration, a very differ-

[4] H. H. Price, *Thinking and Experience*, London: Hutchinson's Universal Library, 1953, pp. 235, 254 ff., 272, 275, 284 f., 292.

[5] *Ibid.*, pp. 252 and 258.

[6] *Wittgenstein's Nachlass: The Bergen Electronic Edition*, Oxford University Press, 2000.

ent Wittgensteinian position emerges. According to this position verbal languages on the one hand, and the language of pictures on the other, function jointly, acting on each other; pictures, like words, are instruments embedded in our life. However, while words are predominantly conventional, pictures are in essential respects natural carriers of concrete meanings.

It is only against the background of such a reinterpretation of Wittgenstein's later philosophy that his formerly published passages receive their proper place value. Thus, for example, this remark in the so-called *Philosophical Grammar*: "How curious: we should like to explain the understanding of a gesture as a translation into words, and the understanding of words as a translation into gestures. – And indeed we really do explain words by a gesture, and a gesture by words."[7] The language of gestures – a pre-verbal, visual language – appears to possess a certain autonomy. Let me quote two other striking passages from the same volume. The first: "Thinking is quite comparable to the drawing of pictures." The second: "for the picture to tell me something it isn't essential that words should occur to me while I look at it; because the picture should be the more direct language."[8] In the *Blue Book* Wittgenstein calls attention to the possibility of "a picture which we don't interpret in order to understand it, but which we understand without interpreting it". There are, he writes, "pictures of which we should say that we interpret them, that is, translate them into a different kind of picture, in order to understand them; and pictures of which we should say that we understand them immediately, without any further interpretation". Later in this rather exceptional passage Wittgenstein acknowledges that there occur mental images making up as it were a *pictorial language*.[9]

---

[7] Ludwig Wittgenstein, *Philosophical Grammar*, English translation by Anthony Kenny, Berkeley: University of California Press, 1974, p. 42.

[8] *Ibid.*, pp. 163 f. Kenny has: "the picture was supposed to be the more direct language". In the German original: "Denn das Bild sollte doch die direktere Sprache sein."

[9] As he puts it: "in some cases saying, hearing, or reading a sentence brings images before our mind's eye, images which more or less strictly correspond to the sentence, and which are therefore, in a sense, translations of this sentence into a pictorial language". Ludwig Wittgenstein, *Preliminary Studies for the "Philosophical Investigations". Generally Known as the Blue and Brown Books*. Oxford: Basil Blackwell, 1958, repr. 1964, p. 36. For a more detailed analysis of Wittgenstein's views on pictorial representation see my "Pictures as Instruments in the Philosophy of Wittgenstein", in Rudolf Haller and Klaus Puhl (eds.), *Wittgenstein and the Future of Philosophy: A Reassessment after 50 Years*, Wien: öbv&hpt, 2002, pp. 328–336.

A fundamental work arguing for the pictorial nature of thought was Rudolf Arnheim's 1969 book *Visual Thinking*, a book that found little recognition at the time it was published. "I shall suggest", Arnheim here writes by way of introduction, "that only because perception gathers types of things, that is, concepts, can perceptual material be used for thought; and inversely, that unless the stuff of the senses remains present the mind has nothing to think with." Perception, as Arnheim, referring to the discoveries of Gestalt psychology, puts it, is a grasping of general structural features. And similarly, also thinking that deals with the generic, the abstract, operates on pictorial structures. "How can conceptual thinking", ask Arnheim, "rely on imagery, if the individuality of images interferes with the generality of thought?" In attempting to answer this question Arnheim cites some psychological experiments conducted early in the twentieth century and concludes that the *indistinctness* and *incompleteness* of mental images is "not simply a matter of fragmentation or insufficient apprehension but a positive quality", facilitating abstraction. (Curiously, Arnheim does not mention Price.) And just as mental images, physical pictures, too, are suitable vehicles of abstract reasoning. In this connection, Arnheim calls attention to the potentials of diagrammatic and schematic drawings. And he stresses that the difference between "mimetic and non-mimetic shapes" is only one of degree: this manifests itself, for example, in the case of *descriptive gestures*, "those forerunners of line drawing". As he puts it:

> the perceptual qualities of shape and motion are present in the very acts of thinking depicted by the gestures and are in fact the medium in which the thinking itself takes place. These perceptual qualities are not necessarily visual or only visual. In gestures, the kinesthetic experiences of pushing, pulling, advancing, obstructing, are likely to play an important part.

From our present point of view the most important passages of *Visual Thinking* are to be found in chapter 13: "Words in Their Place". Looking back at the overall argument of the book Arnheim here begins by stating: "concepts are perceptual images and ... thought operations are the handling of those images". This is not to deny, he goes on to say,

> that language helps thinking. What needs to be questioned is whether it performs this service substantially by means of properties inherent in the verbal medium itself or whether it functions indirectly, namely, by point-

> ing to the referents of words and propositions, that is, to facts given in an entirely different medium. Also, we need to know whether language is indispensable to thought. – The answer to the latter question is "no". Animals, and particularly primates, give clear proof of productive thinking. ... However, animal thinking may be inferior to that of humans in one important respect. It may be limited to coping with directly given situations.[10]

Arnheim's book had an influence on Merlin Donald's work *Origins of the Modern Mind*, published 1991. (Another important influence on Donald I should here mention came from Dunbar's earlier writings.) In his paper in the present volume Csaba Pléh provides a detailed account of Donald's theory. What I myself at this point would like to stress is that according to Donald the rudimentary capacity of thinking *directly* with images, without verbal mediation, seems to belong to our biological makeup. The theory distinguishes three evolutionary transitions in the development of humankind. The first transition, from apes to *Homo erectus*, was characterized by "the emergence of the most basic level of human representation, the ability to mime, or re-enact, events". To Donald's hypothesis of a *mimetic culture* we will return shortly. The second transition, from *Homo erectus* to *Homo sapiens*, completed the biological evolution of modern humans. "The key event during this transition", writes Donald, "was the emergence of the human speech system, including a completely new cognitive capacity for constructing and decoding narrative." The third transition was "recent and largely nonbiological, but in purely cognitive terms it nevertheless led to a new stage of evolution, marked by the emergence of visual symbolism and external memory as major factors in cognitive architecture." To the third transition Donald allots "three broadly different modes of visual symbolic

[10] Arnheim, *Visual Thinking*, Berkeley: University of California Press, 1969, pp. 1., 105 ff., 116 ff. and 227 f. – Arnheim's argument is taken up in the fascinating paper by Robert Scott Root-Bernstein, "Visual Thinking: The Art of Imagining Reality", *Transactions of the American Philosophical Society*, 75 (1985). "A purely linguistic approach to thought", writes Root-Bernstein, "seems to me to be misguided. Neither our experience of nature nor our ability to think about it are limited to, or are even mainly confined to verbal forms. Thoughts may, in fact, be translated into language only for communicating. But pictures, music, and other nonverbal forms of thought also communicate and can me manipulated logically" (*Transactions*, p. 62).

invention", which he designates as "pictorial, ideographic, and phonological". Of these, the pictorial mode emerged first; and the point Donald makes is that this signaled the beginnings of "a new cognitive structure", already enabling some primitive forms of "analytic thought", i.e. "formal arguments, systematic taxonomies, induction, deduction".[11]

Donald's hypothesis of a mimetic culture serves to explain prelinguistic intelligence. Mimesis is distinct from imitation, since it adds a representational dimension to the latter; it is "the re-enacting and re-presenting" of an event or relationship; it is symbolic. Gestures, facial expressions, postural attitudes, tones of voice all belong to the instruments of mimetic representation. Donald points out that this level of representation even today plays a central role in human society. He refers to cross-cultural similarities in the domain of non-verbal expressions, as investigated by Eibl-Eibesfeldt or Ekman, and emphasizes that

> the mimetic layer of representation survives under the surface, in forms that remain universal ... because mimesis forms the core of an ancient root-culture that is distinctly human. No matter how evolved our oral-linguistic culture, and no matter how sophisticated the rich varieties of symbolic material surrounding us, mimetic scenarios still form the expressive heart of human social interchange.[12]

Verbal language builds on the foundations of nonverbal communication, and is then again supplemented by new dimensions of the same. Nonverbal communication as it were regulates verbal exchange on a meta-communicative level. Not backed by direct face-to-face communication, writing, in particular alphabetic writing – actually the main foundation of Western rationality[13] – is from the outset a constricted channel

---

[11] Merlin Donald, *Origins of the Modern Mind: Three Stages in the Evolution of Culture and Cognition*, Cambridge, MA: Harvard University Press, 1991, pp. 16 f., 278, 284, 273.

[12] *Ibid.*, pp. 168 ff. and 188 ff. – Fundamental on the interpretation of pictures as archaic carriers of knowledge is John E. Pfeiffer, *The Creative Explosion: An Inquiry into the Origins of Art and Religion*, Ithaca, NY: Cornell University Press, 1982.

[13] Pioneering on the topic of literacy and rationality is the work of the Hungarian historian István Hajnal. On Hajnal see my essay "From Palágyi to Wittgenstein: Austro-Hungarian Philosophies of Language and Communication", in Nyíri and P. Fleissner (eds.), *Philosophy of Culture and the Politics of Electronic Networking*, vol.1: *Austria and Hungary: Historical Roots and Present Developments*, Innsbruck and Wien: Studien Verlag / Budapest: Áron Kiadó, 1999, pp. 1–11, as well as my volume *Tradition and Individuality: Essays*, Dordrecht: Kluwer, 1992.

of communication. But written language, too, relies on the support of nonverbal elements: word spacing, punctuation, layout, paragraphs, underlining, etc. Gutenberg Man learned to make do with such auxiliary means in the course of his solitary reading and writing. However, in the case of digital communications, the attempt at *interactivity* once more collides with the limits of the medium of writing: the poverty at nonverbal possibilities again and again leads to failures in communication.

In the jumbled literature on nonverbal communication the early publications by the neurologist Macdonald Critchley[14] still represent a singularly clear, and also philosophically perceptive,[15] approach. One of the most convincing arguments given by Critchley for the primordial nature of nonverbal language relates to communication among deaf-mutes. As is well-known, deaf-mutes use contrived sign-languages. However, as Critchley points out,

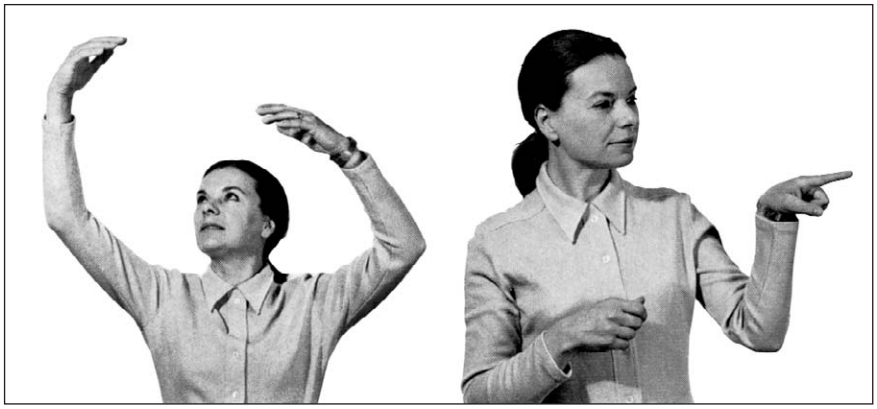
> all deaf-mutes possess another and lesser-known system of communication. This is a kind of pantomimic shorthand, whereby a single gesture signifies – not a letter – but a word, a phrase, or even a sentence. This "natural sign-language" of the deaf and dumb as it is generally called, is largely unfamiliar to outsiders and indeed many are unaware of its very existence. ... Even very young deaf-mutes communicate freely with each other and the presence of this natural sign-language at an age prior to their receiving systematic instruction points to an "instinctive" or at least a primitive type of symbolization.[16]

---

[14] Notably his *The Language of Gesture* (London: Arnold, 1939) and his collection *Aphasiology and Other Aspects of Language* (London: Edward Arnold, 1970), in the latter especially the paper "Kinesics; Gestural and Mimic Language: An Aspect of Non-Verbal Communication", based in part on the 1939 book.

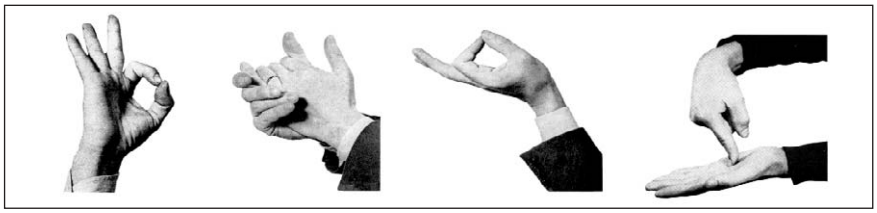
[15] Cf. e.g. his remarks related to Plato and Locke (*Aphasiology*..., pp. 100 f.), Suzanne Langer (*ibid.*, p. 139) and H. H. Price (*ibid.*, p. 161).

[16] Critchley, "Kinesics...", pp. 305 f. – Among the classics of the topic are also David Efron, *Gesture and Environment*, New York: King's Crown, 1941 (new ed. 1972: *Gesture, Race and Culture*, The Hague: Mouton), Paul Ekman and W. V. Friesen, "The Repertoire of Nonverbal Behavior: Categories, Origins, Usage, and Coding", *Semiotica* 1 (1969), pp. 49–98, as well as Jurgen Ruesch and Weldon Kees, *Nonverbal Communication: Notes on the Visual Perception of Human Relations*, Berkeley: University of California Press, 1956 (new ed. 1972). Mark L. Knapp (*Nonverbal Communication in Human Interaction*, New York: Holt, Rinehart and Winston, 1972) adopts the conceptual framework of Ekman and Friesen, which in its turn is markedly influenced by Efrons's work. Critchley, too, finds Efron interesting (cf. "Kinesics...", pp. 311 f.), but describes the latter's formulations – rightly, I am afraid – as "rather involved".



The natural gesture language of the deaf and dumb.
Sign on the left indicates "heaven", on the right "over there".
(After Critchley)

Many elements of nonverbal communication are culturally specific. Critchley presents, e.g., a series of Italian gestures, each having a well-defined, conventional, meaning. However, there also exists, no doubt, a universal dimension of gestures and facial expressions.



Approval Contentment Excellent! I insist
Italian gestures
(After Critchley)

Of those in recent years arguing for a priority of the language of gestures, William C. Stokoe is perhaps the best-known representative. In his last book *Language in Hand*, which was published in 2001, he summarizes his earlier arguments. A fascinating thesis of Stokoe is this: that not only the *semantics*, but also the *syntax* of verbal languages, in particular the subject–predicate structure, is prefigured in gestures.

Motionless handshapes function as names, they represent "people and animals and things"; *moving* handshapes function as verbs, representing "actions and changes". Together, they amount to *sentences*.[17] – The hypothesis of a transformation leading from the language of gestures to verbal languages is augmented by the theory of George Lakoff and Mark Johnson.[18] Lakoff and Johnson on the one hand argue that our language and *thinking* are deeply and thoroughly metaphorical;[19] and, on the other, that the source of those metaphors is the human body itself – its parts, postures, and movements.[20]

Convention and Resemblance

According to the famous trichotomy of Peirce, a sign may be classified as an *icon*, an *index*, or a *symbol*.[21] Icons *resemble* what they denote; indices stand in a *causal relationship* to what they indicate; symbols refer

---

[17] William C. Stokoe, *Language in Hand: Why Sign Came Before Speech*, Washington, D.C.: Gallaudet University Press, 2001, pp. xiii and 12 f. – The thesis is of course not without antecedents. Stokoe himself e.g. refers repeatedly to the paper by Ted Supalla and Elissa Newport, "How Many Seats in a Chair? The Derivation of Nouns and Verbs in American Sign Language", published in Patricia Siple (ed.), *Understanding Language through Sign Language Research*, New York: Academic Press, 1978.

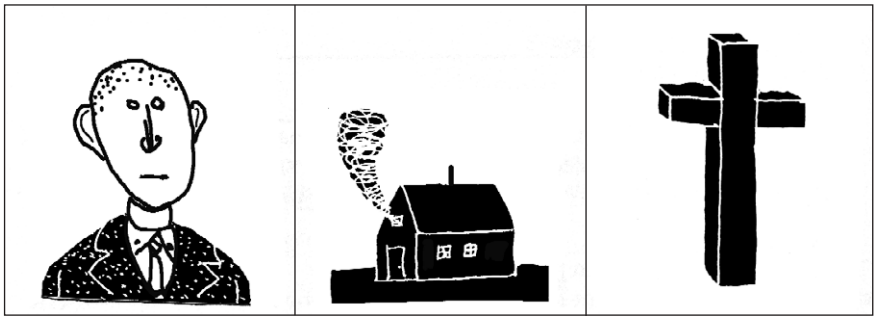
[18] George Lakoff and Mark Johnson, *Metaphors We Live By*, Chicago: University of Chicago Press, 1980.

[19] Thus e.g. in the above half-sentence "on the one hand", "point out", "thinking" (which stems, etymologically, from "appearing"), "deeply", and "thoroughly" are metaphors, "language" (from *lingua* = "tongue") a metonymy. – The idea that originally all word meanings are "non-literal" (*uneigentlich*), was propounded by Herder and Nietzsche already, cf. my paper "The Picture Theory of Reason", in Berit Brogaard and Barry Smith (eds.), *Rationality and Irrationality*, Wien: öbv-hpt, 2001, p. 243.

[20] The approach by Lakoff and Johnson is not mentioned in Stokoe's *Language in Hand*, but referred to in the volume William Stokoe, David Armstrong, and Sherman Wilcox, *Gesture and the Nature of Language*: "Our mental life is run by metaphor, and, some would argue, so is the structure of our languages, as metaphorical representations of our own bodies and their interactions with the environment. We have argued that syntax is metaphorically *embodied* in the direct actions, that is gestures, of our hands and other parts of our bodies." (Cambridge: Cambridge University Press, 1995, p. 235.)

[21] Cf. Charles Sanders Peirce, *Collected Papers*, vols. I—II, ed. by Charles Hartshorne and Paul Weiss (1931), Cambridge, MA: Harvard University Press, 1960, vol. I, p. 295 and vol. II, p. 143.

to what they mean on the basis of *conventions*. In his book *Seeing Is Believing* A. A. Berger explains this classification using pictures:



Simple drawing of a man *A house on fire.* *A cross*

"Where there's smoke, there's fire."

(After A. A. Berger)

Of course all three pictures here are iconic, since each of them resembles what it depicts; beyond that, the picture of the man is an icon in the sense that we directly see what it portrays; the second picture is of an indexical character, in that we *know from experience* that the smoke coming through the window is likely to be caused by some fire; and the third picture is a symbol for those who have *learnt* to associate the cross with Christ's crucifixion. At the same time the cross also has a metonymical function, standing for Christianity.[22] Quoting Lakoff and Johnson, Berger refers to the pervasive role metaphors play in language, and emphasizes that *visual language*, too, is largely metaphorical.[23] He mentions the snake as a metaphor of deception for those familiar with the Old Testament tradition.[24]

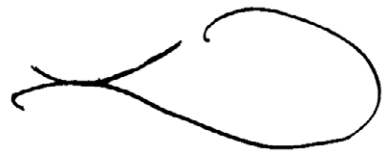
Striving to enrich mobile communication by a visual language involves a twofold task. First, a unified system of appropriate conventions has to be introduced – I will come back to this problem further below.

[22] Arthur Asa Berger, *Seeing Is Believing: An Introduction to Visual Communication*, Mountain View, CA: Mayfield, 1989, 2nd rev. ed. 1998, pp. 32–35.

[23] *Ibid.*, pp. 39–43.

[24] Cf. Gen 3:13.

Secondly, the potential of pictorial likeness as a natural dimension for conveying meaning should be exploited. Note however that the border between resemblance and conventionality is not a sharp one. Stokoe again and again stresses that gestures, originally, are based on resemblance, i.e. they are *natural* signs, but become, gradually, conventional ones.[25] And conventional signs can come to be treated as natural ones. Wittgenstein has some interesting remarks on this. It would be possible, he noted for example, "that we had first to learn with some pains to understand a method of depiction, in order to be able later on to use it as a natural picture".[26] Two years later he wrote: "Just think of the words exchanged by lovers! They are 'loaded' with feeling. And surely you can't just agree to substitute for them any other sounds you please, as you can with technical terms. Isn't this because they are *gestures*? And a gesture doesn't have to be innate; it is instilled, but, after all, *assimilated*."[27] In 1938 he wrote – and drew – in connection with a familiar pictorial convention (MS 159):



The symbol of the spoken word: characters in a loop which emerges from the mouth of the speaker.

This picture strikes us as quite natural, although we have never seen anything like it.

---

[25] Stokoe, *Language in Hand*, pp. 23 f., 69 and 74 f. On p. 69 Stokoe refers to Thomas A. Sebeok's *Signs: An Introduction to Semiotics* (Toronto: University of Toronto Press, 1994), and writes: "Conventional linkage connects a symbolic sign to a meaning through a convention – users and interpreters agree; but a sign may become conventional through use, even though it is an icon or an index (similar to, or naturally shaped by, its meaning)."

[26] Ludwig Wittgenstein, *Remarks on the Philosophy of Psychology*, transl. by G. E. M. Anscombe, Oxford: Basil Blackwell, 1980, vol. I, § 1018. The passage comes from MS 135 (1947), cf. *Wittgenstein's Nachlass: The Bergen Electronic Edition*.

[27] Cf. Ludwig Wittgenstein, *Last Writings on the Philosophy of Psychology*, vol. I, ed. by G. H. von Wright and Heikki Nyman, transl. by C. G. Luckhardt and Maximilian A. E. Aue, Oxford: Basil Blackwell, 1982, § 712, cf. e.g. MS 138, entry of January 17, 1949. The following telling remark by Wittgenstein dates from the same day: "There really

Indeed it is not just the speech bubble as such that we have come to experience as a natural sign, but also its particular varieties. As William Horton indicates, convention and intuition both play a role in the family of speech balloon symbols. He presents speech balloons of various shapes –

– and prompts us to consider what meaning they convey. "What kind of message", he asks, "would you expect each of these speech balloons to deliver?"[28] And indeed the various forms do suggest to us different moods, sentiments, meanings – even though we might have never encountered them before, have never learnt any conventions relating to them. Speech bubbles have been with us for centuries; they have evolved from ancient and medieval *speech bands*.

In the so-called Part II of the *Philosophical Investigations* Wittgenstein makes it quite clear that for him there are some kinds of pictures which convey unambiguous meanings even though we have never been taught how to interpret them. He introduces the example of a "picture-face",

and remarks: "In some respects I stand towards it as I do towards a human face. I can study its expression, can react to it as to the expres-

---

are those cases where the meaning of what one wants to say is much clearer in one's mind than one could express it in words. (This happens to me quite often.) It is as if one distinctly remembered a dream, but was not able to tell it well."

[28] William Horton, *The Icon Book: Visual Symbols for Computer Systems and Documentation*, New York: John Wiley & Sons, 1994, p. 69. On the emergence and the varieties of the speech bubble as a comics and cartoon convention, cf. also Carl G. Liungman, *Dictionary of Symbols*, New York: Norton & Co., 1991, pp. 358 f., original Swedish edition 1974,

sion of the human face. A child can talk to picture-men or picture-animals, can treat them as it treats dolls." [29]

There are pictures we do not interpret at all, but react to, as Wittgenstein puts it, in an *immediate way*. Whether we do so react, can be influenced by "custom and upbringing" [30], such influence however is sometimes very slight. Wittgenstein's view was corroborated by John Kennedy's findings in his 1974 book *A Psychology of Picture Perception*.[31] Understanding photographs or line drawings generally does not presuppose any previous training in pictorial conventions. At the same time Kennedy points out that static pictures are not always unequivocal. He refers to a certain crowd scene about which it has been noted that some African people tend to interpret it as showing people fighting, whereas other African people may see the same scene as part of a dance. "Frozen pictures tend to be ambiguous, of course", Kennedy writes, "and the viewer's culture can be expected to predispose him toward one imaginative story rather than another." [32] Writing at the time he did, it is perhaps understandable that the idea of *animations* as a means of disambiguation does not occur to Kennedy; [33] both Price and Wittgenstein however did hit on that idea when confronted by the problem of ambiguous pictorial meaning.

Knowledge and Visual Communication

In his paper "Visualization and Cognition" Bruno Latour points to "writing and imaging craftmanship" [34] as the ultimate ground of modern

---

and Robert E. Horn, *Visual Language: Global Communication for the 21st Century*, Bainbridge Island, WA: MacroVU, 1998, pp. 141f.

[29] Ludwig Wittgenstein, *Philosophical Investigations*, transl. by G. E. M. Anscombe, Oxford: Blackwell, 1953, p. 194.

[30] *Ibid.*, p. 201.

[31] John M. Kennedy, *A Psychology of Picture Perception: Images and Information*, San Francisco: Jossey-Bass, 1974, see esp. pp. 47–84.

[32] *Ibid.*, pp. 69 f.

[33] Colin Ware's *Information Visualization* (San Francisco: Morgan Kaufmann, 2000) came to my attention as the present volume went to print. Ware acknowledges his indebtedness to Kennedy, and in a sense continues where Kennedy left off. While providing a magisterial summary of the natural sign versus conventional sign theme ("sensory" versus "arbitrary" representations, in his terminology), Ware also focusses on the cognitive powers of animation. I will come back to the subject further below in notes 43 and 50.

[34] Bruno Latour, "Visualization and Cognition: Thinking with Eyes and Hands", *Knowledge and Society: Studies in the Sociology of Culture Past and Present*, vol. 6, Greenwich, CT: JAI Press, 1986, p. 3.

science. Through the technologies of writing and pictorial representation the objects of cognition become *mobile*, and at the same time *immutable*; they can be collected, presented, and combined with one another in the power centres of knowledge.[35] Latour does not mention István Hajnal, although the work of the latter is, partly at least, accessible also to non-Hungarians;[36] but otherwise he provides a comprehensive survey of the recent literature on the topic. He refers in particular to Jack Goody's *The Domestication of the Savage Mind*,[37] a book analyzing the role of alphabetic literacy in the emergence of systematic, logical thinking, and to Elizabeth Eisenstein's major work *The Printing Press as an Agent of Change*, describing the close connection between the spread of printed books and the beginnings of modern science.[38] A work Latour is particularly indebted to is the brilliant book by William Ivins, *Prints and Visual Communication*, published in 1953. The observation with which Ivins begins is that "the backward countries of the world are and have been those that have not learned to take full advantage of the possibilities of pictorial state-

[35] *Ibid.*, p. 7. – "Economics, politics, sociology, hard sciences", Latour writes, "do not come into contact through the grandiose entrance of 'interdisciplinarity' but through the back door of the *file*. ... domains which are far apart become literally inches apart" (*ibid.*, p. 28). Latour refers to the "new branches of science and technology that can accelerate the mobility of traces, perfect their immutability, enhance readability, insure their compatibility, quicken their display: satellites, networks of espionage, computers" (*ibid.*, p. 30).

[36] I have in mind especially his "Le rôle social de l'écriture et l'évolution européenne", *Revue de l'Institut de Sociologie Solvay*, Bruxelles, 1934.

[37] Cambridge: Cambridge University Press, 1977.

[38] "More abundantly stocked bookshelves", wrote Eisenstein, "obviously increased opportunities to consult and compare different texts. Merely by making more scrambled data available, by increasing the output of Aristotelian, Alexandrian and Arabic texts, printers encouraged efforts to unscramble these data. Some medieval coastal maps had long been more accurate than many ancient ones, but few eyes had seen either. Much as maps from different regions and epochs were brought into contact in the course of preparing editions of atlases, so too were technical texts brought together in certain physicians' and astronomers' libraries." (*The Printing Press as an Agent of Change: Communications and Cultural Transformations in Early-Modern Europe*, Cambridge: Cambridge University Press, 1979, vol. I, pp. 74 f.) Eisenstein puts a special emphasis on *maps*. Maps, plans, are in fact the most fundamental carriers of visual knowledge. From the perspective of our present topic, it is not by chance that location-dependent maps soon came to be offered by mobile telephone network operators (cf. the still very readable collection "A Survey of the Mobile Internet", *The Economist*, Oct. 13, 2001, p. 16).

ment and communication... [M]any of the most characteristic ideas and abilities of our western civilization have been intimately related to our skill exactly to repeat pictorial statements and communications."[39] Ivins makes the fundamental point that the lack of a proper technology for duplicating *pictures* was a major obstacle to the development of science throughout most of Western history. Prior to printing pictures could not become aids to the communication of knowledge. Since they were inevitably distorted in the copying process, information could not be preserved by them. There are some enlightening passages by Pliny the Elder in his *Natural History*, written in the first century of our era, describing what can only be regarded as the ultimate failure of Greek botany as a science. Let me here quote the dramatic summary of those passages given by Ivins:

> The Greek botanists realized the necessity of visual statements to give their verbal statements intelligibility. They tried to use pictures for the purpose, but their only ways of making pictures were such that they were utterly unable to repeat their visual statements wholly and exactly. The result was such a distortion at the hands of the successive copyists that the copies became not a help but an obstacle to the clarification and the making precise of their verbal descriptions. And so the Greek botanists gave up trying to use illustrations in their treatises and tried to get along as best they could with words. But, with words alone, they were unable to describe their plants in such a way that they could be recognized – for the same things bore different names in different places and the same names meant different things in different places. So, finally, the Greek botanists gave up even trying to describe their plants in words, and contented themselves by giving all the names they knew for each plant and then told what human ailments it was good for. In other words, there was a complete breakdown of scientific description and analysis once it was confined to words without demonstrative pictures.[40]

Picture printing was invented around 1400 A.D. Ivins argues that this was a much more revolutionary invention in the history of communica-

[39] William M. Ivins, Jr., *Prints and Visual Communication*, Cambridge, MA: Harvard University Press, 1953, p. 1.

[40] *Ibid.*, p. 15.

tion than that of typography half a century later. Pictures became more or less exactly repeatable. However, they were still a long way from being faithful copies of particular natural objects; indeed the very demand for faithful representations emerged only gradually in the course of the fifteenth century. The so-called *Pseudo-Apuleius*, a printed version of a ninth-century botanical manuscript, published just after 1480 at Rome, contains woodcuts that are careless copies of the manuscript illustrations, and could of course not be of any practical use. But just a few years later the German herbal *Gart der Gesundheit* is printing woodcuts based on expert drawings of the original plants.

"Asparagus agrestis",
from the *Pseudo-Apuleius*

"Gladiolus",
from the *Gart der Gesundheit*

(After Ivins)

However, neither woodcuts, nor etchings or engravings, could aim at complete faithfulness. Ivins points out that when Lessing wrote his famous treatise on the Laocoon group, he did not, because he could not, have reliable illustrations at his disposal. "Each engraver", writes Ivins, "phrased such information as he conveyed about [the statues] in terms of the net of rationality of his style of engraving. There is such a disparity between the visual statements they made that only by an effort of historical imagination is it possible to realize that all the so dissimilar pictures were supposed to tell the truth about the one identical thing. At

The head of Laocoon. Engraving around 1527, woodcut 1544, etching 1606
(After Ivins)

best there is a family resemblance between them."[41] Until the age of photography, as Ivins stresses, there existed no technology of exactly repeatable pictorial representations of particular objects.

The work of Ivins had an influence on no lesser a figure than Ernst Gombrich, who refers to him in the foreword to his *Art and Illusion*. Gombrich's theories are of obvious relevance to our present topic; clearly I have no space to summarize them here, but let me at least refer to his talk "Pictorial Instructions", first published in 1990 and reprinted in the volume *The Uses of Images*.[42] In the introduction to this volume Gombrich remarks that the invention and spread of *photography* had a dramatic effect on the crafts of pictorial representation, since the requirement of a faithful visual record came to be met more cheaply and efficiently by the camera. From the talk "Pictorial Instructions" let me single out two observations. First, that instructions expressed through images – be they single pictures or a sequence of them, whether still or moving – are much more easily understood when *verbal explanations* are added.[43] (Gombrich compares and analyzes leaflets provided by British

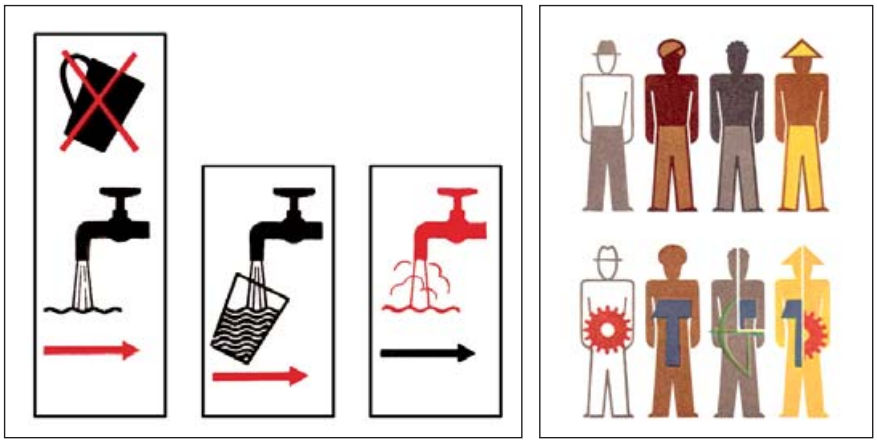
[41] *Ibid*., p. 89.

[42] Ernst Gombrich, *The Uses of Images: Studies in the Social Function of Art and Visual Communication*, London: Phaidon Press, 1999.

[43] This is the insight, too, at which Edward Tufte arrives in the third volume of his celebrated trilogy. (Edward R. Tufte, *The Visual Display of Quantitative Information*, 1982; *Envisioning Information*, 1990; *Visual Explanations: Images and Quantities, Evidence and Narrative*, 1997. Cheshire, CT: Graphics Press.) "My three books on information design", Tufte sums up, "stand in the following relation: *The Visual Display of Quantitative Information* is about *pictures of numbers*, how to depict data and enforce statistical honesty. *Envisioning Information* is about *pictures of nouns* (maps and aerial photographs, for example, consist of

Airways and Lufthansa on what to do when the aircraft comes down on water.) Secondly, that our pictorial representations today employ numerous conventions which to us seem quite natural, but would have been not at all self-evident some centuries ago. Gombrich's example is the arrow, which prior to the eighteenth century had not assumed a "universal significance as a pointer or a vector".[44]

It was perhaps the main discovery of twentieth-century philosophy that *all* knowledge, ultimately, is based on *practical* knowledge. Now pictures are better at teaching practical knowledge than are texts. It was



ISOTYPE symbols

not by chance that Otto Neurath, the ardent advocate of the logical positivist thought of a unified science, conceived of the idea of complementing his planned compendia by an *international picture language*. Neurath

a great many nouns lying on the ground). ... *Visual Explanations* is about *pictures of verbs*, the representation of mechanism and motion, of process and dynamics, of causes and effects, of explanation and narrative." (*Visual Explanations*, p. 10.) The third volume of the trilogy describes, in particular, "the proper arrangement in space and time of images, words, and numbers" (*ibid.*, p. 9). It is to be noted, too, that in this volume the issue of *animations* occupies a central place. – Both the issue of text and image integration and that of animations is admirably dealt with in the book by Colin Ware referred to above, cf. note 33.

[44] *Ibid.*, pp. 226 ff.

was working towards an "International System Of Typographic Picture Education", abbreviated as *isotype*, an interdependent and interconnected system of images, to be used together with *word languages*, yet having a visual logic of its own. Isotype would be two-dimensional[45], using distinctive conventions, shapes, colours, and so on. "Frequently it is very hard", Neurath wrote, "to say in words what is clear straight away to the eye. It is unnecessary to say in words what we are able to make clear by pictures."[46] Neurath particularly stressed that the elaboration of his picture language was meant to serve a broader task, that of establishing an international encyclopaedia of common, united knowledge.[47]

However, he never even came near to realizing his lofty aims. His experiments, conducted from the 1920s to the 40s, turned out to have beeen technologically premature. The icons elaborated within the framework of the isotype program have served as models for those international picture signs we today daily encounter at airports and railway stations, but – because they are so crude, and so cumbersome to produce – they could not form the basis of a true visual *language*. With the *iconic revolution* we today witness, such a language is clearly becoming feasible.

---

[45] "The writing or talking language is only of 'one expansion' – the sounds come one after the other in time, the word-signs come one after the other on paper, as for example the telegram signs on a long, narrow band of paper. The same is true in books – one word over another in the line under it has no effect on the sense. But there are languages of 'two expansions'... Some of the picture languages in existence are of one expansion, they are made up of long lines of small signs... the ISOTYPE system ... makes use of the connection of parts not only in one direction but in two, and the effect is a language picture." (Otto Neurath, *International Picture Language*, London: 1936, repr. University of Reading: Dept. of Typography & Graphic Communication, 1980, pp. 60 ff.)

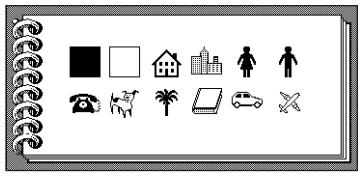
[46] *Ibid.*, p. 26. Neurath then adds: "Science gives us accounts of old picture languages in general use, for example, in the first stages of the development of society. The signs used are frequently not very clear to us today, but they were clear when and where they were used. We are not able to take over the old signs as they are. Adjustments have to be made in relation to the forms of today and tomorrow before it is possible for them to come into general use. Giving a sign its fixed form for international use, possibly for a great number of years, is responsible work. ... It will not do to take the taste of the present day as our only guide; we have to take into account the experience of history. The picture-writing of old Egypt and pictures of fights on old military maps ... are of much help in building up a system of signs" (*ibid.*, pp. 40 f.).

[47] *Ibid.*, pp. 65 and 111.

Iconic Languages

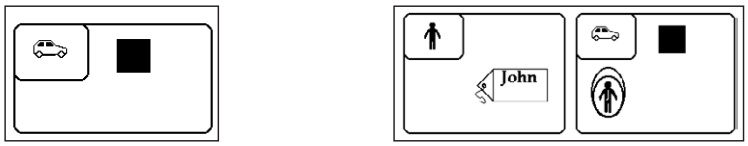
The volume *Iconic Communication*, edited by Yazdani und Barker, was published in April 2000.[48] The volume constitutes an important novel beginning in that it heralds the extension, occasionally indeed the replacement, of verbal language by visual languages. The basic idea itself is not new – the volume repeatedly refers for example to Neurath's work. New however – even if not without antecedents – is the investigation of the possibility of iconic languages as viewed against the background of digital graphics and networked communication. The screen, and in particular the small display, has been recognized as a promising new field of application by the architects of visual languages. In the chapter written by Yazdani there emerges the topic of a possible connection between pictorial communication and the *mobile telephone*. This topic, clearly, raises not just technological questions, but psychological, linguistic, and philosophical ones as well.

Of the authors of the volume Colin Beardon has for a number of years argued in favour of the view that ambiguity in pictures can be removed via felicitious animation; that where the still image stands in need of interpretation, the moving image is self-interpreting.



12 icons from Beardon's dictionary

Representing: black, white, house, city, woman, man, telephone, dog, tree, book, car, aeroplane

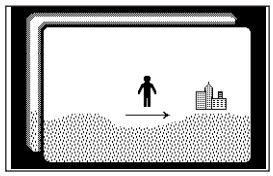


"the black car" "a man named John" / "a black car owned by John"

Iconic expressions in Beardon's system

[48] Masoud Yazdani and Philip Barker (eds.), *Iconic Communication*, Bristol: Intellect Books, 2000.

Beardon's system uses picture frames similar to those of a WAP-enabled mobile telephone (though of course no such devices were available at the time when Beardon was writing). Let us look at a frame (an "event window") which carries the meaning "a man goes to a city".[49]



"A man goes to a city."

The fact and the direction of the movement are shown by an arrow. Now we could say that the arrow is not a natural sign: for members of cultures not acquainted with the bow and arrow it means nothing, and it will gain meaning only when its conventional usage is explained – recall Gombrich's point. However, if the arrow is replaced by the actual movement of an icon representing a man, such difficulties are unlikely to arise. Taking up the ideas of Price, Stokoe, and Beardon, I would here venture the following formulation: while still images correspond to the *words* of verbal languages, animations correspond to *sentences*. Animated iconic languages, both in their intuitive and conventional aspects, are rich and dense carriers of meaning, especially well suited to convey large amounts of information on a small display.[50]

---

[49] I here follow Beardon's paper "Discourse Structures in Iconic Communication", *Artificial Intelligence Review* 9/2—3 (1995); the illustrations are reproduced with the author's permission. The paper is accessible at http://www.esad.plym.ac.uk/personal/C-Beardon/papers/9508.html.

[50] In her paper in the present volume Barbara Tversky refers to results of empirical research which seem to disprove the assumption of the cognitive superiority of animations as compared to still pictures. However, she also notes that on the basis of static representations we are capable of conducting as it were mental animations. I believe this is an important point. Static mental images appear to be, generally speaking, merely limiting cases of dynamic ones. With the techniques for creating animations becoming ever easier to employ, it is to be expected that the same situation will come to prevail also in the domain of physical – digital – pictures. The future belongs to moving images as carriers of knowledge. For some detailed arguments to this effect see for instance Mitchell Stephens, *The Rise of the Image and the Fall of the Word*, New York: Oxford University Press, 1998, and especially Colin Ware's book referred to above.

Iconic languages designed for mobile communications should, roughly, meet the following requirements: (1) ease in producing special symbols, and (2) fast recognizability of the symbols employed; (3) pictoriality (icons, as far as possible, should resemble real-world objects); (4) conventions enabling (a) the combinations of icons, and of parts of icons, (b) the generation of complex symbols out of simple ones, (c) the use of symbols standing for abstract concepts, and (d) adding text (written and voiced) to icons; (5) multi-cultural span and historical continuity, as well as (6) dynamic capabilities (allowing for animations). – Requirement 4b should allow for variation, interchangeability, and indeed a measure of free play for spontaneity, while at the same time preserving visual harmony across the whole range of the icon family.[51] – Basic emoticons like :-) , ;-) , :-(satisfy all the above requirements except 6. In particular, they satisfy 4c, since they do not denote some particular object (e.g. "unhappy face"), or class of objects, but permit translations like "I am unhappy", "sad", etc. Indeed they convey a cluster of ideas without there arising the need for any translation into words. Both Neurath's ISOTYPE icons and for instance Aicher's 1972 Olympic Games symbols fulfill 4a and 4b. From the many excellent examples for iconic design fulfilling criterion 5, let me here refer to Paul Honeywill's "Print Belize" logo, juxtaposing patterns of Mayan carvings and Roman letters.[52] – As I have noted above, not all conventions need to be agreed upon explicitly.[53] For instance, in the course of the twentieth century cartoons and comic books contributed significantly to the standardization of a visual language vocabulary.[54] Emoticons, too, as Honeywill puts it, "are a natural progression of language, developed by the users and not by a designed system".[55]

---

[51] Cf. e.g. Rosemary Sassoon and Albertine Gaur, *Signs, Symbols and Icons: Pre-history to the Computer Age*, Exeter: Intellect Books, 1997, pp. 157 f.

[52] Paul Honeywill, *Visual Language for the World Wide Web*, Exeter: Intellect Books, 1999, pp. 96 ff.

[53] See e.g. the useful references to D. K. Lewis, *Convention: A Philosophical Study* (Cambridge, MA: Harvard University Press, 1969) in David Novitz, *Pictures and Their Use in Communication: A Philosophical Essay*, The Hague: Martinus Nijhoff, 1977, pp. 28 ff.

[54] Cf. e.g. Robert E. Horn, *Visual Language: Global Communication for the 21st Century*, pp. 135 ff.

[55] Honeywill, *op. cit.*, p. 123.

MMS Arrives

Ivins recalls that during his time at the Metropolitan Museum he again and again had to experience "how inadequate words are as tools for description, definition, and classification of objects each of which is unique". Words can never, as he puts it, "catch the personality of objects which we know by acquaintance", whereas "pictures or images" can.[56]

Pictorial communication has obvious advantages; but also obvious drawbacks. In his book *The Search for the Perfect Language* Umberto Eco cites with approval all the usual arguments against visual languages – ambiguity, lack of grammar, the need for conventions, limited applicability. "One could say", he writes, "that there is only a single system which can claim the widest range of diffusion and comprehensibility: the images of cinema and television. One is tempted to say that this is certainly a 'language' understood around the earth." However, he adds, "if there is no difficulty involved in receiving cinematic or televised images, it is extremely difficult to produce them. Ease of execution is a notable argument in favour of verbal languages. Anyone who wished to communicate in a strictly visual language would probably have to go about with a camcorder, a portable television set, and a sackful of tapes, resembling Swift's wise men who, having decided that it was necessary to show any object they wanted to designate, were forced to drag enormous sacks behind them."[57]

As I have tried to make clear in the foregoing, I do not advocate communication in a strictly visual language. But I certainly believe that complementing verbal – voiced or written – communication with a pictorial dimension can enhance the effectivity of information exchange. And Swift's wise men are facing a task that is increasingly easy to perform. MMS – multimedia messaging service – in the introduction of which Hungary witnessed pioneering steps early in 2002,[58] constitutes a

[56] Ivins, *op. cit.*, pp. 51 and 53.

[57] Umberto Eco, *The Search for the Perfect Language*, Oxford: Blackwell Publishers, 1995, pp. 174 ff.

[58] See http://www.westel900.net/kapcsolat/sajto/sajtokozlemenyek/sajtokozlemeny_20020418_e.html (last visited: Jan. 5, 2003).

significant new phase. MMS allows users of mobile phones to take snapshots with built-in cameras and immediately post them; to create line drawings, edit pictures, add text to graphics, and send the complex messages thus created.

Mobile-phone snapshot received on the way helps to identify the object being looked for.

Drawing created on a mobile phone directing to the place being looked for.

Such capabilities deserve our attentions on at least four counts. Having as it were a drawing block handy all the time, with the continuous possibility of communicating sketches and having them applied to

practical tasks at the receiving end, goes at least a small way towards helping to solve the problem Price complained about, namely that *few people know how to draw*. The collection and combination of those mobile and at the same time immutable objects of cognition Latour regards as the foundation of Western intellectual superiority will cease to be the exclusive prerogative of "power centres of knowledge" once they really become mobile, and once "imaging craftmanship"[59] becomes a widespread art. Being able to take photos and send them away on the spot surely alleviates the predicament Ivins pointed at when he wrote that mere words cannot capture the unique characteristics of particular objects. And the disequilibrium Eco alludes to, that producing images is so much more cumbersome than viewing them, will be less marked once the creating and disseminating of images becomes a common everyday skill.

Pictorial Communication and Mobile Communities

At the beginning of my paper I have quoted Neurath's memorable phrase: "Words make division, pictures make connection".[60] Pictures connect people who are otherwise divided by speaking different languages. But let us observe that even among those who share the same tongue pictures have a greater potential to create common bonds than do words. The reason for this has been known since ancient times. Saint Bonaventure in the thirteenth century summed up a millennium of argument about the institution of images in the Church when he said, first, that the illiterate might learn from sculptures and from pictures as if from books, and second, that people who are not excited to devotion when they hear of Christ's deeds might at least be excited when they see them in figures and pictures.[61] The essential fact behind both observations of course is that understanding images, thinking in images, having feelings in connection with images, and even communicating in images – namely in mimetic patterns – is more basic to human nature than thinking and communicating in words. Again, this is not to say that words are dispensable. The significance of MMS is precisely that it combines images and words – words spoken and written. Communicat-

[59] Latour, *op. cit.*, p. 3.

[60] *International Picture Language*, p. 18.

[61] I here follow David Freedberg, *The Power of Images: Studies in the History and Theory of Response*, Chicago: University of Chicago Press, 1989, pp. 162 ff.

ing synchronously in voice, writing, and graphics has the potential to create and maintain a higher level of human cohesion than could be achieved by any of these dimensions by themselves. It was Karl W. Deutsch who applied the notion of complementarity, originally a concept in communications theory, to the issues of social communication.[62] In my introduction to the present volume I referred to the distinction Deutsch made between society and community. Communities are characterized precisely by patterns of communication that display a high level of complementarity between information conveyed through various channels. Multimedia messaging, the synchronous-complementary transmission of speech, text and pictures seems to me to be not just a social activity but an activity sustaining those very types of human communication that make up genuine communities.

[62] See esp. his *Nationalism and Social Communication: An Inquiry into the Foundations of Nationality*, New York: John Wiley & Sons, 1953, pp. 69 ff.