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PREPARATIONS FOR DISCUSSING CONSTRUCTIVISM WITH A MARTIAN

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Summary: It is easy to demonstrate the naivety of many people preparing messages for intelligent beings on other planets using pictures. On the other hand, constructivism, which supposes all our perception to rely on social constructs, has long been shown to be untenable, notably by Gibson, who instead suggested that some general ecological principles have to be taken into account. In a parallel fashion, I have argued that the critique of iconicity should be supplanted by a semiotic ecology: general principles accounting for the fact that pictures are perceived as signs by human beings. In this sense, a message comprehensible to a Martian would need to go beyond the specificity of human ecology.

Key words: picture, iconicity, ecology, sign, extraterrestrials

While we are familiar with naivety characterising those preparing messages for intelligent beings on other planets using pictures such as the Pioneer plaque, the second-order naivety, which distinguishes those who point to the conventionality of pictures, is seldom observed. Indeed, in the psychology of perception, constructivism, which supposes all our perception to rely on social constructs, has long been shown to be untenable, notably by James Gibson, who instead suggested that some general ecological principles have to be taken into account. In a parallel fashion, I have argued that the critique of iconicity should be supplanted by a semiotic ecology: general principle accounting for the fact that pictures are perceived as signs by human beings. This means that, if we are to fashion messages understandable to a Martian, or, to put the issue more seriously, to some intelligent extraterrestrial, and, most probably, extrasolar, being, we do not need to find out in what society he lives: but we have to go well beyond the anthropological universals determining human ecology, which may well be a much more formidable task.

1. OF APES AND MEN: RECOGNIZING THE MESSAGE AS SUCH

Unlike people at the SETI institute, I am not interested in communication with extraterrestrial intelligence (which the researchers at the SETI call CETI) in itself. Rather, for me, thinking about communication with extraterrestrials is a *testing case* (imaginary so far) for the *constraints* imposed on semiosis. In fact, there traditionally are two or three ways of investigating the constraints on the *specificity* of the (human) semiotic function: studying child development, scrutinizing the capacities of apes, monkeys and other animals; and analysing cultures which are not familiar with some kinds of semiotic resources ("primitive" cultures), such as, most classically, pictures. Indeed, the title of the present article is a paraphrase of an article written many years ago by the primatologist David Premack, called "Preparations for discussing behaviourism with a chimpanzee". While Premack must have supposed behaviourism to work if he ever were to engage in such a discussion, my own contention is that constructivism is not what is needed in order

to have a conversation with an extraterrestrial. Constructivism, in the relevant sense, is a particular conception about how not only pictures, but also the common sense world, are perceived.

At the heart of the distinction between constructivism and other views of perception, as well as the problem of communicating with extraterrestrials, is what Douglas Vakoch has called "the incommensurability problem": the models constructed by scientists on earth vary considerably, in part because of their different social and historical backgrounds, so it would be surprising if such a variability were not augmented by the fact of the scientists coming from different planets, in which case biology may also be different.[1] This issue is not only relevant to scientific models, but applies to the transmission of any kind of messages. Indeed, in my own version of the communication model (Fig. 1), which - deriving its inspiration from the Prague school of semiotics - takes into account the active construal of the message on the part of the receiver, the pool of knowledge, including norms, abductions, and sign systems, held in common by the protagonists of the communication process, is - following the parallel suggestions of Lotman and Moles - supposed to overlap only in part at the beginning of the process.[2]

If the act of communication may still succeed, this must either be because the sender takes pains to adapt his pool of knowledge to that of the receiver, or because the receiver does so with respect to the knowledge of the sender, or owing to some combination of both approaches. In the first case, we have what the Tartu school calls a *receiver-culture*; it is, as I have formulated it elsewhere, a culture in which it is felt to be the task of the sender to recover the norms and interpretations characteristic of the receiver. The classical case is the pedagogical situation. In the case of a *sender-culture*, on the other hand, the receiver is assigned the task of recuperating the part of the pool of knowledge peculiar to the sender that does not overlap with his own. High art, as well as mystery cults, are of this kind.[3] Hermeneutics, as a science with practical goals, was developed for the latter situation. Philosophical hermeneutics, on the other hand, often envisions some kind of combination of the two processes: a "fusion of horizons", in Gadamer's famous phrase. The incommensurability problem, in its extreme forms, suggests the opposite case: when the overlap between the two initial pools of knowledge approaches to zero.

It is important to recognize that, in a situation of communication, the first problem is not to find out *what* the messages means: it is to realise that there *is* a message. That is, it involves the recognition of the message *as such – as* a message, rather than a message about something in particular. Even those theories of communication which insist on the act by means of which meaning is produced and conveyed, on the enunciation rather than the utterance, are not very clear about this issue. "Speech act theory" (Austin, Grice, Searle, etc.) separates the content of the message ("locution") from how it is to be taken ("illocution") and even the effect it may have or not have depending on circumstances ("perlocution"), but it is very vague about "uptake", the necessity for the message to be attended to as such. In Jakobson's model of communication, one of the functions, called the "phatic function", is supposed to assure that the message gets through, but Jakobson has very little to say about the way this is brought about, apart from giving the commonplace example of checking whether the telephone line is open by saying "Hello". Luis Prieto has

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[1] VAKOCH (1999)
[2] SONESSON (1999)
[3] SONESSON (1999)

been much more insistent on the difference between the message ("indice") and the information that somebody is sending a message ("indication notificative"). But somehow the essential question gets lost in the discussion of intentions. After all, even an unintended message has to be recognized as such.

The first incommensurability problem thus concerns the recognition of the message *as* a message. Such recognition requires us to share some common presumptions about the shape of possible messages. This is nicely illustrated by the examples quoted by Vakoch of messages which a mathematician in the 1820s suggested could be formed by clearing massive stretches of forest in Siberia producing geometrical figures; and which others hoped to obtain by digging geometrically arranged channels in the Sahara which could be filled with kerosene and set aflame during the night.[4] Even if the Martians or the inhabitants of the Moon could see these shapes, and recognize them for what we think they are, they would only learn anything about us, to the extent that they understood that these are messages send by us – and, even more fundamentally, messages, period.

Searle claims we can only see patterns in the desert sand as writing *if* we suppose somebody intended that we should understand somebody had the intention… etc. But the opposite is of course true: it is only *because* we see something as being (typically) writing that we suppose somebody had the intention… etc. If it is impossible that somebody was around, then, miraculously, God, some ghost or ET must have been doing the writing.[5] The astronomer Richard Hoagland says he has discovered, on pictures from the planet Mars, a sculpture of a monkey's head, together with some other strange constructions, which must be traces of an ancient Martian civilization. For obvious reasons, other astronomers think this is as absurd as affirming that the man in the moon has been painted by intelligent beings. However, what Hoagland presents us with is actually an iconical sign of another putatively iconical sign, i.e. a photograph of the monkey's head. If his claim were borne out by direct observations, then we would have to admit that von Däniken's space gods, with their superior technological resources, have landed on Mars and edified the monkey's head, just so as to bewilder us. This is parallel to a case considered by Arnheim: a prototypical picture should possess configurational and other holistic properties not found in ink blots which, in their natural state, are all too irregular and, in their Roschach version, too symmetrical.[6]

In the end, then, what is needed, are criteria for some shape being a message. One such criterion is no doubt "ruleboundedness": regularity, repetition, etc. – that is symbolicity, in a Peircean sense. Interestingly, as we shall see, this is what is found in Gros' and the Niemans' schemes, as well as in Drake's later proposal: in the first case, the same number for each line, and in the second "551 = 19 x 29" – although the same clue has to do service a second time as a signifier of "mathematicalness". Another such criterion is similarity, that is, iconicity (But this may lead to projection, as in Hoagland's monkey face and van Däniken's wrist watches and helmets). Indexicality, on the other hand, as found in traces, for instance, could easily suggest no intention to communicate, that is, messages involuntarily produced.

Interstellar communication projects into space problems long faced by archaeology in time. Thus, archaeologists are want to ask: Is the Berekhat Ram figure, an object dated to

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[4] VAKOCH (1999; 2003)
[5] SONESSON (1978)
[6] cf. SONESSON (1989): 254f and ARNHEIM (1966):93ff

between 250-280 000 BP, the likeness of a woman? But before that another question must be posed: do the traces of abrasion left on it show regularity in a fashion suggesting "anthropogenic" movements? Although it has never been claimed to be a picture, Marschack's "calendar", if it were indeed a calendar, i.e., another kind of artefact with a cultural imprint, would have to evince some kind of regularity in the very way its traces are disposed.[7] Thus, we recognize the same interplay of iconicity, indexicality, and symbolicity as in interstellar messages. This brings us to the critique of iconicity.

2. DISQUISITIONS ON BIERMAN'S KEY

In his history of interstellar messages, Vakoch also tells us about some ingenious ways of constructing messages invented by Charles Cros in 1869, by the Niemans in 1920, and by Drake in the 1960s (Fig. 2.).[8] Cros suggested that several series of numbers should be sent, each one of them having the same final sum. When the numbers where translated into strings of beads of two different colours, and these strings were aligned one over the other, a figure would appear. According to the proposal made by the Niemans, dots and dashes would be used instead, again corresponding to beads of different colours, and the dots and dashes of each string making up the same sum. Drake's proposal is of the same general kind, but more complex: the message sent consists of 551 bits of information, which is a number the only primes of which are 19 and 29. When these numbers are taken to be the length and the side of the message, respectively, the result will be a pixelated pattern, which could be interpreted to be a "stocky biped", placed beside the star and the nine planets of our solar system, as well an oxygen and a carbon atom with their electrons (Fig.3). The result of the reconstruction, then, may be said to be more of the same general kind as the better-known Pioneer plaque.

The idea if of course that, if these extraterrestrials beings are intelligent, they will be familiar with the same kind of mathematics as we are, and they will know the same chemistry (and also, as I will insist on below, that they would represent them in the same way). Even granted that, however, these proposals beg the question: why would these hypothetical extraterrestrials scientists believe, in the first place, that these are messages – which is the primary requisite for them setting out to reconstruct them.

Although these codings are much more complicated, they remind me of a parable constructed by Arthur Bierman, with the purpose of proving the impossibility of iconicity. This story, I submit, is instructive in a different way from what Bierman intended. A man receives by mail a parcel, which turns out to contain something the man, takes to be a blueprint. Using metal pieces, he sets about constructing a machine according to the blueprint, but when he switches it on, he is electrocuted. The next morning, his widow receives a letter, explaining that the figures marked on the paper have to be cut out and put together, to obtain a paper machine. But is the moral or this story really that there are no iconic signs?

I think not. Like all activities taking place in the Lifeworld, the interpretation of pictures depend on certain things being taken for granted, but not necessarily on any particular conventions: "normal" conditions are thought to obtain. When a sign differs from what might be expected, it is indeed necessary to have it "anchored", to use the classical Barthesian term. When opening the parcel, the man will note a number of things: it contains iconical signs, rather than writing or scribbles, etc.; the particular style of the pictures

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[7] SONESSON (1994)

[8] VAKOCH (1999; 2001, 2003)

connotes "blueprint"; and the shapes given to the figures suggest they depict machine parts. These observations determine the use to which the man puts the gift: since it appears to be a blueprint, he sets about constructing something; since the shapes of the pictures suggest machine parts, and since machine parts are usually made of some sort of metal, he makes his construction out of metal pieces. Apparently, there must also be some kind of sign, probably iconic or indexical, which tell the man how to relate the different pieces to each other. But Bierman has been pulling the man on. What seems to be a blueprint is really a cut-out sheet; instead of being pictures, the figures are self-presentations; and what seem to be their borders are really indexical signs for where one has to cut.

Interestingly, while instructions would be needed to discover that the sheet of paper could be seen as a self-presentation (a secondary iconical sign, as we shall say below), none was necessary for the man to take it for a picture. If the sheet, considered as an expression, is ambiguous between two readings, then one of them, which happens to be incorrect here, would seem to suggest itself more readily. It should also be noted, that there is no hint in the story that the man put the pieces together incorrectly: thus, something was apparently read off from the picture iconically (and indexically). In this sense, Bierman's parable presupposes the truth of the very thesis it is supposed to disproof, that similarity, as such, can explain depiction. Not depiction, but the function of depiction, is at issue.[9]

In our case, however, incommensurability is much greater. We have no reason to suppose the sender and the receiver of an interstellar message to share such understandings that permit the man in Bierman's story to make an interpretation, even if it happens to be the wrong one. Here it is true, in a much more acute sense, that normal conditions do not obtain. In fact, if depiction, on the face of it, stands at the beginning of Bierman's story, it only emerges as a result at the end of the coded messages aimed at extraterrestrials. This is, I think, a decisive difference.

Both Vakoch and Arbib locate the problem of the Drake kind of message on the depiction end: the extraterrestrials would not be able to interpret it, they contend, if they tried to read it upside down, with the legs of the biped pointing skywards. Indeed, Arbib even proposes a possible, but obviously erroneous, interpretation of the inverted image. Interestingly, the philosopher Edmund Husserl long ago encountered the same problem, without having to take the perceptual habits of extraterrestrials into account: he suggested that pictures were essentially non-arbitrary, but that a convention was needed for telling us what was up and down. In as rejoinder to Husserl, I long ago refuted the last part of this affirmation: it is sufficient to turn a picture slowly around, and at some point the configuration giving rise to a depiction will emerge of itself. This is nicely illustrated by the comic strip "The Upside Downs", created by G. Verbeck in 1903: at the end of each strip, you have to turn the whole strip on its head in order to follow the rest of the story. Thus, each drawing has a double interpretation, in which what was a hat may, after inversion, appear as a skirt, and so on. When you turn the figure around, not only a new configuration (*Gestalt*) appears at some given point - but also a new representation. At least, so it is for human beings.[10]

If extraterrestrials are like human beings, then they will certainly not have any more problems finding what is upside down in the picture, than perceiving the picture as such.

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[9] For the parable, see BIERMANN (1963):249, for the argument above, cf. SONESSON (1989):220ff and (1998; 2000; 2001)

[10] VAKOCH (1999); ARBIB (1979); HUSSERL (1980), SONESSON (1989): 276ff

Nothing permits us to conclude, however, that extraterrestrials share the ecological world characteristic of human beings. But all this ignores the primary problems, which is anterior to the depiction: why would the extraterrestrials think there is a message at all?

3. THE CONSTRUCTION OF THE WORLD – AND ITS PICTURES

As we have seen, the pictures making up the blueprint are really the givens of Bierman's story: it is the machine which is constructed in their image or, as is happens, out of them. Bierman's formal arguments, however, rather go to prove that pictures as such are constructs of our perception. As is well known, Nelson Goodman later on gave more famous formulations to those same arguments. The messages conceived by Cros, the Niemans, and Drake are really better illustrations than that of Bierman's story of this constructionist theory of picture perception. Indeed, if human beings really have to construct each picture before perceiving it, then it is perhaps not so strange to think extraterrestrials would be able to do the same thing.

There is a parallel between the extant conceptions of picture perception and the psychological theories about our perception of the world. Three schools of perceptual psychology are commonly distinguished. The most venerable one is known as constructivism and goes back to Helmholz, but has in recent times most famously been represented by Gregory, who claims that impoverished stimuli only can give rise to percepts thanks to social constructs. Neisser, who was an important representative of this school, later on embraced ecological psychology. As for the brand-new version of constructivism proposed by Hoffman, it seems to abandon all tenets of the classical tradition and is hard to distinguish from ecological psychology. According to the second school, *Gestalt* psychology, represented by Köhler, Koffka, Arnheim, etc., innate mechanisms organise perception, again based on impoverished data, into configurations. Ecological psychology originates with the work of James Gibson, which has been pursued by Reed, Neisser, Kennedy, Hochberg, etc.: according to this conception, the principles of "ecological physics" explain how percepts emerge from stimuli. Thus, it supposes human perception to be a function of the human ecological niche or *Umwelt*, that is, in phenomenological terms, of our lifeworld.[11]

Psychologists have maintained that all three theories are descriptively inadequate: constructivism because no criteria have been proposed for when a hypothesis is confirmed; Gestalt psychology, because its laws are mysterious; and Gibsonianism, because no list of the invariants picked up from the environment can at present be given. Indeed, many psychologists, such as Neisser and Hochberg, clearly think some combination of constructivism and ecological psychology would be more to the point: in our terms, ecological psychology may account for the general presuppositions of the human lifeworld, and constructivism may take care of the things taken for granted in the various socio-cultural lifeworlds.[12]

Only ecological psychology, however, seems to have anything relevant to say about pictures. The paradox of perceptual psychology is that ecological psychology is alone in attending to the difference between perceiving the real world and those signs of it called pictures. Gestalt psychology and constructivism often use pictorial examples (configurations and illusions, respectively) to illustrated real world perception. As against this, Gibson has claimed that no conclusion about the real world can be derived from

[11] HOFFMAN (2004); for the rest, cf. SONESSON (1989): 255ff;
[12] SONESSON (1993): 352ff

pictorial examples. Although he never says so in so many words, Gibson clearly supposes the picture to be a sign. All animals can understand the meaning of surfaces. But, according to Gibson, only human begins can interpret *markings* on a *surface*, that is, have indirect perceptions.

To see the picture as a picture clearly requires the capacity to perceive wholes (Gestalts) as such; to take contours to be equivalent to the sides of objects; and to accept the 2D surface as a surrogate for a 3D world. The picture supposes a *similarity* on the background of a fundamental *difference*. But the problem may very well be to see the difference rather than the similarity. Gibson observes that, besides conveying the invariants for the layout of the pictured surfaces, the picture must also contain the invariants of the surface, which is doing the picturing: those of the sheet of paper, the canvas, etc., as well as those of the frame, the glass, and so on. The difficulty, clearly, consists in seeing, at the same time, both the surface and the thing depicted.[13] There are indications neither animals nor small children perceive the difference. Studies of "picture perception" in animals (from doves to apes) and children do not distinguish the perception of the picture as a picture from the identification of another member of the category. But studies of self-recognition in mirrors (if, in spite of Eco, the mirror is seen as a sign) indicate that apes but not monkeys can make the distinction.

According to Peirce, the sign, i.e. the expression, is something that "stands for that object not in all respects, but in reference to a sort of idea, which I sometimes called the ground of the representation" (Peirce CP 2:228). In this sense, the "ground" is the point of view from which the expression represents the content. Elsewhere it is said that the ground is "an abstraction", for instance "the blackness of two black things" (1.293). In my interpretation, the ground is the moment in which iconicity becomes a relation, that is, in Peircean terms, a kind of Secondness. Like indexicality, which is already in itself a relation, it has to be combined with the semiotic function, in order to be turned into a sign. But, as we shall see, there are two ways in which this may happen to iconicity: either similarity is a prerequisite for the sign, or the reverse.

4. PRIMARY ICONICITY IN THE HUMAN LIFEWORLD

The relative part played by iconicity and conventionality in a sign may be used to distinguish *primary* and *secondary iconicity*. A primary iconic sign is a sign in the case of which the perception of a similarity between an expression E and a content C is at least a partial reason for E being taken to be the expression of a sign the content of which is C. That is, iconicity is really the motivation (the ground), or rather, one of the motivations, for positing the sign function. A secondary iconic sign, on the other hand, is a sign in the case of which our knowledge that E is the expression of a sign the content of which is C, in some particular system of interpretation, is at least a partial reason for perceiving the similarity of E and C. Here, then, it is the sign relation that partially motivates the relationship of iconicity.

That pictures are instances of primary iconicity is shown by the child's capacity for interpreting pictures when first confronted with them at 19 months of age (as demonstrated in Hochberg's famous experiment); as well as by the ease with which pictures are employed by populations whose own culture ignores them – at least, as long as the culture in question is within the bounds of our own earth. On the other hand, we *do* have to learn that, in certain situations, and according to particular conventions, objects which are

[13] GIBSON, J., (1978):231; SONESSON, G., (1989): 251

normally used for what they are become signs of themselves, of some of their properties, or of the class of which they form part: a car at a car exhibition, a stone axe in the museum showcase or a tin cane in a shop window, an emperor's impersonator when the emperor is away, and a urinal (if it happens to be Duchamp's "Fountain") at an art exhibition. When Man Ray makes a picture of a billiard table, we need no convention to recognise what it depicts. However, if Sherrie Levine's (real, three-dimensional) billiard table is to represent Man Ray's picture, there must be a label inverting the hierarchy of prominence of the Lifeworld. This shows that among the properties determining the probability of an object functioning as the expression of an iconic sign is to be found three-dimensionality rather than the opposite.

There is one kind of picture that is really a limiting case, the "droodle", i.e. a picture that needs a key, as Carraci's mason behind a wall (cf. Fig. 4b). In one droodle, which we borrow from Arnheim, an ambiguity is noted immediately in the title: "Olive dropping into martini glass or Close–up of girl in scanty bathing suit" (cf. Fig. 4a) While both scenes are possible to discover in the drawing, both are clearly underdetermined by it. There are two ways in which we can try to avoid such an ambiguity. One is to fill in the details, in particular such as are characteristically different in an olive and a navel, in the air and a pair of thighs, etc. At some point the droodle will then turn into a genuine picture. The other possibility, which is the only one considered by constructionists, is to introduce an explicit convention, such as Carraci's key. According to Hermerén, it is only because of "the limitations of human imagination" that we see Fig. 4c. as a human face, for it can equally well be perceived as "a jar from above, with some pebbles and broken matches on the bottom, and a stick placed across the opening".[14] It all depends on what is here meant by the limits of human imagination: Gestalt principles, the face as a privileged perceptual object, and so on, all conspire to make one of the readings determinate. While it is possible to find the elements Hermerén suggests should be there in the picture, it is impossible to see the interpretation as a whole without being disturbed by the other reading. Thus, it seems that when an expression has similarities to different contents or referents, one may be favoured because of properties of the expression itself, and is not overridden by convention.

5. AT HOME IN THE TERRESTRIAL LIFEWORLD

If our capacity to experience pictures directly, as opposed to secondary iconical signs, depend on the particular lifeworld we are inhabiting, that is, on the ecology typical of human beings as it has evolved on the planet Earth, then there is every reason to suspect that extraterrestrial beings, however intelligent, would not share this capacity with us: what are for us primary iconical signs would be secondary to them. While we function according to ecological psychology, they would have to follow the precepts of constructivism. No doubt there are other phenomena which are primary iconicities to them, but which we would could only hope to interpret, if ever, according to the regime of secondary iconicity.

In the case of the biped of Drake's picture, once it is reconstructed as a picture, or the more explicit man and woman of the Pioneer plaque, the problem is not so much that the characteristic body shape of human beings must be recognized. Even in a normal picture, we can only recognize objects of the world with which we are already familiar, at least as to their general type. Thus, if the extraterrestrials have different body shapes from ours, and have never seen human beings, they obviously cannot recognize the human shape. But the more general issue involves the possible embodiements of signs themselves. As I noted

[14] ARNHEIM (1969:92f), HERMERÉN (1983:101)

above, the faculty to interpret pictures at least presupposes the ability to perceive wholes as such, to take contours to be equivalent to the sides of objects, and to accept 2D forms as stand-ins for 3D objects. There is no particular reason for supposing that this forms part of the ecology of extraterrestrial beings.

In a more general sense, these observations are also valid for markings on a surface that are *not* pictures. If our ability to interpret pictures is part of our competence as inhabitants of the human lifeworld, then all other sign system may well by dependant on the same particular ecological niche. Suppose that those are right who think that our conception of mathematics, as well as our contemporary theories of physics, astronomy, and chemistry, must be known to extraterrestrial beings, either because they accept the same theories, or they have entertained them at some earlier stage of their development (as we would recognize Newtonian physics in other intelligent beings). This fact would only be relevant to the content side of the sign. Even in the case of natural sciences, the expression side of the signs are wholly within the limits of our human lifeworld. Suppose that the extraterrestrials are very well aware of hydrogen transitions, pulsars and the layout of our solar system. It is still very improbable for them to use the same markings of the surface to convey them to others as we would. Their lifeworld would most certainly predispose them differently.

It is still possible that iconicity, in a wider sense than pictorality, may be of some help. Peirce pointed out that iconic signs convey more information than is contained in them, thus, "with two photographs you can make a map". This property, which Greenlee called "exhibitive import" (Greenlee) depends on our knowledge of the lifeworld: because of our familiarity with the layout of the lifeworld, we are able to fill in the blanks in the representation. We can "see in" what we know should be there. Therefore, if the extraterrestrials live in a different lifeworld, which they most certainly do, they would be unable to derive any help from exhibitive import.[15]

But perhaps there is another type of iconic surplus: something which we might call "introversive semiosis", echoing a term used by Jakobson for signs referring to other signs rather than to the world. Peirce's favoured example of iconicity was mathematical expressions. Jakobson discovered an iconicity in grammar. Such projections of the selection axis onto the axes of combinations, in Jakobson's phrase, is reminiscent of those messages with a regular structure which Arbib suggests should be used in communicating with extraterrestrials. More importantly, perhaps, what would be needed are expressions that mirror the system character of the system. This might be feasible if there is what Deacon has called "semiotic constraints": generalities of all "conceivable" semiotic systems. Of course, like earlier philosophers such as Husserl, Deacon is generalizing from the case of logic and mathematics to less tightly organized system of the kind of verbal language.[16]

In conclusion, we have seen that pictorial iconicity is dependant on the peculiar human lifeworld, but that more abstract kinds of iconicity may stand a greater chance of given rise to messages going beyond the peculiar human lifeworld.

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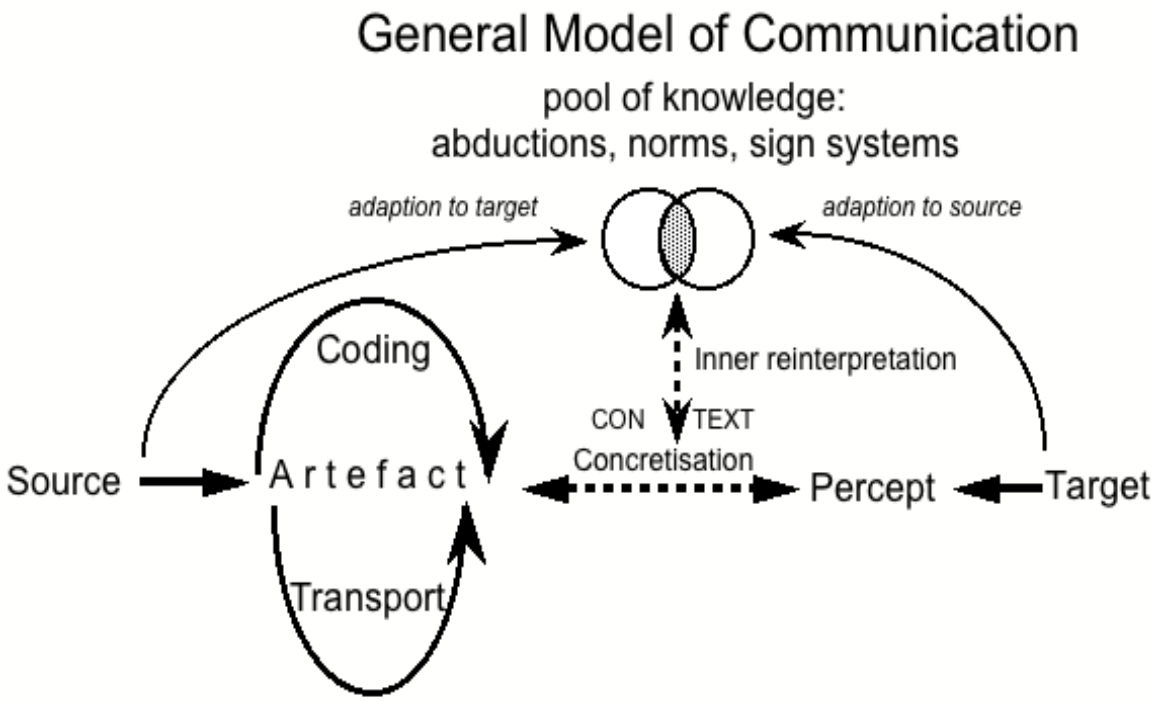

Fig. 1. General model of communication

Cros's Method		Nieman and Nieman's Method	
Series 1	11	Series 1	. . . . .
Series 2	5,1,5	Series 2	. . . . .
Series 3	4,3,4	Series 3	. . . . .
Series 4	3,5,3	Series 4	. . . . .
Series 5	2,7,2	Series 5	. . . . .
Series 6	1,9,1	Series 6	. . . . .
Series 7	2,7,2	Series 7	. . . . .
Series 8	3,5,3	Series 8	. . . . .
Series 9	4,3,4	Series 9	. . . . .
Series 10	5,1,5	Series 10	. . . . .
Series 11	11	Series 11	. . . . .

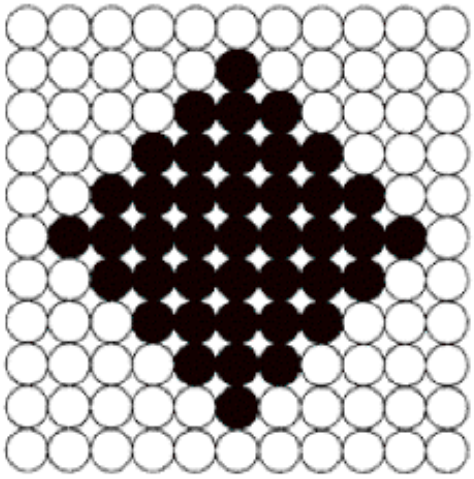

Fig. 2 Cros' och the Niemans' method and the resulting picture (according to VACOCH 1999. Reproduced with permission form the author)

3a

3b

Fig. 3 The result of construction Drake's pictures (3a) (according to VACOCH 1999. Reproduced with permission form the author); and the same picture turned upside down (3b)

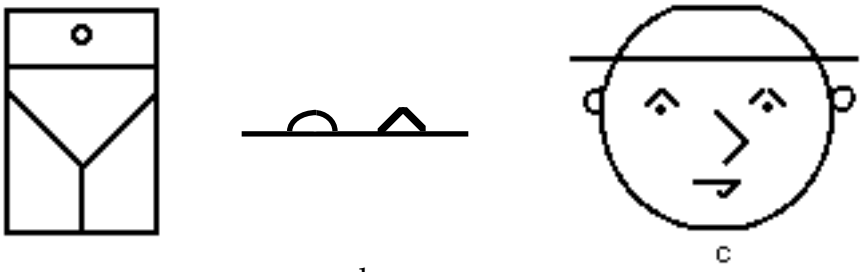

Fig. 4. Two droodles and a picture which can be read as a droodle: a) Olive dropping into Martini glass or Close-up of girl in scanty bathing suit (inspired from Arnheim as adapted in SONESSON 1989). b) Carraci's key (Mason behind wall); c) face or jar (inspired by HERMERÉN 1983:101);