Prometheus in Hell
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"It would seem that for most of us, most of the time, communication depends on more than words." [Winterson]

Technology and Art — Prospects

When in 1946 — the inferno that had been the Second World War drastically before his eyes — Albert Camus wrote his short essay Prometheus in Hell, the Internet did not yet exist. What did however exist was the desire for a new future for mankind, for communication across all borders, for peaceful co-operation instead of instrumentalized, machine-guided conflict. There was an attempt to recall traditional human values.

Camus used Prometheus, for whom it was characteristic "that he could not separate the machine from art" as a symbol of humanity and civilization. Prometheus believes in "the simultaneous liberation of the body and the soul."

In the following, I should like to attempt to discuss what chances there are for mankind's cultural evolution against the background of possible global

information processing and networking in the light of the theme of the symposium, which I interpret in Camus' words: "… will we have the strength to make the heather bloom?"

If we stick to purely technological, instrumental information transmission, then the chances of adapting the "human being" system to a new environment will be reduced. We will be limited in our scope and pattern of reactions and will not be flexible enough to react to complete change in our surroundings — Prometheus will remain in hell, and the heather will die.

The connection between [computer] technology and art concedes a special place to art. With means that differ from those of philosophy but aim at the same purpose, art makes it possible to reflect humanity when dealing with our knowledge, and thus enables a new evolutionary advance in communicating knowledge that cannot be verbalised. Through experiencing art, through the moment of opening ourselves for new insights, we manage to implant things and relate to them, a different way of reflecting everyday life. Art liberates the soul. Yet what happens to the body?

For a liberation of body and soul we need to reflect philosophically as well as artistically on what happens when knowledge is communicated, how this communication can be successful and what will enable us to break through the barrier of the purely verbal transmission of knowledge, and enrich its non-verbal contents.

I will therefore attempt to show that the idea of a cultural evolution as a feature of "complex adaptive systems" [Gell-Mann] such as, for example, human beings, is based upon the idea of content-oriented [i.e. not merely genetic] conveyance of knowledge, while what we term net knowledge can only be transmitted through linguistic or multi-media channels. Put more optimistically this means that what is called factual knowledge can above all be passed on very quickly. We gain time for other things. New ways of conveying knowledge could thus be explored, since we no longer have to be bothered with simply transmitting facts.

What actually happens is that the instructions decisive for the use of factual knowledge are not always delivered with it or, at least, not always in an adequate form. This is often precisely what cannot easily be expressed and communicated in linguistic terms, because it is based upon special experience in applying knowledge.

The utopia I would like to depict would be a means of communication like the Internet that is able to convey, in a suitable form, not only facts but also instructions, not only formal but also content-oriented, genetic and memetic knowledge.

Biological and cultural evolution or genetics versus memesis

If we compare biological and cultural evolution, the decisive difference is that the genetic, i.e. internal transmission of information about the surroundings in which an organism lives and to which it has adapted is in general fairly slow. From the point of view of population genetics, it might even be detrimental to the individual.

By contrast, the cultural evolution represents a considerable speeding up of the transmission of survival-relevant information. The trick here is to "externalize" information, that is, to use signs which in certain situations comprise [useable] information. According to Wittgenstein, the meaning of a word is its use in the language. In the course of cultural evolution, various techniques for the transmission of information were developed which are [to a different extent in different cultures] based upon individual experiences and which reflect individual development. In a way, what has been created is external information ’genes’. Objectively speaking, each member of the culture has to learn how to handle these signs and how to use the information encoded in them.

If we look at the potential of the Internet as an extension of the cultural evolution, we have to remember that the ideas transmitted have to fall onto fertile ground. We already have to know something, already have to have a basis of experience of our own in order to understand the signs of others. When knowledge is passed on through learning, it is reassembled from ["knowledge"] bricks. The question now is, what can an evolutionistic point of view [Memesis] contribute to an understanding of the role of the Internet in further developing and improving our cultural evolution, for instance when a new phase of evolution may be initiated? What, if anything, can be better understood, described, and predicted in the development of a global information network through the Internet?

In a cultural evolution ideas are passed on for a better adaptation to the environment — yet they are not so much concrete ideas that can be passed on in a narrative, they are rather concept "cores". By analogy to the concept of the gene, Dawkins introduces the term ’meme’ as an element of cultural evolution. It is supposed to function in a way similar to the transmission of genetic material in a gene.

Concept cores have the advantage of enabling us to grasp different situations under one common facet [or one common function] and thus to adjust quickly to the situation — we are able to recognize a wheel, we have certain expectations about its functioning, yet in a different case we can replace it by rollers and move a heavy wardrobe that way. We have grasped the essence of the concept "wheel" — yet what is responsible for a successful communication of concept cores?

The real problem of cultural evolution lies in passing on experience. Knowledge has to be conveyed in such a way that it is useful in decisive situations. External [not genetically coded]

knowledge should also be open to correction [genetic knowledge can only be corrected in the long term, through mutation or by species becoming extinct]. It should be possible to avoid mistakes in the replication of knowledge through individual, collective or artistic reflection, though accidental mistakes can also be useful, at times.

Memesis and the global information network

"If you say to grown-ups, I have seen a very beautiful house with red tiles and geraniums in front of the window and pigeons on the roof … then they are unable to imagine this house. You have to tell them, I have seen a house worth a hundred thousand francs. Then they exclaim, Oh, how nice!"
[Antoine de Saint-Exupéry]

The real question is, how can we create new knowledge "within the other"? How can we convey new insight which does not immediately result or can be deduced from the prior background knowledge and its semantics/pragmatics?

As regards the potentials of the Internet, we have excessive expectations, anyway, since we also have false expectations as regards the information sciences which are its basis. Scientific results are hardly ever immediately action-guiding or descriptions of reality. They tend instead to serve more general understanding and explain how things hang together in our world.

If we balance a pole on our palm, we look at its tip to see how to react to keep it balanced. The tip replaces the whole and becomes a value for the system under observation. In a similar way, in science we use models — idealisations which replace reality — in order to manipulate reality with their help.

There is a tendency to pre-suppose a universal language and, in this context, a universal sense common to all for the transmission of factual knowledge in the hope of being able to communicate "everything" this way. Unfortunately, we are then bogged down in the misery from which Prometheus wanted to rescue us: "They saw without seeing, they heard without hearing, resembling creatures in a dream". If we want to understand verbalised knowledge, we basically have to know something already, we have to have a common background knowledge to grasp the communicated content and then be able to handle it in a meaningful way. If this knowledge is not to be reduced to a global minimum [universal average knowledge, thinking "in step"], we must be able to break through the lowest common denominator at least locally, to experience anew, to acquire additional knowledge and also to convey this new knowledge.

The Evolution of communication — possibilities and limitations of the Internet

"Art is for us a reality beyond now. An imaginative reality that we need. The reality of art is the reality of the imagination. The reality of art is not the reality of experience."
[Winterson]

The Internet achieves primarily an increase of speed in the transmission of factual knowledge. Basically, however, we are dealing with "signs" that are transmitted, and which receive their meaning only through interpretation [decoding] in a form, a world, a practice of living. By gaining time we create space, which could be used for the communication of potential interpretation of the transmitted signs in view of an evolutionary advance. Above all, we have to be concerned with creating tacit knowledge [Polanyi] in the recipient.

The advance of evolution here consists in a new way of creating and conveying information and knowledge offering better chances of survival for both the individual and the species.

Of course, we should not underestimate or belittle the value of factual knowledge. Yet we should not forget either that the Internet was originally developed for military reasons, and is therefore above all suited to the transmission of information that is essential for survival and easily communicated, and not of information that is creative and might improve the quality of living.

An evolutionary advance — the improvement of the quality of living — cannot therefore originate through the Internet, but only through a creative handling of the Internet. Art could achieve this improvement, since its reflective mission enables a novel arranging and assembling of facts in pictures, and thus communicates new ways of seeing things:

New ways of conveying knowledge — art and cyberspace

"It is the artists who must apprehend things fully, in their own right, communicating them not as symbols but as living realities with the power to move."
[Winterson]

The potential of the Internet is therefore not the mere use of communication technologies for a speedy transmission of information, but its potential to free us for the exploration of forms of communication able to convey that knowledge which cannot easily be made explicit through linguistic or even multi-media means. "Knowledge" is not identical with factual knowledge.

When passing on knowledge, we also have to consider how knowledge comes about and what experience is necessary for understanding it. In science, for example, it is very often important for results to be able to be reconstructed through controlled reproduction, yet the techniques of reproduction are not the techniques of the creation of knowledge, and certainly not those of discovery. It is the passing on of the latter, however, that is important, namely the passing on of new ways of seeing things.

And this is where art comes in. Through experiencing alienation of, or distance from, everyday objects, the contemplators can open themselves to new ways of seeing things and can become familiar with new facts. Art can create a connection between reason and emotion, which can lead to a mutual reflective correction, to a re-introduction of human values into technology.

If we analyse the technology of cyberspace, we have a superficial impression that it could create new ways to transmit information which could enable us to submerge in a different realm of experience that can open us in the same way as art. We have to keep in mind, however, that cyberspace technologies are simulations which relate to one or more chosen aspects of reality and thus create artificial model worlds in and through the computer.

Virtual presenters mean mega-achievement computers. Technical developments aim at creating all these images "in real time", i.e. we move our heads and the compuer calculates and generates the relevant picture on the monitor so quickly that we have the impression of looking round in a real room. It is important to point out here that virtually viewing Mount Everest is in principle no different from seeing a video-sequence. We can only watch those sections which are pre-selected — here on the basis of mathematical models. We can only admire those parts of Mount Everest that have been pre-determined in the sense of having been selected in the "realm of possibilities of mathematical representation." Our actual

activity as users is in reality restriced to the [mathematically] admissible. Since this is at first not noticeable, we have the impression of being entirely free, an impression that is enhanced by the fact that we can interactively remain with a certain perspective as long as we like. It is highly questionable, however, whether, in virtual reality, we can contemplate Mount Everest while standing on our heads, something that, given some acrobatic skills, we could easily do in the real world. Even if the simulations are improved so that we no longer notice or see through these illusions/deceptions, this does not change the principle of the situation.

The simplifications of cyberspace tempt us to replace real worlds with virtual worlds. At present, experiments take place with pilots who really fly with a data helmet. On their displays, they find a simplified "sunny" world which enables them to fly safely even if there is real fog. While at the moment, a co-pilot still sits next to the cyberpilot, who can look out of the window — only an advantage if the weather is nice —, this basic safety-net will in future no longer exist.

The world is turning into cyberspace — we project our theories onto reality. It is therefore quite probable that we will not even think in terms of wanting to contemplate Mount Everest while standing on our heads. The world will be replaced by technical gadgets. In contrast to this, art does not attempt "to imitate life but to anticipate it" [Winterson].

Language, Information and Reality — ways of communicating facts and knowledge

"Communication between you and me relies on assumptions, associations, communalities and the kind of agreed shorthand, which no one could precisely define but which everyone would admit exists. That is one reason why it is an effort to have a proper conversation in a foreign language. Even if I am quite fluent, even if I understand the dictionary definitions of words and phrases, I cannot rely on a shorthand with the other party, whose habit of mind is subtly different from my own. Nevertheless, all of us know of times when we have not been able to communicate in words a deep emotion and yet we know we have been understood."
[Winterson]

The following scheme is a simplified meta-represenation of communication unifying linguistic and non-linguistic elements, which above all takes into account that understanding has come about through the interpretation of signs via different components of background knowledge and considers the dynamics of conveying knowledge and changes of meaning. "Knowledge" [e.g. implicit knowledge] results from the mutual relationships of the different components of background knowledge."Knowledge" reveals itself in the handling of knowledge. "Knowledge" emerges through the relations of things to each other."Knowledge" mediates between language and reality, defines the handling of linguistically encoded information and determines how language relates with reality.

If we communicate knowledge, we have to consider the multiple background knowledge of the recipient in its multiplicity [cf. the components E, F, K, M in the scheme above]. If we want to communicate the transition of a state P into a new state Q [in the world, in an attitude, in understanding, in knowledge] or want to make it explicit or even create it [in the recipient], we have to be clear about the means of representation R [e.g. language] used and we also have to clarify through which components of background knowledge the signs in R are related to sections of the world W. The transition from P to Q is reflected linguistically and therefore also in communicating the acceptance of the transition of p to q, i.e. it is reflected in the admission of the relationship of those signs which are assigned to the [more or less real] state-transitions P and Q in the realm of representation D. This acceptance in the realm of representation can be emphasized by a deliberate change of relevant components of the background knowledge responsible, in the last resort, for approval and the endowment with

meaning. Whether we actually accept and therefore successfully communicate knowledge [especially when dealing with creating and conveying new views, frames of reference etc.] depends on the interplay of the respective components of our background knowledge. Here, the relationship between theoretical knowledge T [selected general knowledge A, cf. the left side of the x-axis] and vernacular knowledge V [common sense knowledge C, cf. the right side of the x-axis] is decisive, since it determines the fine-tuning of new and old knowledge in the concretely chosen area B [as section of world/reality, lower part of the y-axis] and the representation D [as specially chosen representation, upper part of the y-axis]. Value-judgments or general ethical considerations, human values and aims in handling new "knowledge" are accepted and influence the handling of knowledge and information via the background knowledge.

… will we have the strength to make the heather bloom?

According to Camus, "Prometheus was the hero who loved Man sufficiently to give him fire and freedom, technology and art at the same time."

Today, mankind believes "only in technology. In their machines they discover their strengths and regard art and its demands as an obstacle and a sign of bondage. For Prometheus, however, it is characteristic that he cannot separate the machine from art. […] Mankind today believes that it has to free the body first, even if the spirit — temporarily — perishes. Yet can the spirit perish temporarily only?"

The myth of Prometheus may serve to re-mind us of the fact "that any restriction of Man can only be temporary, and that one can only serve Man if one serves fully. If he hungers after bread and after heather, and it is true that bread is more necessary, we shall teach him to preserve the memories of heather […] And it is this admirable will [of Prometheus] to part nothing and to separate nothing, which has again and again consoled the suffering heart of mankind."

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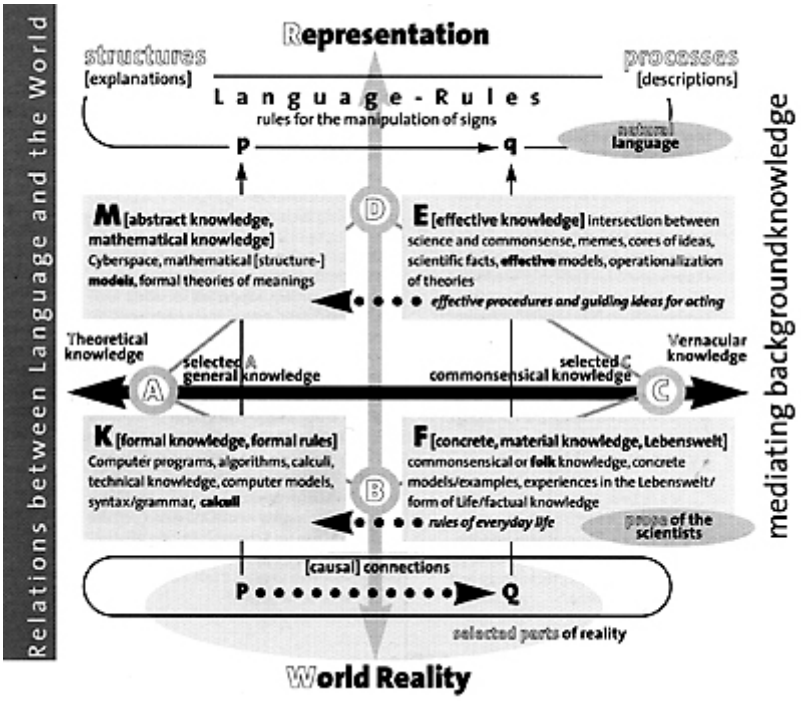
Relations between Language and the World
Representation
structures
[explanations]
processes
[descriptions]
Language-Rules
rules for the manipulation of signs
P
q
natural language
M [abstract knowledge, mathematical knowledge]
Cyberspace, mathematical [structure-] models, formal theories of meanings
D
E [effective knowledge] intersection between science and commonsense, memes, cores of ideas, scientific facts, effective models, operationalization of theories
effective procedures and guiding ideas for acting
Theoretical knowledge
selected A general knowledge
A
commonsensical knowledge
selected C
C
Vernacular knowledge
K [formal knowledge, formal rules]
Computer programs, algorithms, calculi, technical knowledge, computer models, syntax/grammar, calculi
B
F [concrete, material knowledge, Lebenswelt]
commonsensical or folk knowledge, concrete models/examples, experiences in the Lebenswelt/ form of Life/factual knowledge
rules of everyday life
praxis of the scientists
[causal] connections
P
Q
selected parts of reality
World Reality
mediating backgroundknowledge