

# Does the computer change our perception of reality?

By Luc Sala

Mind, data, experience, sensed experience, information and Computer

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The interaction between the computer and its user/victim takes place on many levels. In modern society even morality has become computerized, your parking ticket, bank statement or the result of an HIV test reaches us as a computer printout. The question I am interested in is whether we overlook or dismiss some of the interactions, specifically the psychological interplay between the silicon and carbon entities. I will ask more questions here than I answer; this is mostly uncharted territory.

## Computer and mankind

When we look into the subject of (the individual) mind and computer, we first have to start looking into man(kind) and computer. There are various theories about how far the computer is influencing our daily life and the way we work. We can mention Wiener, Polak, McLuhan, Rucker, Roszak, Simon, Huxley, Leary and a host of SciFi writers. The computer is described as an eye opener, as the generator of the data-cloud (J.Lanier), as reducing us to data that fit the model, as the democratising force restoring individual choice (Leary), as the next best thing to sliced bread. Joseph Weizenbaum (MIT) of 'Eliza' fame has described the computer as a solution in search of problems.

The metaphore of choice in the recent past was to compare the brain and even the mind to a computer. In return the human biocomputer (Lilly) became programmable and we designed computers that work the way we supposed we think (AI) and neurons work (Neural networks).

Obviously computers have brought along major changes in our society and in the way we perform our daily jobs.

I do, however, doubt the depth of these changes, in any case as yet. Because I am a journalist and writer, the computer has, at the surface, definitely changed my way of working and the way my company produces books and magazines. For a while, it has made the step from fingers to typeset text a lot easier. But lately I am beginning to think that the process of creating text is and has actually been more of a process that takes place inside my mind. The getting it out onto paper, onto a screen, and then

process it, lay it out and give it a reasonable form, is more of a mechanical action. I still type with two fingers, having tried the better keyboards and such, so the flow from my grey matter to real words and vice versa seems limited to some ten of bytes per second under normal circumstances. This doesn't mean the computer hasn't changed me or my work, I just don't know in which direction and how much we mix up efficiency and effectiveness.

But anyway, the computer and information processing (I would rather stick to data-processing) has a major influence on the way we have organised society: financial matters, where we work, how we work, and even how we relate to other people. Once we realise that the telephone network is the world's largest computer, that banks and money are now largely electronic entities, we begin to feel how much 'silicon' there is in our lives, that the 'datasphere' has become a major part of it.

## **Mind and computer**

Let's now go to a seemingly more tangible interface, the interface between the individual mind and the computer. The hardware-software-user triangle offers food for thought. Is that a good model or do we have to bring in information and space? How far have we designed the computer as an analogon to our biocomputer of a body, brain and spirit? For sure there is hardware and programming, but who is in the driver's seat? And this concept of volatile and fixed, of RAM and ROM memory, do we keep our archetypes in ROM or are they erasable <196> and by what means? You can be sure that mystics like G. Gurdieff would have loved to play with this comparison. I like Timothy Leary's bold statement 'We should exchange Einstein's  $E=MC^2$  by  $I=MC^2$  where I equals Information'.

Claude Shannon of Bell Labs has defined a mathematical framework for communications and information theory. His approach is extremely important, but has also obscured the practical and psychological issues of information. His definition and use of the word information was rather technical and quantitative, taking it away from its common usage as related to data and statements. Highly praised by the scientific and computer community, I feel that it has also obscured the issue. Bits, noise, entropy, channel, his ideas centered around technical transmission but had little to do with meaning or people as the ultimate communicators. Message, data and information got all mixed up, making the word information into an all-purpose stopgap, a godword.

## **Gestalt and Information**

The Persona or Gestalt that the user assigns or recognises in the computer is that a father, a child, a friend, God, an enemy, slave or lover? Probably all different things for different people at different times. Users and even more programmers at times make strong statements about their systems, giving them pet-names and spending more time with them than with human partners. One day soon perhaps we will be able to do therapy with a monitor instead of a pillow.

We value our systems, our programs and our data, beyond reason. Did you ever lose a text to the electronic erase devil and feel like having been robbed of something very precious? Of course most of the time we mistakenly take data for information, and

information for knowledge, and that for intelligence and then even equate that to wisdom. These things are magnitudes apart.

`Information to the power of information is consciousness' (R.Rucker)

The computerworld now realises that between hardware-software-data-information there are tenfold steps in costs, but how compares the cost(!) of wisdom to the cost of a megabyte chip? I like Jaron Lanier's "Information is alienated experience" koan in this respect. That brings information back to the human aspects, and points at the philosophical interpretation, but in line with Shannon's ideas. If information is the stuff we store because we can't cope with it, because we don't experience the isness of the situation, could we then say?: `The information content of a human is the number of questions we have to ask in order to bring him to self-realization". For the esoteric among us, is this a way to express Karma as information content? I personally think that leaving out the inner experiences as information is too limiting, I like to say : **`Information is censored experience'**, playing with the words censor and sensor, indicating the sensitized and activated experience as the source and then see (human) life as the quest for resensitizing ourselves, opening us up for the real information. Information is mediated, sensitized and activated experience, it is thus `coded' experience and this differs slightly from Jaron Lanier's `Information is alienated experience' mentioned above. Although it is an interesting and far-reaching idea to look at what experience does to us, I think it goes too far to write off the non-alienated (and what about the inner) experience as not changing us and thus as non-information. Otherwise we could equate information with karma only in its negative, alienating meaning.

The concept of non-information borders more on the socratic questions of `true courage'. He who ventures into the really unknown, into the non-information void, displays true courage. That is the letting go that can bring us true freedom. But what to think of "Information is being told, knowledge can be acquired by thinking. New knowledge can be acquired without new information being received." (Fritz Machlup). Again knowledge, information and experience mixed up?

Experience in the `empiricist' (Bacon) tradition looks like information, the data that tell us about the world out-there. We know now, that the `objective' experimenter is as much part of his subject as the thing itself. Another way to describe experience is as "the stream of life and consciousness. The raw material from which moral, metaphysical, and religious ideas are fashioned by the mind in search of meaning." (Roszak). Even then information is not yet intelligence, as "the mind thinks with ideas, not with information," as Roszak stated, "and the relationship between the two is generalization, while ideas (and knowledge) are integrating patterns. They order the wild flux of experience as it streams through us in the course of life. There is the interplay between experience, memory, and ideas, which is the basis of all thought.

The shape of memory is quite simply the shape of our lives; it is the self-portrait we paint from all we have experienced."

The relationship between archetypes or `master ideas' and information is that they are not based on information whatever, according to Roszak.

## **Human Information Processing**

Data only becomes information if it changes something. Information then is more than a technical concept as in Shannon's work, it has to do with the distinction between intelligent and non-intelligent data processing. For the moment we assume that information processing is related to consciousness and/or intelligence, so basically a human thing. This goes further than Gregory Bateson's 'A bit is a difference that makes a difference'. Although that's a cute line, it actually doesn't help very much in distinguishing between data and information.

One of the main distinctions we thus could and should make in discussing information is the one between data and information, even within the human system. Somewhere between our sensory input and the storage as information the data become information. There are intermediate stages, maybe we could use the word 'Token' there, as thoughts, ideas and memes are already fairly complex.

One model to look at this is to assume, that data enters our sensory system, is filtered by active and adaptive processes that even influence the data we allow to enter via our senses. In the brain it then passes through interpretative systems, where some kind of representation of the outside reality is necessary to decode and further encode the data for further storage. Once it is stored it is information, as it then changed something in our system. When and how exactly this happens is not easy to define, but according to this also much data is stored as information that we will normally never use again, but can be retrieved given special exercises or drugs.

With the idea of the left and right brain hemispheres is mind, we can see the data coming in at the left, magical side, turn into information somewhere down in the left hemisphere. The right hemisphere doesn't use much new data, but mostly internally reprocesses existing information, the mystical side of the brain. Bergson already divided knowledge in the speculative 'intuitive' and the generalising 'intelligent' parts.

## **The dimensions of information**

Although this is speculative, I think we have to define information as multi-dimensional. It seems to have a dimension related to the hit, the dynamic aspect that relates to change, to the becoming. Another dimension is the being, this relates to the static knowledge and even the esthetic aspects, the beauty. The link with left and right brain hemisphere is obvious. Is time a third dimension, or is it part of the dynamic dimension of information.

## **Robot fears**

Automation, computers and robots do touch us at the existential Golem level. Karl Capek in his play R.U.R in the twenties used the word Robot for the first time and gave it a slave-like image. We now feel at times threatened by the idea that computers could replace humans at work, and could perform better at things we consider our proper domain. However, it seems that most people now accept that the computer is a tool like other tools.

The problem is that the tool is more powerful and active in other areas than we think. I expect that in the next century we will look back at these days and wonder why people would use computers only for administrative and technical data. We will be looked

upon as the `Stone-age' of informatics, and I have a hunch that the psycho-active applications of the computers are the way to go.

The irony about the computer industry is now that one accepts that Artificial Intelligence is kind of too far out. According to the experts we should now be concerned with `Artificial Life' in the wake of Cellular Automata and Fractals.

## **Language and imagination**

An important computer influence is the linguistic. We use different words, different ideas and different concepts, and in relation to that a different language, not only with the computer, but in our human non-computer relationships, so that, because of the computer, many people will argue that the computer influences the way we think, and how we build and construct the world in our mind. The linguistic aspect of the computer comes through on many levels. We commonly use words like "backup" and "save" and "connect" or "portability" or "compatibility" now for situations that are only vaguely related to the computer. Slowly our concepts of mind and brains have been invaded by words like programming, metaprogramming, and other computer related concepts, we talk about the body as the human system and try to explain it as a machine. Although we now, that these are symbolic, we tend to mix up the map and the landscape, the language has become a barrier to the real experience, to the non-symbolic knowing of things. Again Jaron Lanier points at the importance of Virtual Reality technology to bring us back to non- symbolic awareness of our environment.

## **Digital black and white morals**

On another level there is the idea of digital thinking. Because the computer tends to work in either black or white, yes or no, and when we are programming, we have to work with definite choices, branches and menus. It forces our thinking into the same digital patterns. One might say that we lose the gray shades in our thinking. And for sure, when you talk to a programmer, you will find his way of expressing himself a little bit rude, slightly digital: yes and no. Something works, or it doesn't. Something is good, or bad. Digital thinking can be compared to science or Newtonian reasoning. Cause and effect are clear. Everything obeys clearly stated laws. And if it doesn't, it is because we haven't discovered the appropriate laws yet.

If the computer is to counteract this, it has to become less `digital' and about `non-digital' applications like music, art, psychology, even magic and religion. We have to move away from this filtering influence of the computer on our perception, allow more flexibility, less connection with the hard numbers and letters of the `paper' culture.

Of course we know that in the `new physics' the Newtonian certainty is somewhat tarnished. Uncertainty and chaos are the new buzz words of the mathematicians and physicists.

## **Visual**

A further level of linguistic influence is when we realise that the computer is allowing us more and more communication in graphic and visual forms. Symbolism sneaks in

the back door via our `icon' user interfaces. As computer columnist and SciFi writer Jerry Pournelle said: "We reduce Shakespeare's language to 16 icons on a screen, going back to the Stone Age."

In this respect, the rather new concept of "virtual reality" is a good example. In virtual reality, with the help of stereoscopic screens before our eyes and a VPL DataGlove (TM) or DataSuit (tm)for interfacing, we can enter spaces that only exist in the memory of the computer and in the eye of the beholder.

## **Other realities**

This virtual reality, or cyberspace, is still mostly in the laboratory stage, but we will see real products on the market soon. For instance, for computer games there are already stereoscopic devices available, and there a number of software approaches to create such alternate realities. The impact of this will be tremendous. People will be able to travel, to meet other people, to communicate, to have sex, and what not in this virtual reality. The point here is that according to Jaron Lanier of VPL, one of the pioneers of virtual reality, this technology will alter the way we think, because it will alter the way we create reality in our mind. The next step will be that our changed thought will change the `outside' reality in its turn. The freedom that virtual reality will give us to transcend the limitations of the physical world will help the "cybernauts" to become conscious of the way they perceive reality. New realities, new thinking, new semantics, and then a different view of normal reality. One example is that if people can be trained to see four dimensional space constructions, and with some computer programs we can already do that, it becomes easier to them to think in multidimensional space and develop mathematical tools for those spaces. The hallucinogenic potential of virtual reality has already been recognised and Tim Leary speaks about "LSD by Computer." The user is fooled by the system, our senses pick up data that makes one transcend ordinary reality. Psychotherapeutic applications can't be far off then.

The computer is - or rather will be - very versatile, flexible and not limited to either text, images, speech, linearity or even logic but can be the controlling entity to mix and match these, with optimizing feedback and even productive `irritation'. If one accepts, with Bergson and Huxley, that our senses are limiting and shielding us off from outside data and stimuli, and the various `paths' are but resensitizing its follower, what a great tool to explore this resensitizing across all media and senses.

## **The other self**

Although it is not widely observed, it is clear that the computer has a notable psychological impact on its user. We can call that hypnotic, or even self-hypnotic, but there are certainly computer addicts. Sherry Turkle, in her book "The Second Self", describes a number of cases where people got really consumed by their relationship with the computer. It's also observable that some computer interfaces tend to bring about a bonding process between the user and the computer. The Apple Mac interface with its so-called userfriendliness is in fact rather addictive. Many people who have used it will close themselves off from other approaches and this will even affect their social life. Of course the true Mac user will say that it was indeed the interface that

converted them to the computer in the first place, otherwise they wouldn't have jumped. The Macintosh user community has a strong tendency to divide between us and them, the Mac religion is quite unforgiving. The machine was originally even marketed as the machine for "the rest of us" with lots of symbolism and references to totalitarian systems, but Apple itself has become rather 'corporate'.

## **Self-hypnosis**

I have in the past described so-called productivity-software as being hypnotic or self-hypnotic, and a way in which the user gets indoctrinated by the organization and business ideas that lie behind the software.

If the software is made with strong hierarchy and procedures in mind, this will reflect in the program organisation and thus in the way people will work with the program. A good or bad example of this is the spreadsheet which has actually led to a whole rigid culture of business analysis in the US. Instead of instinctive analysis one relies upon the numbers and statistical projections and sometimes loses track of the reality behind the numbers. Two speculative numbers always lead to real numbers, as John P. Barlow likes to say.

Now this is accepted as part of the 'normal' influence that the computer has on the user by way of the software. We can say that the software is made by some programmer and that the computer is just a medium to transfer the ideas and hidden or even unintended meanings of the maker of the software to the user. So there are no bad computers or bad programs, but just bad programmers. But if the human mind is behind it all, what about the programmer himself, didn't he pick up some hints from the 'conscious' silicon? (Strangely enough, there are no reports of 'automatic' software mediums, someone should really tune in to Lady Ada Lovelace.)

## **Brains and computer**

On the other hand, coming back to our idea of a digital worldview, the computer itself forms and limits the message. Even without resorting to Marshall MacLuhan's ideas we can see that the computer in itself is a message. By way of our eyes and fingers our brains interact with the machine and the software concepts. Can we ignore the fact that sitting in front of a screen which blinks with a 30 to 50 Herz frequency can be compared to what brain-machines are supposed to do? And what about electromagnetic fields influencing our brain-patterns, generated by a computer next to us.

We can briefly touch here the subject of the user influencing the computer. Of course, someone who programs a computer or works with any program, will have an influence on what comes out of the machine, but this is rather obvious, and enough has been said about it.

## **The direct link**

I want to go one step deeper and that is: does the mind/brains of someone working with the computer directly interact with the machine in front of it? Bill Gibson

describes (in his 'Neuromancer' SciFi novel) such an interface, but does that bear on reality? Apart from various brain-wave sensors and implanted chips, like Kevin Kelly suggests, could we directly influence the processes in the semi-conductor material, on the quantum level?

Is there a way that the carbon mind already interacts with the silicon chips? The fascination of some hackers with their other ego in front of them makes one wonder and many of them confess that at times mysterious things happened, programs would suddenly run or not run without any conscious changes. The ultimate computervirus would be mind-induced. Now, even if we don't believe in mind-over-matter, one could say that if there is such a thing, then it would not be unlikely that it will happen on the quantum-level. And the tender balance in semi-conductor devices is very close to that. Isn't that a paradox, relating to the otherworld by computer. But then, Mother Earth's outer skin is mostly silicon!

The practical application of this, a so called quantum-coprocessor subsystem, has yet to surface. At present we can do no better than to exploit synchronicity with I-Ching remakes on the PC.

## **Psychology and computer**

The state of the art in psychological computer applications is pretty disappointing, as far as I am aware off. Apart from myriads of statistical analysis stuff and a few psycho-analytical programs and some management development programs, there is very little psycho-active or therapeutic software. Since Eliza, only Racter has attempted to put up any conversation. But maybe there is more? A few Companies like Mindware in the US and Egosoft here in Amsterdam (fax 31- 20-6253280) have small catalogs of psychological software available.

My personal fascination with information is because it is so close to control. Knowledge is Power, but information is knowledge made active. Looking for the fabric of reality, one cannot escape the link with information, consciousness and the role of spirit and mind. In my extrovert personality structure, oscillating between intuitive and mind obsessed states, control and power, with gut-anger as the fuel, play an important role. Exploring its impact on the world is then some kind of justification, trying to recognize its role in creation. I am defending my deepest urges, throughout my life a source of confusion for myself and others, trying to position my gut feelings and reactions on a continuum with some good/bad polarity.

Norbert Wiener said: "To live effectively is to live with adequate information. Thus communication and control belong to the essence of man's inner life, even as they belong to his life in society."

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Modern Koan:

**Between me and the computer  
there is but God to enjoy**

I would like to end with the creed of the Silicon Brotherhood, that most esoteric Cyberage otherhood:

## **"We acknowledge the Silicon path"**

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*Literature: Theodore Roszak The Cult of Information '86 Random House/Pantheon NY In this book Roszak tries to unravel our new 'Information' religion and its philosophical roots and warns against overestimating the computer and our hi-tech society. It is a critique of the computers in our lives, a warning not to forget our humanity, without dismissing the computer as worthless. He feels that the emphasis on the Information Age, especially its (hidden) influence on the educational system, could distort the meaning of thought itself, turning us into the robots and mindless computers we work with. He fights the notion that the brain operates like a computer and that the mind itself thus can or should be modelled after the machine. Procedural thinking like in Papert's 'LOGO' is clever or smart, but limiting. He writes about the alienation caused by computers and information processing and is rather critical of 'The information age' and its prophets like Toffler and Marvin Minsky. Rudy Rucker Ilya Prigogine Herbert Simon Michael Talbot Mysticism and the new Physics, '81 RKP London. Norbert Wiener Cybernetics '48 Houghton Mifflin Boston Fritz Machlup Study of Information '83 Wiley NY.*