

SIGNS OF EXFORMATION SYSTEMS

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Abstract

The paper presents the hypothesis that creation of information is only one side of inquiry. The creation of exformation as the context, the history, and the process behind the creation of the end-product of inquiry - information - must be paid just as much attention. The paper goes on to examine the signs for the need for exformation systems in exploring the possibilities for an ethical global information society. It challenges the design effort and design processes in designing information systems and pleads for new approaches to the design of exformation systems. Finally it attempts to sketch three possible approaches for the design and exploration of exformation systems.

1. OUTLINE

In a story on a picture called 'The Yellow Ticket' the Danish Painter, Immanuel Ibsen, tried to convey to himself and to the public the essence of the colour yellow. It was to be found in a yellow bus-ticket, which he saw lying on the pavement in a frame of grey and rainy stones. Only this much of non-yellow, contrasting frame could produce that particular colour yellow. When he came home he tried to paint a yellow table against a wall. But he did not succeed. As he remarks, there simply wasn't enough grey in the room. This particular colour yellow couldn't be produced without the context of massive greyness. Only the tension among colours gives them their value.

In a similar attempt one may imagine J.M.W. Turner standing alert on a table, just before the exhibition opening on varnishing day, in order to convey to himself and the public the impression of something not yet conveyed, not yet formulated, not yet put to the canvas, to the picture. Maybe not yet framed.

He is still working, not satisfied. May be he won't even succeed in time. But - on the other hand - does it matter? The attempt was made, the possibility is still there! Or, it may be gone forever.

This is what exformation is all about: to remember, to experience, to convey between minds the essence of things, colours, ideas, senses, qualities. In short: exformation is about the stories and processes in inquiry behind the product of inquiry: information.

2. A SHORT STORY OF THE CONCEPT INFORMATION

When Claude Shannon at the Bell Laboratories suggested the term 'information' as a measure of the capacity for transmission of signals in a telephone line, it was in a sort of competition with the concept indetermination. Information - bringing form/order into something. Information was accepted as being the term used in the Bell laboratories.

But since then it has not been used according to its original meaning. No, as we all are aware today, it has become a concept of wide ranging importance for the future thinking of mankind. Nowadays terms like 'Information Highway', 'Global Information Society', 'Design of Information Systems', 'Information Resources', etc. etc. flourish and seem unavoidable in any political and important debate on the future of the world.

Very much capital, as well as practical and intellectual effort, has been put into the design of effective information systems for leadership, management, government, society, the citizens, companies, public authorities, NGOs, universities. etc. The human use of human artifacts like the computer (or

ICT) has become paramount for 'The Ethical Global Information Society' or 'An Ethical Global Information'.

We are in a process of refining these efforts into being part of an effort to revise culture and democracy: in short in a process of using the concept of 'An/The Ethical Global Information System' as paramount for the 'Human Use of Human Beings' as was envisioned by Norbert Wiener in the late 1940s. He later warned strongly against this kind of letting the Djin out of the bottle in his book, *God and Golem*. Or as it has been put by Samuel Butler: "The Servant glides by imperceptible means into the Master".

During the latest 30 years these warnings has been put forward in various settings: at conferences, in books, in articles, even in public demonstrations. But little, if any, effect can be noticed. The debate on 'Society and Computers' and the different working groups in IFIP TC-9 may be said to have had some impact on the rest of IFIP and thereby on political decisions on ICT. Provided, of course, that IFIP has any influence and/or importance in society.

But honestly speaking, the effects may be noticed, but can they be spotted or accounted for in the overall picture. Can they indeed be the essence of the 'Global Information Society' as being culturally and democratically 'An Ethical Society'?

Has the painter of 'An/The Global Information Society' succeeded in bringing his/her essential thoughts to the 'public mind', or even to the politicians minds? Is he/she still trying? Or has the work been done? Who is to decide? Who may decide?

3. INFORMATION AND EXFORMATION

It must be remembered that the original meaning of the term 'information' was intended for a very specific situation. And that that situation in which it can be used as a measure of the performance or effectiveness of the telecommunication system must account for:

- (1) insecurity and noise in transmitting signals, in the transmission channel, in the source and in the receiver;
- (2) the context in which the measurement and the communication is taking place;
- (3) what we mean by order and/or disorder.

As this is put by Tor Nørretranders (*Mærk Verden*, 1991, p. 84):

"Information is defined only when we know the context, when we describe which macro- and micro conditions, we talk about. Information is only defined when we explain what we mean by order."

Thereby the concept of information is related to concepts of order and disorder. At the same time we identify elements of chance and probability. Furthermore it is impossible to tell what information is in a statement before we know what the receiver has been doing in his or her interpretation of that information.

One may even suggest that it is a necessity to draw the receiver's lifestyle, education, habits, job, values, etc. into account before one can account for the information received. At the other end of the communication channel one may have to account for all the work and effort done in order to produce the particular statement, send it, taking into account noises, channel capacity, the receiver and the receiver's intentions, etc.

According to Tor Nørretranders (1991), Charles Bennett in 1985 argued that the value of and meaning in a message (or technically speaking: complexity) can be found in the work done in producing that message and not in the product. The value and meaning is measured by the work that the receiver may be spared for carrying out. The 'information' thrown away in the process is of greater importance than the 'information' resulting from the process.

In the words of Nørretranders (1991, p. 112):

"Bennett's concept points to the fact, that complexity is something, which requires time to be created. Time in which order is created. Time in which information is thrown away, so there is less to control."

That "information thrown away" or that "information not (yet) accounted for" may be called *exformation*. Again in the words of Nørretranders (1991, p. 131):

"Exformation is the history of a statement, information is the product of history. Both are meaningless without each other - information without exformation is empty talk; exformation without information is not exformation, but only thrown away information."

One example is the use of 'burn ointment', which was standard equipment in any emergency box a generation ago. This being the case even though any baker, any blacksmith, any sailor would know with certainty that the best methods for helping burns was de-cooling. But they had no way of telling the authorities of their knowledge. "Put the finger in the flour" was a shout that did not convey any meaning to the authorities - the doctors - even though they had the responsibility for treating burns. However that shout meant a lot to the baker.

4. DESIGN OF INFORMATION SYSTEMS - REVISITED

Maybe the effort, as patiently as it may have been carried out, in the design of information systems is simply fundamentally wrong. Or just as painful to accept: the effort has been successful, but part of the essence has been missing all the time. Simply because the focus is on the wrong picture, on the wrong spot in the picture. Or maybe the essence is outside the frame of the picture so carefully painted.

The designer - painter or not, artist or not - is doing his best, the public is doing its best to understand, everybody is doing whatever they can to design

and paint in beautiful colours *The Ethical Global Information System*. They even discuss what ethics might turn out to in a power-free dialogue among equals and unequals all over the world. We may argue and state: "We haven't reached *The Ethical Global Information System* but surely, we are heading for it".

But as imagined by C. West Churchman (1971, p. 199):

"The spirit of the Hegelian inquiring system on which Singer built his theory of inquiry says that when all is going well, and data and hypothesis are mutually compatible, then is the time to rock the boat, upset the apple cart, encourage revolution and dissent. Professors with well-established theories should encourage their students to attack them with equally plausible counter-theories. This is the only pathway to reality: whenever we are confident that we have grasped reality, then begins the new adventure to reveal our illusion and put us back again in the black forest."

What may put us back into the black forest? My suggestion is to look first for the signs of exformation systems! And then to investigate and explore the possibility for the (Re-)Design of Exformation Systems.

5. SIGNS FOR EXFORMATION SYSTEMS

As a starting point we may learn one more lesson from Churchman's interpretation of Singer. He uses the term 'Design of Inquiring Systems', not 'Information Systems' and not 'Exformation Systems'. But maybe, and I would believe that to be the case, 'Inquiring Systems' contains both 'Information' and 'Exformation Systems', provided we speak of Churchmanian-Singerian Inquiring Systems.

So a first sign may be to look for historical meanings of Inquiry as this has been done in Churchman's and Singer's life-long search for not drawing conclusions on his philosophical speculations on systems design.

As Churchman puts it in his attempt to describe the 'sweeping-in-process', using physical measurement of the length of a rod as an example (Churchman 1971 p. 196-7).

"At this point (also in this paper, authors remark), those who hold precision and certainty as high values of the inquiring system may feel that the whole foundation has slipped. Once the measuring system engages in the game of adjusting imagery, and hence data, to "save" its view of the world, all fundamental control seems to be lost: there is no ultimate court of appeal. One has only to recall the very flexible and subtle strategies open to the Ptolemaic geocentric theory to see how far this game can be extended.

"But such a reaction arises out of the kind of parsimony that no longer is suitable as a criterion for the design of inquiring systems. The parsimony is based on the erroneous theory that authority or authorization is essential to design. The word "authority" derives from the concept of leadership, a component of the system to which one can turn when in doubt. It is similar to the concept of control, which implies that a component can observe and correct the behavior of the system. But Singerian inquiring systems have no such component. Put otherwise, authority and control are pervasive throughout the system and have no location; the system is controlled, but no component is the controller. The idea has already been mentioned several times under the labels "tactics" and "strategies"; a tactical decision assumes an authority while a strategic decision does not. Thus a Singerian inquiring system must encompass the whole breath of inquiry in its attempt to authorize and control its procedures."

This illustration of the sweeping-in-process in measurement both Churchman and Singer see as one of the best ways any inquirer can approach handling any question of importance. And we may add: a sweeping-in-process like this must be the essence of the ethics, culture and democracy of any global information society. And the only way we may keep track of that process is through exformation.

There is no rest, but only restlessness to be found in exformation. However the name Singer used for this kind of restlessness was 'contentment'. This may seem to be the opposite, but as Churchman (1971, p. 199) explains,

*"... contentment comes from Latin **continere**, to 'hold together'. The contented life is the complete life, made up of all those aspects of a life that make it meaningful. But to be restful is to establish oneself in only one sector of a life and to ignore the rest. So to be 'contented' is to be restless."*

Thereby the second and third sign shows itself easily. There is no authority to be found in exformation, even though there may be for information. And thirdly, there is no terminating point in exformation, even though this is certainly the case for information.

This does not mean that the Singerian sweeping-in-process is pointless, it is "... above all teleological, a grand teleology with an ethical base" (p. 200). However this brings out some interesting features of the language of exformation. In a slight transformation of the wording of Churchman (1971, p. 201), 'The language of exformation needs to convey both what has been learned and what has yet to be learned. This means again that the indicative mood of expression, such as in 'This apple is green', is reasonably capable of expressing what has been learned, but it is very poorly designed to express the unlearned.' And we may add the information left out in the learning process.

In place of "X is P", Singer therefore suggests something like, "The object observed is to be taken as having property P plus or minus e". The wording "taken to be" is a self imposed imperative of those people engaged in the communication. It is in fact an ethical judgement. As Churchman (1971, p. 202) puts it,

"That is the community judges that to accept its instruction is to bring about a suitable tactic and strategy in the grand teleological scheme. The acceptance may lead to social actions outside of inquiry, or to new kinds of inquiry, or whatever. Part of the community's judgment is concerned with the appropriateness of these actions form an ethical

*point of view. Hence the linguistic puzzle which bothered some empiricists - how the inquiring system can pass linguistically from "is" statements to "ought" statements - is no puzzle at all in the Singerian inquirer: the inquiring system speaks exclusively in the "ought", the "is" being only a convenient **façon de parler** when one wants to block out uncertainty in the discourse. As a computer programmer would say, the whole design is instructions, including the "database".*

We now can see the fourth sign of exformation systems: in exformation we only speak in the 'ought', in ethical judgement terms. The 'is' is only a way of speaking when we want to exclude as much uncertainty as possible.

But, how can we - whenever certain - sustain always being thrown back into the black forest? And at the same time always talking ethically in and for an unknown future. The sign is in our own mood: we are desperately in need of the heroic mood. But we must not only create knowledge by scientific methods as learned through history and explored for the future. Making knowledge must be seen as any other form of life. This man is making knowledge, this man is making love; both simply live out an existence.

This kind of exformation thinking must therefore be based on an understanding of mood, which might best be characterised as a complex of emotions which stems from man's history. No one has explored these complexes of emotions more than Carl Gustav Jung, Joseph Campbell and James Hillman — under different names like 'archetypes', 'collective unconsciousness', 'hero with a thousand faces', 'myth and adventure'.

The journey for exformation is much like the hero's or the heroine's journey in an adventure. We'll end this specific journey by depicting three such restless ways of making that journey: a masculine, a feminine and an androgynous. But in order to do that we have to pass two more signs: the need for networks and the need for frameworks.

One of the signs met before, nearly escaping our mind, was the distribution of control, power and authority in the exformation system. No one can be said today to hold the whole truth and nothing but the truth. Even though it might seem as if the power has been centralised, the ethical, cultural and

democratic urge is for freely distributed power for each individual to decide over his own destiny in cooperation with others: most profoundly stated politically in the world summits for sustainable development and the EU's call for Social Dialogue and The Social Dimension in political and practical decision making.

Finally there is the sign of the framework. Kant considered the frame of a painting as merely an external supplement. But Derrida has problematised that characterisation of the frame. He challenges this outside / inside polarity in his essay on *Parergon*, the title of which means 'by-work'. He says (see Duro 1996 p. 2),

"The parergon stands out both from the ergon (the work) and from the milieu, it stands out first of all like a figure on a ground. But it does not stand out like the work. The latter also stands out against the ground. The parergonal frame stands out against two grounds, but with respect to each of these two grounds, it emerges into the other. With respect to the work which can serve it as a ground, it merges into the wall, and then, gradually, into the general text. With respect to the ground which is the general text, it merges into the work which stands out against the general ground. There is always a form on the ground, but the parergon is as form which has as its traditional determination not that it stands out but that it disappears, buries itself, effaces itself, melts away at the moment it deploys its greatest energy."

Neither Kant nor Derrida saw the work of art as the only element for their thinking on frames and framing. They expanded their thinking outside aesthetics towards science, philosophy, ethics, religion. We take the liberty to do the same here in the following explorations.

6. RE-DESIGNING THE EXFORMATION SYSTEM

The signs are taken to be there in front of our eyes. But can we use them as a starting point for (re-)designing exformation systems? And how can we eventually get started? Can anyone participate, or do we have to wait for yet

another sign taking the form of a master mind? Churchman comments clearly on that question (1971, p. 204).

"It is very important to note that the hero's journey is not restricted to great men or semi-gods. The hero is in every one of us, and it is impossible to say whether a Newton or Theseus is a greater hero than the individual who risks his security in the quest for self-knowledge. To be sure, the heroic mood is often suppressed by other emotions and thoughts; to free it in every man is an ideal, the ideal of a unified decision maker, client, and designer."

But what about the question: is there progress or merely process? Can we create knowledge of reality or are we just the victims of an illusion? Churchman's response to that question on creating exformation is: it depends on where you are on your journey.

"If you are at home, in the status quo, there is a kind of quiet progress, an orderliness, cleanness, comfort, in which little discoveries here and there push back the decimal places and provide better ways of doing things. If you are on the road, then there is no progress, just change, which can be bright or dark, funny or sad, tragic or comic. The rules are gone, laws make no sense. If you are fighting the battle, or whatever the mission may be, you are risking your soul for something overwhelmingly important and central. Progress is no longer diffuse, but here and now in your actions; revolution is one word for it. If you are on the way back, you may be disillusioned, angry, dead in spirit, or playful, or senile."

But can we (re-)design the heroic mood? This question may be stressed even further: is there after all a Guarantor? What would a design process have to be like in order to design a unique human being's relationship to his God. Or, more prosaic in the wording of this text, what would design have to be like in order to design exformation systems?

There is no sensible, straightforward answer to that question. The head-on approach from a scientific point of view would be to try to define some of the illusive concepts which have been creeping into the text while we were

not watching. Well, some must certainly have been watching, as the scientific quest for logic and data has been in our mind all the time.

On the other side, my mood tells me that I would be better off in suggesting some more meandering, wandering around in the black forest: maybe meeting two heroes from the past, one heroine from the present, and a timeless androgyne for the future.

7. THE HERO WITH A THOUSAND FACES

Joseph Campbell has through many years explored the differences, but especially the extraordinary similarities, of myths and adventure across ethnic, cultural, historical and national borders. He finds evidence that any exploration for the secrets of life or nature always faces the same steps, dangers, conditions and possibilities: ultimate success or disastrous failure. In this adventure we will only consider a brief sketch of the necessary steps in the hero's journey in response to the riddle of life.

The hero must always pass through these steps:

I. Departure

1. The call for adventure
2. Refusal of the call
3. Supernatural aid
4. The crossing of the first threshold
5. The belly of the whale

II. Initiation

1. The road of trials
2. The meeting with the goddess
3. Woman as the temptress
4. Atonement with the father
5. Apotheosis
6. The ultimate boon

III. Return

1. Refusal of the return
2. The magic flight
3. Rescue from without
4. The crossing of the return threshold
5. Master of the two worlds
6. Freedom to live

Any one of us, having read any adventure, would immediately recognise most of these steps. Would it be possible to follow these steps in the design of exformation systems, provided we get some solid advice from the past? But before we embark on that journey at the end of this paper, we must explore yet another journey as one might easily guess that Joseph Campbell is mostly fascinated by the male hero. Would a heroine do the same? This exploration has been carried out by Clarissa Pinkola Estés in her book...

8. WOMEN WHO RUN WITH WOLVES

First, she does not see steps or phases, but tasks. And the necessary initiating tasks for retrieving intuition can be sketched as follows:

1. Allowing the Too-Good Mother to die
2. Exposing the Crude Shadow
3. Navigating in the Dark
4. Facing the Wild Hag
5. Serving the Non-Rational
6. Separating This for That
7. Asking the Mysteries
8. Standing on All Fours
9. Recasting the Shadow

Maybe these tasks do not find ears as willing as those for Joseph Campbell's, but they may nevertheless be taken to be a final blow to the contented human designer, who wants to design an ethical global information society without any other tool than the computer, the ICT.

9. SOME ANDROGYNY LESSONS

In his quest for the design of inquiring systems C. West Churchman explored the possibility of using the knowledge created by the old philosophers. What would design have to look like in order to design knowledge. Scientific methods, so to speak. With special focus on Leibnitz, Kant and Singer he suggested nine points to be carefully considered. Later on, in *The Systems Approach and Its Enemies* he added three more. The twelve necessary conditions for something to be conceived and designed as an exformation system are as follows.

1. Exformation systems must be teleologically defined.
2. Exformation systems must design a measure of performance.
3. Exformation systems must design a client.
4. Exformation systems must design disciplinary, crossdisciplinary and transdisciplinary components.
5. Exformation systems must design a cooperative environment.
6. Exformation systems must design a decision maker which must be distributed all over the system.
7. Exformation systems must design so that the intentions are to maximise the value of the exformation system to the client.
8. Exformation systems must design its own designer which must be distributed all over the system.
9. Exformation systems must design a built-in guarantee that the designer's intentions are ultimately realisable.
10. Exformation systems must design a philosopher.
11. Exformation systems must be designed to be challenged by counter-Weltanschauungen: its enemies.
12. Exformation systems must make a difference: be significant and essential.

These combined twelve points must at least be discussed as necessary conditions, even though they clearly cannot be taken to be sufficient, for the design of exformation systems. And the steps in that process, that progress

towards exformation systems may best be taken to be steps of the hero's or the heroine's journey as these are sketched in the scheme above.

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This paper is dedicated to the memory of Jane Retvig