Gaia versus Servoglobe

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Introduction

The core content of this article was originally given as a talk at an international conference on the "Gaia theory", arranged by ECOROPA in Cornwall, England in 1987.[1] My interest in globalised microprocessor control goes back, however, to the early fifties, initially embracing the concept with science fiction-inspired enthusiasm. Over the years that attitude changed radically, and it finally came to a head during my stay at Columbia University, New York, in 1967. I was there to study and produce something on "The aesthetic and communicational problems of electronic and computer-generated music". New York is also the Mecca of jazz music, and I was deeply struck by the contrast between the two forms: constructivism versus improvisation; they appeared finally as two different worlds, and that became the starting point for the development of the concepts 'complication' and 'complexity' (defined below).[2]

I left New York and the Ecophilosophical Group was formed at the University of Oslo in 1969: We watched the expansion of the European Economic Community (EEC) - inspiring the concept 'Industrial Growth Society' (later designated ACID; see below), and in 1972, seven of us produced the book *Økopolitikk eller EEC?* (Ecopolitics or the EEC?), which sold 10 000 copies - to our surprise, since it was somewhat on the philosophical side. One of the books the group had discussed, was Christopher Hodder-Williams' *A Fistful of Digits* (see bibliography), giving us the idea of "Servoglobe"; he uses the designation "Servex" - which we also used in the beginning, - until we were threatened to be sued in court by the washing machine company SERVEX.

That made us invent the word Servoglobus (Servoglobe), which, anyway, turned out to cover the intended meaning better than the earlier term. Other analyses that helped form our own were those made by Jacques Ellul (*The Technological Society*), Lewis Mumford (*The Myth of the Machine*), Peter Wessel Zapffe *("The Norwegian apparatus landscape")*, Norway's earliest ecophilosopher, philosopher and sociologist Dag Østerberg

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[1] The "Gaia theory" was an invention of the British specialist on atmospherical chemistry, James Lovelock, in 1969. It proposes to view the earth's biosphere as one organism and an entity that actively changes itself to survive under shifting circumstances. Since then, a growing interdisciplinary team of scientists has been active in elaborating the theory .
ECOROPA - The Campaign for an Ecological Europe - was started in 1977 (this writer was one of the founding members).

[2] The ground for this line of thinking had been laid, however, during the years 1955-58, when l worked as an aircraft technician in the Norwegian Air Force. In the middle of that period, we had to be re-schooled to the American "Technical Order System", under which everything we did had to fit into a pre-arranged, hierarchical order scheme. It gave us an explanation why Vietnamese improvisers won out against the world's mightiest industrial power - at the war's last stage putting its faith in computers. That made things worse, and the jungle guerrillas just kept on eating up the pyramid.

(*Forståelsesformer* - "Forms of Understanding"), as weII as the more eco-philosophical parts of the British monthly *New Scientist*. (Additional sources, see the bibliography).

Inspired by these, and my collaborators in the ecophilosophical group (Arne Vinje, Paul Hofseth, Ivar Mysterud, Per Gaarder, Nils Faarlund, Erling Amble, Jon Godal, Karl Georg Høyer- and Arne Naess and Dag Østerberg as important satellites to the group), still being politically naive but thinking we had a message of overwhelmingly serious significance, I approached members of the Parliarnent around the mid-seventies - as batches of new communication and - surveillance systems were put into space (notably satellites etc. of the National Security Agency (NSA) - arguably the world's most secret global espionage organisation). I was met with friendly nods but it quickly became clear that I would need a week or two of talking space to establish communication on the issue, and of course the Parliamentarians' space available for me was ten minutes at the most.

Anyway, our book on Ecopolitics and the EEC has turned out to have a great predictive value, e.g. that the socio-economic process let loose by the EEC's founders was a self-strengthening spiral (a positive feedback affair) towards a union (the leading opinion-makers scoffed at this possibility in 1972, - and, strangely, still do it today (1999), when the Union is more or less a fact).

ln later years I have had the opportunity to meet and discuss the main ideas of this paper with some of the authors who helped inspire it in the first place, like Hubert Dreyfus, and Theodore Roszak in California (see bibliography), the Dalai Lama as weIl as Buddhist philosophers of Bhutan, and most prominently, Helena Norberg-Hodge, founder and director of the *International Society for Ecology and Culture*, as well as Edward Goldsmith, editor of *The Ecologist* - a leading ecophilosophical journal.

Of course I am mentioning the interaction with these people to try to convince the reader that the Servoglobe prediction is not just the product of a mind gone astray in the face of the contemporary turmoil. Anyway, Norway appears to me to be the country where society's computerisation has been accepted with the greatest naïveté. Now and then up through the passing years, retuming again and again with inspiration from abroad, I have attempted to start a debate in my own country, using available opportunities in the various media; it always came to nothing. Our academic environment is small and we largely lack politically engaged generalists to face the specialists.

Lately, however, the law professors Thomas Mathiesen and Ståle Eskeland have tried to raise awareness of and an opinion against the Big Brother scheme of the European Union (Schengen, Europol, etc.). No political reaction seems to be forthcoming. Georg Apenes, the Director of Datatilsynet ("Data Watch") - a state institution that watches and can stop computer violation of privacy - is almost the only one in Norwegian society who manages to stir up a little debate now and then. None of these, however, appear to have gone into the psychosocial and ecopolitical impact of the computerisation process in its global reach.

The present attempts at interdisciplinary team research at all four of the Norwegian universities are, if anything, positive towards computerisation, revealing how this new trend lacks in depth. To argue that failure of insight is the substance of this paper.

Summary of Main Points

1) "Servoglobe" is a name given to a supra-nationally run "global supercomputer" - an "artificial intelligence" system coupled to a global network of information gathering and electronic data-processing systems, surveillance satellites, regional expert terminaIs, etc., semi-automatic in operation - created partly by economic globalization forces, and partly to serve mankind's survival in the face of a destructively simplified natural biosphere (Gaia) and the threat of political and social chaos.

2) There are strong scientific, technological, economic, administrative, and political forces at work on all sides of the various global conflict fronts to reach efficiency in repairing and managing the increasingly unmanageable mess created by Western lndustrial Society - or rather: the Advanced Competitive-lndustrial Dominion - ACID (to be defined). There have been various research projects in operation for more than thirty years to co-ordinate this effort through micro-processing networks of increasing sophistication. Various feedback loops are involved in this process, gradually producing a self-propelling impetus of such a force that it is hard to see what would stop it, even if there were any public awareness of what is happening. There is not. Projecting this development into the future, the end point is Servoglobe.

3) Part of the strength of this self-propelling process has its root in the impossibility of managing a natural dynamic "system" as if it was a system of static machinery (the 'complex' as if it was 'complicated', see below), but *these are the only means that science and technology have given us*. The result is a build-up of chaos-potential, and at an accelerating rate larger quantities and more refined versions of the mechanistic "medicine" are applied. lnstead of changing the medicine, which is beyond the horizon of ACID, a steadily greater effort is put into widening its application: The thinking is that "there are loopholes in the systems" which must be closed to achieve a completely rational functioning of it. Among other things, human political activity is treated as "sand in the machinery" that must be removed to obtain a smooth running. So are old borders between nations. Servoglobe is the "Endlösung" to these problems.

4) Finally, nature - the biosphere, Gaia - must also be conceived by this thinking as too messy for rational management. After all, she is seen primarily as a collection of resources for human material needs. So, the impetus is strong toward a replacement of Gaia - i.e. the biosphere's natural self-regulation - by an artificial system of global compass.

5) Servoglobe, however, is an impossible goal, - a breakdown of the mechanistic control network will happen before that end-point is reached. The reason for this is the later mentioned lack of "interface" between *'the complicated'* and *'the complex'*. These concepts are defined (this is the central part of the presentation, which everything else hangs on): Gaia is complex, ACID tends inherently towards perfected complication.

6) ACID may go far in this grandiose attempt and the further it gets, the more devastating will be the resulting chaos (Priogine is counterargued). To create awareness of this development is therefore an extremely vital project.

Central Concepts

Computers large and small abound and proliferate exponentially. Even my own country, Norway, reputed as housing an exceptionally down-to-earth nation, has been hit by an almost frantic propaganda for their use in all possible corners of society, the schools being the prime target. We must bring our people quickly into the computer age, otherwise we'll lose out in the international competition. Not only economically, but culturally too.

A decade ago we saw one TV program after another telling us that we should watch the children - "*they* are not afraid!" "Just try for a while, and you'll be convinced!" - and we were promised new jobs, as well as a new creativity and even liberation - from *angst*, from chaos, from war. By now, we are convinced; very little of the old fear remains. The media

hardly ever publish any critical comment. Directly, and indirectly, in many ways, we are led to believe that computers and human brains belong to the same class of phenomena, reducing the "interface" problems to something almost negligible, - around the next corner the computer will exist as a natural extension of the human mind. Both to blue/red industrialists and green "New Age"-followers, interconnected computers will solve our problems on a global scale.

For those of us who think that we are here in for the most consequential and unfathomable upheaval of society that human history ever witnessed, among other things, due to the speed and universality with which the computers take over vital functions, it's high time we sit down and try to grasp as well as we can the depth of what is happening. Time is, in my opinion, far over-due for green associations, like the intra-European ECOROPA, and The International Forum on Globalization, to do this, since what we see here is, in effect, an attempt to replace the naturally flowing ecosocial system with an artificially controlled, mechanistic scheme.

I will mention three concepts that to me have been useful on distinguishing various elements that the pro-computer advocates mix up to everybody's confusion. I label these concepts *complexity, complication and pseudocomplexity*; in the latter case I also, depending on the context, use the expressions "Amusement diversity" and "Disneyland Effect" . This handful of concepts have been helpful to me in clarifying, among other matters, how computers and living entities differ to the extent that they belong to different worlds. As will be seen, the concepts contain hypotheses about nature, society and machines.

By "complexity" (CX) I mean the dynamic, irreversible, non-centrally self-steered, goal-directed, conflict-fertilized manifoldness of nature and - as a particularly refined and intricate version of that - the human mind/body entity.

By "complication" (CC) I mean the static, reversible, externally and unicentrally steered, standarized structure-intricacy of the machine. The computer is a particularly refined and intricate version of that.

"Pseudo-complexity" (PCX) is, like CC, a human design-product, but unlike CC it mimics CX in order to set up various arrangements and activities to keep people occupied in a diverse manner, through mass media, hobbies, tourism, schools, etc. so that it replaces complex challenges; it occupies people on the shallow level that is exemplified by the amusement park, i.e. without offering training or development that equips them better for creative interaction with nature and society. Environmental PCX often functions as a "safety valve" outlet for the inner urge towards complex integration with the larger world that every human being is born with; it offers, however, only the sort of interaction that leaves the personality without further development or maturation after the event.

CX can be described only by reference to qualities (where, however, quantitative perception and assessment is included as one segment of the spectrum of qualitative mediations between the individual and her/his environment) - kinds and sorts of differentiations and border-crossings, shades and hues without fixed boundaries, dialectical build-ups and break-throughs, etc.

CC can, in any situation, be completely described by reference to the five mechanical parameters: height, breadth, depth, mass, and locomotion - modelled through spatial diagrams, mathematics and formaI logic, and quantified according to fixed numerical scales.

CX is thought of as something existing, as being real - as concrete, imperfect, practice-related goings on in the human body-mind and its world, and as something already given and presented when "consciousness wakes up" and starts to formulate concepts. It's in large measure pre-intellectual.

CC is a product of the human intellect and manifests itself as abstract model-collections, describing ideal, theoretical, perfect machine-like structures. Since Pythagoras and Plato, and modernised by Descartes, CC has largely been taken to express the real world[3], and that is still dominating Western thought, making it easy to accept the computer as an extension of the living.

Time

To understand CX and CC and their difference, it is useful to apply two different time concepts, "organic time" as a part-characteristic of CX and "mechanical time" (or "clock time") as the "time" of CC. Organic time is the group of modes of change related to the various subjects and actors and groups of such in nature, it expresses itself through rhythm, expands and contracts, is created as part of natural processes, does not extend into the future, nothing moves through it - it is movement itself. Organic time is concrete; it has no existence separate from material-spiritual events ("being-processes" is one tentative word that might be useful to get away from the Cartesian split between matter and spirit). It cannot be "objectively" measured, because any kind of measuring rod would change with it, but among humans it can be illustrated and talked about concretely, clearly, and with abundant communicability. Available to us for such communication are innumerable human sensual, emotional, aesthetic, and ethic experiences ("I arrived earlier than my uncle, who was actually walking very fast - red-faced and puffing, but strong - despite his heart condition", etc. !).

Mechanical time is a human intellectual invention. It was historically prepared through the observation of the rhythmical pulses of day and night and the seasons, but came into consequential being as something different from organic time only with the invention of a reliable mechanical "time-keeper" (a device that conserves time) - the clock. It is used to quantify natural time - or, rather, to substitute mechanical co-ordination for rhythmical living in approximation with the sun's rising and setting, tides in the sea, and various rhythmical body functions. Mechanical time is regarded as being the same for all natural processes; it's "objective" not "subjective", we speak as if we are "moving through it", it is supposed to stretch out into the future (it is actually constituting the concept 'future' in Western civilisation - a sheet of paper, a map, now a screen, on which the *planners* trace their lines), as if what has not yet happened is already "there" "some place" (it's embryonically also the basis for the belief in precognition and time travel - strengthened today through science fiction - where H.G. Wells' *The Time Machine* is the classic). It keeps us in captivity since it's a fenced-in path for our steps, but it is abstract - not dependent upon concrete events, and so lacks qualitative aspects. It is the basis for the notion of reversibility of processes, and it is the only time concept relevant to the construction of the physical computer and the programming of it as well.

Human culture as we know it, can hardly function without the co-ordination of mechanical time. The trouble is, however, that it has a tendency to hide natural time, and as *the dominant* time concept of industrialism it has made Western man almost lose awareness of natural time - a fact of deep consequence, including the notion that the human brain/mind relationship is a kind of computer/computer program ("software") system. Logically, mechanical time is a *spatial* parameter - it is the measuring rod for locomotion - shift of location - in geometrical co-ordinate systems. As said it psychologically tends to eliminate (natural, real) time. Only space is left. ln accordance with this perspective, the Advanced Competitive-Industrial Digit-Society (ACID), the social system that - like acid - simplifies complex entities, is an extreme experiment in testing how far it is possible to go in

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3A.N. Whitehead's "Fallacy of Misplaced Concreteness" is related to this.

spatializing the human universe, an attempt that started in classical Greece (Pythagoras, Parmenides, Plato, Xenon, etc.).

Two Cultures - two time concepts

As an illustration of this historical development, the modern Western house, an engineering perfection of the Greek temple - has a smooth, geometrically perfect appearance, seemingly time-defiant. If a crack appears in its shining surface - an attack of organic time - it looks terrible because decay is supposed to be irrelevant to its conception. It is an expression of a "stop-time aesthetic". In contrast, if we take a look at- say - a Sherpa house in Nepalese Himalaya, it always appears "unfinished", a creation that never reached "its destined geometrical perfection " . This, however, is the modern Western perception of it that of the visiting tourist or development aid expert. We stop at the entrance of the village and say: "The poor ignorant Sherpas, they can't do a better job."

But, from the traditional Sherpa point of view, the beauty and, intimately connected with that, the utility of his house may only be discovered if you settle down for a couple of generations, build such a house yourself, take responsibility for its daily care, live with the house instead of being its architect, repair it when (that frequent) need arises, add to it or subtract from it as the requirements of your family and your animaIs may be, etc. The modern Western building is given an adequate expression through a snapshot photo, while there's another modern Western devise that might help you to an initial appreciation of the quality of a "Sherpa type house", the cinematic film camera. You mount it on a tripod in front of the house and let it expose one frame every day for, say, a hundred years. Finally you develop the film and let it run at normal cinematic speed. What will be revealed to you, is not a house in the western sense, but an organic structure, its wall stones and roof material will be moving about and changing, likewise the shape and the size of the structure; the vegetation clinging to it, the animal and human life around it will expand and contract, speed up and slow down, shift in kind and variety - alI in subtle co-ordination with changes appearing in the house itself. You are viewing a total, complex process, where alI elements in the environment and economic/social conditions prevailing in the locality, quickly and flexibly are mirrored in the house.

This is a house that is decaying every day, a fact which is *accepted* by the people that are part of this "house-hold" - a material, pliable dough, responding to both the immediate and the long-term challenges of local life. The people of the house let it decay, always, to some extent, so that it can bud and sprout every next spring, but at any *moment* moving to be something new. This house - behaving like a living organism, is the expression of a culture that also accepts illness, age, and death - that even finds security in accepting that nature is an insecure place, a process. Strengthening that, the Sherpas have a religion - Buddhism - founded on the premise that nothing is permanent. The result is that quality of self -reliance, resourcefulness, ability to improvise, and flexible cooperation which makes the Sherpa's help so attractive to Western mountaineers engaged in the world's most demanding ventures in wild nature, summit climbing in the Himalayas.[4]

Why wouldn't the computer be of any help here, but rather a hindrance? Because we are faced with a particularly clear case of Gaia's demands on natural, complex man. The challenges facing the Himalayan mountaineer are hardly ever complicated. But in principle, these demands are no different from, say, those facing someone bringing up a child -

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[4] The ability to improvise, individually and collectively, is now (1999,2000) being studied at the University of Trondheim, Norway, through the project "Improvisation in interdisciplinary light". V arious cultures are here being compared. Metaphors, enlightening to the problematique, are the jazzband and the European symphony orchestra, contrasted.

anywhere, even in the West (which tends, however, to "complicate" that issue too). In both cases, complex growth is the challenge. Correspondingly, the computer may be useful in constructing and running a modern Western office building, while it is a total miss in a Sherpa village life process. And the office building, in order to stay smooth, as a daily sign of corporate reliability, continuously demands resources far beyond what the neighbourhood can give. The same goes for the Western urban system as a totality - and any attempt at keeping a complicated structure smooth!

Meaningful, complex work versus complicated employment in the Gaian perspective

There is, from what I have said, justification in using the expression "real time" for natural time, since it is irreducibly concrete - movement itself as experienced by each individual, while mechanical time is an abstraction - a reducing of time to geometrical space. Under the heading "a complicated system (like the computer) is incapable of handling real time", there is one aspect where "natural man's" incompatibility with the computer is particularly consequential. To my thinking, the concept of *'meaningful work'* is central to understanding of the unfoldment of human personality, and I am here talking about something specifically human. It is the aspect of "human-ness" that- before anything - is the product of man as an inventive socio-ecological creature. "Meaningful work" - as I will define it - is "human work", in contradistinction to "mechanical work" or "complicated employment". Again: The complex versus the complicated.

I define *meaningful* - or *humanly appropriate work* (mfW - where "mf' also stands for manifold-ness, i.e. complexity) as follows:
1) It is an activity *necessary* for the human being's material survival (through this, it possesses a direct, clear seriousness not shared by any other activity except defence against disruptive social conflict).
2) Its *fruit* of products (goods, services. . .) are such that do not damage but rather strengthens life (human society and nature) with no envisaged time limit - which means that Gaia is always - more or less consciously- on the horizon.
3) It poses such challenges that bring the potential *complexity* of capabilities - including the ability to improvise, i.e. alertness to organic time - in the human individual and her group to bloom.
4) It demands of its partakers the building of *solidarity and loyalty* and practical, flexible techniques for cooperation; and
5) in general it engages *children* (as the most important group - but any other, like old people, as weIl).

Years of active life filled with mfW establishes constant awareness of organic time, including personal, dialectical shifts, - i.e. conflict-fertilized maturation.

Work roughly corresponding to this concept has as a matter of fact been the normal basis of society - its economy, education, artistic and political ability world-wide and as far back as we are able to trace human history . *The first society to completely lack this basis* is ACID, and the computer perfects this state of affairs: it employs people, i.e. segments of them, to some extent, but robs them of work. A complex society, with complex process-attachments to Gaia entails complex persons! Sums of specialists or segment-persons won't do. To state very briefly one of the many lines of argument involved in the matter: A society

built on the basis of mfW is a society that in principle thrives on meagre resources in energy and materials - while energy/materials abundance blocks its realisation.

Contrary to ACIDic thinking (also in greener branches, New Age, "Oecentralised Regionalism!" etc.), micro-electronics presupposes an energy-intensive, international heavy-industry economy, factually accelerating the depletion of the world's resources: - The word "post-industrial" stands in my analysis for idealistic wishful thinking!

The main point here is that mankind's greater teacher is Gaia in her manifoldness, always up to something new; but she will fulfil that function only if her complex challenges are not replaced by complicated problem-tasks, posing as the easy way out - usually through the ready availability of specialists. (Wo)man is by birth pre-eminently gifted towards being a continuously creative Gaia-being in body-spirit, but that creativity is a complex affair, which as a general, social characteristic is brought to flower only in cultures that have their basic flow-structure determinated through meaningful work, posed as a challenge necessary for survival. This line of reasoning owes nothing to the "Christian/ Protestant work ethos" a generation or two back, but is founded on empirical observation, comparing how societies live and develop within various cultures. The point is that a human animal is free, even in the sense that it may "choose" the easy way out, if its environment offers that, like ACID. Then it may expand in a pseudo-complex manner, or just "go to pot", ashes-Iike.

I am here largely in keeping with E. F. Schumacher in the chapter "Buddhist Economics" from the book *Small is Beautiful*, where he stresses the point that to my mind has paramount importance, viz. that "man needs work *as much as* he needs food", and that "man without work is in a desperate situation" - where the concept 'work' is closely related to mine (except for point 5 - the requirement of children's participation, which of course is indispensable if we want to restore to work the role as society's foundation).[5] Taking this point seriously constitutes an elementary step towards the much-sought-for Green Paradigm. In spite of its extremely well-twined historical roots, it is a truly radical, concrete and forceful departure from ACID - one that we cannot possibly avoid if our course is to de serve the label "social" or Gaia-directed.

In contradistinction to this, the computerised society model furthers isolated individualism- as it is spelled out, e.g. in Zbigniev Brzezinski's grand vision of a "Technetronic Society"[6], a "society" that in my analysis would be economically dependent on mechanistic schemes replacing organic processes producing an alienation to nature that also means human self -alienation. It offers an abstract world in replacement of a concrete, a complicated for a complex, machine-directed employment instead of work. It represents the last stage of a western civilisation that for centuries increasingly regarded work purely as a means toward an end - survival, and, if possible, affluence: Work acquired meaning *only* from the end it was to serve, - from itself only as a chance byproduct. The socialist workers' revolution happened within this historical context, and for that reason, partly, meaningful work - work in itself possessing the promise of human bodily/intellectual and emotional expansion - never became an important fighting issue to the socialist movement. If it had been the case, computerised employment would have had a much harder time in gaining labour's acceptance than we see today. Let's calI this "Karl Marx's blind spot". Due to historical urgencies in his time, we can 't blame him. His day required the red so much that it had to bIot out the green. In my opinion - after thirty years of discussing work and social change on three continents (admittedly a short time - clockwise), Green's central key is meaningful work, as defined.

5 Schumacher explains that he got this set of ideas from a study of Burmese Buddhist culture.

6 Zbigniev Brzezinski: Between Two Ages: America's Role in the Technetronic Era, Penguin 1977, Green wood 1987. Brzezinski was a special adviser to President Jimmy Carter .

MfW requires (wo)man to accept insecurity as a nonnal state of affairs, and it trains the individual or the group to be broadly prepared for new challenges, to improvise - to be creatively one with organic time. That is why mfW shares a common departure with Buddhism, which in some of its historical branches represents the world's most radical eco-process philosophy. (This is *not* the case with the *Avatamsaka Sutra* story of *lndra's Net*, often quoted by New Age people. Instead, we have here to do with a sort of Far Eastern "Spinozistic" eternalism, where everything reflects everything else in a perfect manner. The crystalline world net mentioned in the story is rather some sort of "supercomplication", inspired in its way by meditation, which at its deep level is quality-free[7]...) In those branches of Buddhism where its originality is kept fresh *nothing* is permanent, everything is change and movement; - the idea that anything is enduring, like even the most highly cherished objects, the human soul and God - is an illusion.

In keeping with this, but transposing Buddhism to our time and place, I define the human personality through *activity*, more or Iess creative, and the individual's activity as it ties in with other individuals' activity. The individual is here thought of as a process - its being is its activity, slow-moving and graduaI or creative by leaps, only hazily distinguishable from other individuals' activity-processes (unlike indra's Net, nothing is ever a copy, the world is full of mutually over-lapping, reciprocally inspired individualities, new ones and new constellations forever emerging - human, animal and plant. This kind of reality explains why the scientific method, as we know it, can never grasp more than distorted fragments of the world). The "other-individuals" may here be either animal or vegetable, or even non-animate -like a mountain, a desert, or a river. Everything concretely nature-given is movement, perceivable through characteristic rhythms and modes of rhythm shifts, while the world of mechanistic science is static, mathematical and abstract (I do *not* say that mathematics is non-creative or useless !).

Even though new approaches may be appearing in modern microphysics, the way science is taught and practised is still mechanistic, which it must be anyway as long as it serves ACID. The computer is part of the latter, regardless of its vastness in electronic miniaturisation. Either digital or analogue, it's still qualityless - complicated not complex: The computer functions on the basis of sharply defined boundaries, the individual it represents is either an abstract-binarily catalogued "cat" *or* a "dog", never the dog-like cat that crossed my way as I left the farm to start on the complicated and complex joumey to an ECOROPA meeting. A robot can never be any sort of open-ended, inventive activity-presence, at every stage redefining its character, as any member-being of concrete Gaia. Computer-locomotion is reversible - as long as it fulfils its expectations, Gaia's and man's activity is not.[8]

Ecology was at one time defined by the American ecophilosopher Paul Shephard as "the subversive science". Today students, by the hundred thousands, learn about "nature " in front of a computer, displaying various "simulations". They learn about something complicated instead of something complex, and are hardly ever led on to the idea that there might be a difference. It's now an overdue and extremely important task for the ecopolitical movement and for ecophilosophical pedagogics to stir up a debate within the field of

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[7]The difference between the Chinese and the lndian branches of Buddhism, where the latter was dynamically oriented, was reflected already at the famous Council of Lhasa a thousand years ago, where the Chinese were thrown out on the ground of their static interpretation!

[8]In 1985 I visited the Artificial Intelligence laboratory at the University of Texas, Austin, and interviewed its director. Philosophically still in the 17th century, he was convinced that at the next step computers would feel and value, the interface with living entities being near to perfection. It was just a matter of miniaturisation and parallel processing. My quoting Hegel where he says that he who lacks a knowledge of the history of philosophy is doomed to repeat it, just produced a blank stare; any discussion of basic presuppositions did not have a chance.

education in general about the practice of representing complexity as complication. A critical attitude to the computer would - as things have developed - has to be the central part of such a project. The computer draws the whole ACIDic development together - makes it finally crystal clear where it's aIl been leading us, what kind of a hole machine thinking has dug out for us.

Treating nature and human society as problems of complication plus Disneyland means giving the wrong answers at every stage, step by step aggravating the situation. What we see is a self-propelling spiral towards disaster. One expression for this - perhaps unnecessarily mechanistic - is "positive feedback". Systems governed by positive feedback tend positively in the direction of a basic change of systems, which in human social affairs might mean disintegration. And the last spiral in ACID's historical development had to be the computer - its most refined attempt at machine control: It is so refined that ACID's propaganda manages to convince us that we are dealing with an extension of human thinking, and sensitivity and feeling as weIl. Even though it's intricacy boils down to a simple bipolar scheme (1 or 0, the switch on or off, the house at right angles or not), treating everything as amenable to analysis (the parts tell the whole story - the whole treated as another part), ACID's educators and politicians manage to present it as complex.

A spaceship designed to replace Gaia

ACID's way to deal with the mounting crisis that necessarily results from treating the complex as if it is complicated, is a globalization of the treatment, the thought being that we are faced with a lack of co-ordination: there are still uncontrolled zones that interfere with and disrupt the dataprocessing network. And what can co-ordinate billions of details if not the one and only computer? The perfectly logical far end of this line of reasoning is the global computer, or a globe-spanning network of interlinked computers and "data-banks", where every computer at any time "knows" what alI the others in the network "know". And what they "know", is the total collection of details about the state of the "world", mechanistically interpreted into huge crystalline patterns. I call this logical end of the road SERVO-GLOBE, from "serve"/"service" and "servo" in the sense of "automatically self-adjusting", and "global". Servo-globe is, then, the historically ultimate stage of the accelerated alienation and one-dimensionality of industrio-competitive society, a stage that means the final abdication of human control and the elimination of (wo)man's creative, meaningful activity as a contributor to Gaia's life. A global, electronic service lady replaces Gaia.[9] One of the impulses to reflect along these lines came in the early seventies, in Oslo, when I became acquainted with a man who was employed by one of the leading transnational electronic corporations.[10] This was before the collapse of the Iron Curtain. We seemed to have thoughts and worries in common and one evening after a few beers, he confided in me that the most interesting but also the most worrying part of his work was research on what he called "the global computer". The program is led from an American university, he said, and is supported by several electronics and communications corporations: We have affiliated a large number of researchers, engineers, sociologists, psychologists, and language experts, localised in all the major industrial and administrative centers around the world.

The idea is to use satellites for observation and communication, sensor-equipped stations on land and in the oceans as well as local human observers to collect data on the state of the world's various regions. Much research goes into solving the problems of constructing

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[9] Since I wrote the first version of this, a British computer expert, Geoff Simons, has come out with a book, *Eco-Computer*, describing in detail how the global cornputer (Servo-Globe) is becoming a reality (J.Wiley, N. Y. 1987, ISBN 0 471 91340).

[10] Xerox International

sensible formulations to express the data including social conditions and political developments - so that the computer can handle them. The world is in deep trouble, he said, and this is the only way to go to overcome those troubles; some are optimists - a few, like myself are worried. Can we do it? And that's only the first part of my worry . . . .But what about the Eastern block, I queried. They are surely not part of this effort, so how can you globalise without them? They are, by steps, drifting into the same thing, he said. Besides the parties stealing each others technological secrets, there's a lot more research cooperation than most people can imagine, and because of the sorry state of the world and resources that steadily grows harder to get at, since the ecosphere doesn 't respect political territorialities, the scanning and planning systems of the East and West get more and more entwined with each other. And when things break, they break across the boundaries. So in both camps, the global computer slowly appears as the only way to go. The top politicians are hardly aware of what is happening, and among the researchers, the cross-national interlinkage of systems are so far mainly toyed with as interesting science projects. But the development already has so much momentum that it would be very hard to reverse the process. At this stage, when serious ruptures appear, wherever else can they turn, both the East, the West, and the South?[11] Microelectronics is, after all, the only way they know when complication overwhelms the human mind. But do you know what, he continued, there is one very hopeful aspect to this trend: the cold war blocks might one day soon wake up and find themselves so involved with each other through this global network that they'll be forced to overcome all their serious differences; they might find their life-or-death prospects is at stake if anything disturbs the completion of this global computer system. That will be a more powerful deterrent than the threat of nuclear war, because it might mean sudden chaos - the loss of the basis for any kind of planning and political manoeuvring, even the use of nuclear deterrent as a workable political tool.

I remember tbe day well. We were sitting with a good view of the Oslo harbour, where a beautiful square-rigger had just sailed in - its soft, rbythmical lines reminding me of days when qualitative complexity had not yet been replaced by quantitative complication, a time when the human *cybernetes* was at least in principle - still at the helm; - the millennia before Norbert Wiener gave 'the Greek word anotber meaning. *Cybemetics* suddenly flashed through my mind as being tbe great cold turkey knife across human history , replacing Einstein's $E = mc^2$ as the signpost of Western civilisation's leap into the abyss. The atom bomb is very visible - tbe microprocessor creeps upon us, like electrified plastic grass everywhere replacing tbe real thing. Before it's really noticed there's just tbe green plastic.

I was not, bowever, disturbed by tbe second part of his worry; answering my prodding on that, he said: - If the frightful level of complication can be overcome, the computer might take over- we'd have nothing to say anymore! That, to me, was soap opera science fiction, and it still is, because you can't ever succeed in "interfacing" tbe complex and the complicated. *If you have absorbed that deep distinction*, nothing stops that conclusion either .

About this dependency that you are speaking about, I asked, - a forced reconciliation of East and West certainly looks like something to be jubilant about; - but a second thought comes up: - this thing about nothing being permitted to disturb the "global computer project". The world being what it is, happily but disturbingly uncoordinated, a lot of wills moving at variance witb each other, won't there always be a multitude of threats to that computer-based, globally centralised steering perfection?

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[11]lndia has by now, 1999, one of the world's largest communities of IT developers, probably third after the US and Japan. But they are pushing in the same direction; no Indian philosophy (Hindu or Buddhist) is involved. Take note, though, - so far, only 1 percent of mankind has internet access !

Yes, of course - he replied - soft- and hardware going into the network will have to be guarded against any conceivable kind of onslaught. After alI, the fate of humankind would be at stake. More would be involved than - say - with radioactive materials deposition. - A well-drilled, electronically equipped surveillance police force trained in sociology and psychology - resilient but firm, would have to be constantly on the alert to keep prospective, intentional or non-intentional saboteurs at bay.[12] But in view of the strides that are being taken towards artificial intelligence - what with tbe competition between Japan and US etc. - we can manage that.

This is how he thought and I've met several computer specialists later looking this way at the world. - So we'll end up by having a global police state? - Is that really something we should hope for as the alternative to the various global and local conflicts? I went on to ask. Well, at least we would have peace, was his reply, and again, he voiced his own worry, that we'd end up as parts of a global machine, and redundant parts at that. Finally, there would be just that machine.

The perspective was amazing, coming from a serious worker within the field, and not out of a science fiction book. I guess I was gaping at him, and it took me a couple of days before I started thinking that ecophilosophy was immediately relevant to the question, and particularly the concepts 'complication' and 'complexity' : "Life is complex - the machine complicated", and "the more complicated the machine, the subtler and more difficult to grasp and handle the interface problems - and the greater the consequences of not seeing and handling them properly ." And "the computer is nothing but a machine, albeit an extremely complicated one". But "with a machine like that, you can repair yourself out of trouble for a long while, so that when finally nothing can hold back the system' s ruptures, the disintegration accelerates into a chaotic state."

If this were to happen to the global system the total dependency built up in the meantime would produce worldwide shock and panic. I am not speaking of any normal kind of dependency cut-off, something within the range where history can give us a lesson. What I am talking about, is a global socio-ecological crumbling produced by a systematic replacing of complexity with complication on all levels - something unprecedented in mankind' s history . That could be the outcome ofACID's last survival convulsions.

Yet we are systematically educated to accept an endless increase in computerisation of our world - and our children much more so. There's hardly ever any discussion going on except in a few publicly remote academic books. The task I am proposing is one that should override most others, viz. to expose this subtle but gigantic push towards SERVOGLOBE, and its consequences.

Literature
Literature that has inspired my writing (partly referred to above), and that I would like to recommend as elaboration and substantiation of what I have said:

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[12] One aspect of this, the attacks by "hackers", has grown strong since the original version of this article was written. Their threat to the internet function (and to SERVOGLOBE) is now met by surveillance systems that "could compromise the anonymity and privacy of law-abiding citizens" - in other words "Big Brother" (Orwell). The vulnerability of the globalized "information highway" produces one more spiral towards SERVOGLOBE. See New Scientist, Feb. 19,2000, p. 6.

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