Science, Sustainability and Organic Practice
(Organic Farming in the Sound-Byte Age)

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Andy Warhol told us [1] "In the future everyone will be famous for fifteen minutes." The kind of person who could make this statement and paint Campbell soup cans was prophesying our era now-- the sound byte age, where fame goes to those who have quick information. I am particularly concerned and curious how the sustainable, organic community will choose to fit into this rapidly emerging techo-culture. A fundamentally new dilemma has emerged different from the one we had 25 years ago, when this mostly all started. It goes something like this: everything we know in Nature is deep and slow, but the world is increasingly fast and cheap. Agri-chemicals and genetic engineering like the cyber electronic culture itself are promising quick solutions, and are making nature a commodity in the process. Organics rejects this view, but the question is: Can we keep the balance?

LIMITS TO GROWTH, NO MORE

I started into college under the somewhat ominous spell of the 1972 Club of Rome report "Limits to Growth"[2], a bible to many. In that study, a team of systems scientists and computer modelers wrote a computer program called *World3* and its results challenged conventional wisdom. Modern society was expected to have pretty much exhausted its resources by now. The model warned of environmental limits to how "big" human civilization could become and how far its appetite for resources could go.

More recently, the original authors of *Limits to Growth* have revisited the subject and concluded that this ultimate limit is not inevitable and that although we are closer to "overshoot and collapse" a sustainable society is technically and economically possible[3]. Do you believe it?

As if to support this, the next generation of computers has weighed in on the subject. Are you listening to the news? We won't run out of oil and gas after all. Using "virtual exploration" by computer enhanced imaging, even the smaller pockets of oil that in the past eluded discovery can be tapped. This seems to have vastly increased the estimates of the available reserves. Meanwhile, if you believe the reports, car manufacturers will soon begin phasing out internal combustion engines. This has prompted at least one prominent writer, Jonathon Rauch[4], to predict: the age of oil and gas will come to an end with most of the reserves left in the earth. Clearly, all bets are off.

TO CHANGE OR NOT TO CHANGE

It's instructive to start with this viewpoint of all-bets being off in exploring the farming debate, because the surroundings have changed very much in the past few decades since many of us started in the field of organic farming research. Whatever your view, it is apparent that *modern civilization is building a new world on top of the original world*. Perhaps organic farmers will find surprising ways to adapt to it, while others will dig in their heels and be called Luddites.

1. from an entry in The Andy Warhol Diaries-Thursday, July 27, 1973
2. D. H. Meadows et al. (1972) The Limits to Growth (New York: Universe Books).
3. Meadows, D.H, D. L. Meadows and J. Randers (1992) Beyond the Limits: Confronting Global Collapse, Envisioning a Sustainable Future
4. The Atlantic Monthly (2001) Vol 287:1-pp35-49

Part of the premise of the organic movement is that we support Nature all the while Nature remains basically as she is. In view of what is happening, this seems naive. It is hard to imagine that nature needs upgrading, but this is the view coming out of modern technological farming with its scientific underpinnings. True, nature changes, but not in the way being proposed. *Yersinia* bacteria that caused the dreaded black plague of the Middle Ages are still with us, but have somehow lost their punch. One does not know where AIDS originated and new toxic strains of *E. coli* have appeared from prior benign forms, as have also numerous antibiotic resistant bacteria. Nature is therefore fluid and changing, yet modern tech-culture wants to tweak it more, and faster. How will these two worlds- human utilitarian and nature— interact? When there is interaction, will it ever be favorable to nature as opposed to favorable only to human ends? How are we in the future going to maintain connections to nature of any but a most superficial, utilitarian-manipulative kind?

NATUES WEB IS OPPOSITE TO OUR INFORMATION WEB

The author attended a retreat recently where authors, artists, technologists and teachers met to address present and future problems arising from modern society and technology.There was a lot of discussion about the cyber-wave, some of it very positive. Yet I suggested there is an alternative web,— natures web, a distinctly opposite path to modern technology- and a new path for humans. As a start, let's look at the rather stunning 1997 feature article in *Nature* entitled the "Wood Wide Web"[1], in which researchers showed how photosynthate from healthy forest trees growing in full light travels down and out across mycorrhizal fungi "bridges", root to root, arriving eventually at the shaded, weaker trees - even of differing species- thereby bolstering their impoverished nutrition. It is hard to imagine anything more interesting (and less Darwinian?) than this. Shortly afterwards biologists from the University of York reported[2] another unforeseen effect of modern, intensive agriculture in that it is significantly disrupting this very web- undermining a feature I like to call Nature's Sustainability System. This is just more direct and compelling evidence that the human-technological way of treating nature fundamentally undermines her.

The point, however, goes beyond this. Nature is crisscrossed with communicativeness, but not of our type, certainly not digital or electronic. Natures web of communication is not even remotely similar to the modern information web. We haven't the faintest idea how it works, either. This web of nature encompasses a vast system of organic compounds, bacteria, fungi and macrofauna, all the way up to the animal kingdom and excepting us (evidence somehow that we are not animals, at least not any more). With each new report on interactions and communicativeness within these vast kingdoms, one is more likely to be convinced that our Promethean manner of manipulating nature is terribly off the mark- somehow based on an incorrect set of premises. Nearly a century ago, Rudolf Steiner, founder of the Biodynamic farming movement, posited that a healthily functioning whole farm would behave like a whole organism, intrinsically seeking it's own welfare. With these recent revelations about nature's networking, this biodynamic view may seem less and less astonishing. Even more: far from being a mystical concept as many suggest, what if Steiner's view is simply honoring nature on nature's own ground, unlike the modern approach we live with where somehow we always foist industry into nature and see mechanisms everywhere.

One thing is true and also exciting: the future for organic farming holds the promise of a continuing wave of surprises as we plumb nature's web of

1. S.W. Simard et al. (1997) Net transfer of carbon between ectomycorrhizal tree species in the field. Nature 388, 579 - 582

2. T. Helgason, et al. (1998) Ploughing up the Wood Wide Web. Nature. Vol. 394: 6692

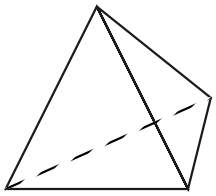
connectedness on deeper and vaster horizons, finding more ways to help nature do farming with us.

Delving into nature's secrets will require human and not only technical skills — science will be involved in documenting it. Modern scientific technology I believe may close the doors on necessary developments, since it mimics this underlying world of connectedness without actually attaining it- all the while leaving humans passive bystanders where we need to become active participants.

Perhaps the meaning of all this to us lies in the conflict. So you'll teleport one moment and be in the garden the next. It's going to be a weird combination of something you could call the The Exploding Cyber Inevitable alongside community supported agriculture, where people shed their image and airs and work the land together- almost as a kind of therapy. I hope we avoid what Andy Warhol seemed to mean when he said in his foolish wisdom: "Machine's have less problems. I'd like to be a machine, wouldn't you?" Ever since Descartes and Newton it seems to have been the driven imperative of the western world to find the machine in nature and thereby to find the ultimate, basic bolt from which it was all built.

PARTIAL KNOWING- SEEING THE SAME WHOLE BUT DIFFERENTLY

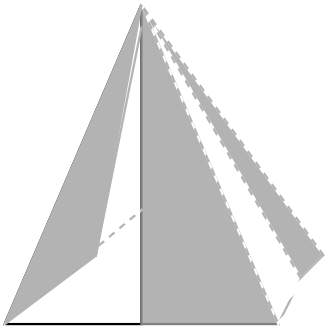
The theme *Science, Sustainability and Organic Farming* expresses the multiple potentialities and conflicts that I experience around me and through my work. Unless I am wrong, there are no simple black and white issues, no left/right contrasts. Many issues which appear at first negative, may reveal a positive side, and vice versus. Danish Nobel physicist Niels Bohr has said: "The opposite of a profound truth may well be another profound truth."



Which side is the right view?

Imagine now that these faces of **S**cience, Sustainability and Organic Farming are tangible, as in a triangular polyhedral object, consisting of one face each for the three. Any way you turn this object, it is standing on a firm surface. No side is less relevant than the next and no matter your angle you are simply seeing the same whole object, but differently.

To increase our difficulties, now imagine that each surface is holographic, and depending on the angle, you can see one of two possible images. Call one bright, the other shadow. This is my picture of reality now, of science, sustainability and organics.



Left and right views on each of several sides.

Remember that odd book, "Mass Dreams of The Future"[1] by Chett Snow where peoples' visions of the future were tabulated? Well, the moral implications of divisions are discounted in favor of seeing Ultimate Reality as "inconceivably multidimensional". I'm comfortable with this idea. The separate faces that objects (or issues) presented are each seen simply as aspects of Wholeness operating in isolation for reasons of our fall into space-time. Somewhere in all of this in the inconceivably distant future there is a re-integration or re-union out of fragmentary consciousness into the "All That Is". These writings suggest this will only happen after we learn to consciously manipulate

1. Mass Dreams of the Future. Chet B. Snow (1989) Deep Forest Press.

life's energy- but how? Surely they don't mean electronics and genetic engineering?

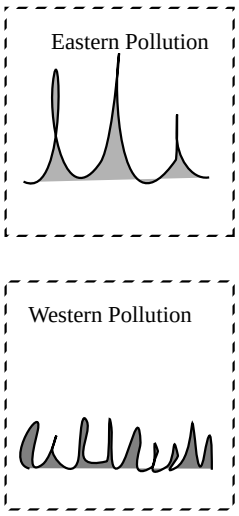
THE JANUS FACE OF SUSTAINABILITY

Sustainability is considered by some to be a partner if not alter ego to organics, others find it at odds with our natural, earth-oriented goals. Fred Kirshemann once told me it may have been Wes Jackson who started using the expression, yet Wes Jackson simply tells me that he uses the word *differently* than others do. The word sustainability has magic in it. It seems to lift anyone who uses it out of the ordinary into either being defensive about what they do or being remarkably open and futuristic. In any event, look closer and there is a shadow side. A European scholar, Wolfgang Sachs, warns us of its undertones. We are using technology, he suggests, to create a semblance of sustainability, not a real state[1]. Called by him Ecocracy for ecological bureaucracy, this modern sustainability manages industrial society, allowing it to propel itself at very high speeds right along the brink, only without falling in. This is the form of sustainability we have to watch out for. It surrounds us. When the traffic jams at our 1950-era toll booths got so bad in many US cities, what did we do? We created electronic fasttracks to make toll collection systems "more sustainable". Behind it an entire bureaucracy had to be created to process the accounts, with built in pre-payments so that someone is earning money on our travel money even before we set out to travel, with penalties thrown in for balance.

There are many similar examples today of technology's version of sustainability. While we are managing to scale down energy use per se, by vastly improved efficiencies and smaller size of electronics, we are never the less significantly increasing technology use per each unit of transaction, at all levels, making each level of society hugely dependent on a mechanical-electronic sub-structure (and the service network that goes with it). This is the image of sustainability *a la* technology. There are many who find this to be futuristic, more efficient, more market oriented. Looked at more closely, it also appears to be driven by market forces combined with an inability to look at our problems differently. The possible ironic outcome of all this development is that in the future humans will be forced to vastly simplify their lives to avoid being overrun by this overly technological system.

If you look at how we are handling sustainability- and how every industry has staked out their claim on it, you just have to hear Heidegger's cry echoing out from the past century in his words: "Confrontation with Modernity"[2]. The modern sustainability engineer is the proverbial technological worker-soldier that Nietzsche called the "blond beast of prey" and which Heidegger tells us Aristotle anticipated metaphysically when he invoked Man the "rational animal".

SUSTAINABLE POLLUTION?



There's another way to look at the shadow side of sustainability. It is a mixture of my own and Jacques Cousteau's environmental experiences in eastern Europe. I met Jacques in Washington DC in September of 1996 at the Environmentally Sustainable Development[3] convention, held only shortly before he died. Because I too had been working in the East, a discussion ensued about envi-

1. Wolfgang Sachs, in *The Development Dictionary* (1994) Zed Books

2. Zimmerman, M. (1990) Heidegger's Confrontation with Modernity. Indiana Univ Press
3. Recycling Waste For Agriculture (1996) "The Challenge in Wasting Waste" September 23-24, 1996 - Washington D.C. Sponsored by the World Engineering Partnership for Sustainable Development and The World Bank.

ronmental pollution in eastern Europe, which has been widely reported by the west to be so bad. Jacques had been studying the rivers of the east, in particular the Danube[1], work that was made possible only since the fall of the Berlin wall in '89 When asked the proverbial question: is it as bad as they tell us? Jacques replied, this depends on your viewpoint. Jacques pointed out that in the East they have very high pollution loads of just a few agents- such as trash, fecal matter and oil, in the river. In contrast, in the West we have something of the opposite, low levels of innumerable compounds- so complex it takes multiple GC/MS runs in the lab just to characterize a single water sample. Now which is better? Jacques pointed out how we in effect conceal these innumerable polluting agents by constructing scenarios called "threshold levels"," no-observable effects levels" or "risk models"- these latter tending to favor humans over animals and microbes. A good example is how pesticide content of fruit and produce is discounted by authorities because the multiple residues found "are within legal tolerances"[2]. These many actions and others work to remove the agents from consciousness, creating the picture that things are okay or even "getting better". Yet these many compounds are there, and we don't know with certainty that they are not having unwanted cumulative effects.

These important observations of Cousteau have not made it into the popular press. At the writing of this paper, the Atlanta Center for Disease Control announced the publishing of a report on numerous, low-level contaminants in the environment and in human blood[3]. Parenthetically, my own observations in the east working in Romania and Poland with conversion farms bore some of this out: unlike our soils in the west, many of these eastern farm soils had never received chemicals of any modern kind. It was a startling the realization to grasp that in many places you had in a sense the past before modern chemicals preserved in the present,- a primitive, less tampered-with condition that ought to be recognized and studied, at very least. Meantime, the westerners were swarming in, offering up credit lines to enable Poland to import new chemicals for agriculture. "I don't know why we accept this" said the then minister of agriculture of Poland in a personal meeting with me: "We are totally self-sufficient in food and agricultural supplements with the exception of limestone, and yet you offer us money for new chemical imports, which of course we can't refuse". There seems to be a pattern here. The proverbial architect of destruction is a rich westerner wearing a disguise of stability, science and capitalism.

DATABASE FUTURES

Almost confirming this view from another angle, in his recent work, "Database Nation" Simson Garfinkel argues that the dangers in the not-to-distant-future will arise not from any feared totalitarianism of the sort envisioned by George Orwell or Stalin, but from capitalism itself, most particularly in how it conceives the marketplace to function.[4] It is in the very act of turning everything into information to be captured, cataloged and sold as commodity, that the modern process detracts so much from not only our civil liberties, but from life itself. This view is mirrored in many other fields, notably in genetic engineering, where units of genes are now viewed as investable property. This is just the Gutenberg press, all over again. It comes back to this: starting with Descartes original conception of the world as a gigantic mechanism, am inevitable direction comes out of it. Is it possible

1. Les secrets du Danube (1993): Enquête sur le dernier grand fleuve sauvage d'Europe. Jacques-Yves Cousteau, Jean-Michel Cousteau auteur, François Sarano ; équipe rédactionnelle, Thierry Piantanida... et al. Paris: Hachette, 1993 (Nature et aventure)
2. USDA (2001) Pesticide Data Program, Progress Report AMS-USDA January 2001
3. CDC (2001) National Report on Human Exposure to Environmental Chemicals. Center for Disease Control. Atlanta, Georgia
4. Simson Garfinkel (2001) Database Nation: The Death of Privacy at the End of the 21st Century. O'Reilly & Associates, NY

that if we let the western world alone dictate the terms of sustainability,- or organic farming- that we will loose something vital to our life and our future?

SCIENCE: ULTIMATE ANSWERS?

The second side I mentioned was that of science and I have spent my life so far in this arena, sometimes wondering why. Using science to improve composting and organic farming as I have tried to do has been for me personally a rich and rewarding effort. Underlying this service motif of science which many scientists feel, we find again the same technological motif tweaking nature's mechanism. There are many questions now: is there a form science that is any different than the science posited by Descartes, Darwin or Crick, that does not seek ultimate manipulation as it goal? It's been said before, that in the wake of Darwin the idea of technical progress been raised to a level of scientific religion. Yet, we are well into the era of diminishing returns with science. More and more effort and expenditure of money is allocated just to sustain progress. This is partly for the reason of complexity, as already indicated in previous examples with sustainability questions. It's may be worse than that, however. Dr. Hubert Markl is director of the Max-Plank Institute, the world's largest government financed scientific establishment, and when asked in a public interview in 1997, he put it like this: "We [scientists] need to keep manipulating creation, just to save ourselves from ourselves.[1]"

Are we doing a good job of saving ourselves? Many argue no. The whole enterprise of science has changed and is loosing credibility. Freeman Dyson is professor of physics at the Institute for Advanced Study, in Princeton, and has written on topics of complexity to Gaia. What he said is this: "Long ago, some very bright people invented science. If you go into the future, what we call science won't be the same anymore."[2] Are we basing the new organics on the science of the past?

The situation with science can be summarized as the matter of pursuing excruciatingly smaller issues with diminishing greater precision at exponentially greater costs— to arrive at what? What happens, says Nobel chemist Ilya Prigogine, is that "we arrive at the end of certitude."[3] Far from discovering the foundation blocks of the universe we have only removed them all, one at a time. It is similar to the Buddhist explanation of reality, which says: the student asks the Sage, on what is the world carried? Replies the Sage, on the back of a turtle. What's under him, asks the student. A turtle, replies the Sage. I don't get it, observes the student. My child, says the Sage, don't you see, it's turtles all the way down!

While it has to be admitted that right now there is not agreement on this matter, I would say science is entering a unchartered waters, where uncertainty about its enterprise is growing. Some hold that we have explained the world very certainly, and others just that we have certainly explained the world. Assuming the uncertainty thesis is appropriate, I tend to be concerned about those who in their attacks on genetic engineering give far too much credence to this fledgling technology based on an over-simplified mechanistic view of the living world. Medical geneticist Charles Sing -also presenting a paper at the Governor's conference[4]- points out how far from explaining how they do what they do, geneticists are confronted daily with contradictions to their "belief" in the determinis-

1. Markl, H. in Der Spiegel January 20, Nr.4, 1997

2. Freeman Dyson, interviewed in 1993 by John Horgan
3. Physicist Ilya Prigogine, in End of Science, John Horgan, Addison Wesley 1995 also in: The End of Certainty, Time, Chaos and the New Laws of Nature (with I. Stengers) (1997) The Free Press, New York
4. Sing, C. (2001) What everyone knows but most deny when considering new biotechnologies. Governors Conference on Organic Agriculture. Mich State Univ. Marc 3-4.

tic-mechanical paradigm they are working with. Evidently, what is really present is more like a multi-dimensional circular scheme: the gene makes the cell which in turn has been made by the environment. Princeton biologist Ken Silver has recently cautioned about misrepresenting the primacy of genes by overlooking the environmental factor in genetics[1]. Maturana and Varela like to point out that the whole notion of genes as "information" is doubly false[2]. In all these critiques, we experience science needing to take account of context, long forgotten. As organics grows and also delves deeper intthe marketplace, what will come of its science?

What many are beginning to ask is : who is doing all the misrepresentation to the public? A curious investigation that gets to the heart of this was recently reported by a New York Times writer who set out to expose the origin of the expression "germ", a kind of modern mythology that is being widely propogated in order partly to promote the modern obsession of killing all germs, as evidenced in new detergents and soaps carrying antibacterial chemicals[3]. According to this writer, virtually all the experts interviewed denied giving credence to the expression "germ" which has been long outmoded in science and is even considered to be a false model representing pathogenesis (that was how people thought in the 18th century.) Yet the NewYork Times writer was able to document the word "germ" appearing countless times each day in major American media underwritten by organizations whose employees include many scientists. Shame on them!

From all these considerations, it is clear that we must say: be wary of science, even when you think it supports organic practice. Science is a far more frail enterprise than some would like to know. But then again, it is far more human than many would like to believe.

FOOT AND MOUTH: A VIRAL OR POLITICAL DISEASE?

Perhaps the most telling example of distortions that sweep science and farming, and where we can not decipher right from wrong, is seen in the current predicament with foot-and-mouth disease. Judging from the media heyday, a world calamity is in the works. Yet this viral infection of cattle is in clinical terms the equivalent about to a bad cold. It is well known that 95% of animals will recover within 2 weeks with very little treatment[4]. Why the hysteria, and all the cattle slaughtering? University of Manchester, (UK) veterinarian Abigail Woods comments on this: "Since productivity [in modern farming] is everything, a slower growth rate [of cattle] is intolerable... with markets being global or nothing-at-all, this spells immediate bankruptcy".[5] The imposition on nature and farming of an extremist position that necessarily destroys massively what it does not need has the direst implications for the future. Imagine a time to come when plant-seedling raising is on such a huge-scale and narrow-margin basis in a global-world economy that a small outbreak of *Pythium* damping off— which we treat simply with compost— would impel agencies to sweep in with a massive spray-and-kill program to protect all the other big growers. There can hardly be any organic farming possible in such a world.

1. Krueger, A. (2001) A Genetic Level Change for Society. NYTimes, 3/1
2. Maturana, H.R. and F.J. Varela (1998) The Tree of Knowledge. Shambhala Press Boston
3. Kolata, G. (2001) Extreme Hygiene; Kill All the Bacteria. NY Times Jan. 7 ALSO: Brody, J. (2000) Personal Health; How Germ-Phobia Can Lead to Illness NY Times. Jun 6
4. Woods, A. (2001) Foot and Mouth Disease: The current outbreak and its historical precedents. University of Manchester, Wellcome Unit Newsletter. 2/28/2001
5. N.Y. Times (Foot-and-Moth puts fear on British farms). March 3 2001 (see above)

HOW SCIENCE BELIEVES WHAT IT IS DOING

The overall problem in science and modern knowledge can be put like this, and we needn't be ashamed of it: from the beginning, the western world incorrectly formulated the basic argument concerning the separation of objective and subjective. This played an important historical role in reshaping society and focusing industrialism, the subject of another story. Even while compounding the error vastly, we've been able to live with it by postulating that we will one-day find the one underlying truth: the fundamental genetic mechanism or the ultimate particle— in which case we are off the hook. This promise is one of the neat tricks we borrowed from religion. Meantime,- and here is the important part- we have invested such a huge effort in discrediting not only religion but in fact all wisdom based approaches to understanding the world that we can't go back on it, not now, not this late- at least not with the arrogance that is embedded in the western, scientific-determinist psyche.

This concept of an error having been made which compounded over time has got us where we are now, is reflected wonderfully in the dialogue held in 1980 between physicist David Bohm and J. Krishnamurti, concerning knowledge. Bohm summarized: "It was a mistake made long ago- a wrong turn- that having introduced separation between various things outwardly, we then kept on doing it— not out of ill will, but simply through not knowing better"[1].

Organic farming is trying, philosophically, to lead us to something better, and if I am right, we can't attain it fully by practicing the same original science based on separations and manipulation. But some feel impelled to do just that, perhaps in order to impress the powers that be, or to woo the marketplace; probably both. This deepens the dilemma, while making the outcome much more interesting.

ORGANIC FARMING ON THE LINE

This brings us to the organic farming part of my three-sided, holographic polyhedra. Everything seems to be going the organic way- a definite trend. Underlying the battle to remove chemicals from farming, however, is the other battleground (or did we forget it) and that involves how we understand what we are doing. Within my field of organic soil care, I am alarmed how so many superficial, reductionistic facts have been lifted from conventional science and imported into organic farming by its very proponents. This is very much the case with popular literature and soil testing where it may be enough to add the word "balance" or "soul" and suddenly very dreary facts appear to be "organic", leading to soil-friendly farming technologies. Does the means justify the ends? I doubt it. Somehow, those who are doing it seem not to have considered that organic farming is more than just a difference of degree rather than type to common methods. Thus, organic farming has been and still is beset by numerous pseudo-holistic soil views from ionization to mineralization and cation-balancing, to name a few, all considered synonymous to soil-health. In our laboratory we have found that the great usefulness of any of these soil or composting theories is relatively easy to disprove for most situations. It is important to realize that tweaking minerals in soil or manipulating composts is a mere partial step. It seems to be the same thing all over again as we saw in the techno-culture and genetic engineering where a variety of blends of marketplace logic and spin-doctor science produces numerous new processes and products a free society even with Organic Expert oversight has no recourse except to accept. In view of this, one may sometimes despair of attaining nature-oriented and truly organic solutions with the framework of the western world.

The Organic Materials Review Institute (OMRI) plays a necessary and vital watch-dog function in the world of organic soil amendments. OMRI's

1. Krishnamurti and David Bohm. (1985) The Ending of Time. Harper San Francisco.

growing lists of permissible organic amendments is added to weekly[1]. There seems to be no end to the new "input organic farming" which is indicated by this trend of new products. I raise this point again because it suggests that we are in the process of constructing our own ecological bureaucracy, similar to Sach's Ecocracy, just to manage the whole good affair. These growing databases of allowed ingredients and practices forces one to recollect Garfinkels book "Database Nation" which is mentioned already in this paper. Now it is called *Database Organics*. No wonder we needed the USDA to step in with its National Organic Rule. In a world where you have to be certified to be good and all the evil-doers go unpunished, what should one expect?

One thing is certain, when everyone becomes good, then the whole thing vanishes, becomes invisible. A Zen kaon states: the world disappears to him who is awakened from the darkness of ignorance. That's something to look forward to. The immediate goal of implementing a form of nature-farmer-consumer friendly agriculture must be pursued and is attainable. What I like about the USDA NOP is that we have planted a seed in them, a seed as in: seeding a salt solution. It doesn't take 100% to bring the whole thing to finality, to saturation. Sometimes it is far less than that, maybe as little as 25%, could be less. In Europe already calls are out that soon organic will be mainstream. That means, this could all be over sooner than you think, long before all the votes are counted. When that happens, we will simply go on to other things.

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1. OMRI is a non-profit center in Oregon that inspects and regulates information pertaining to organic soil amendments. The author is on the advisory board.

Postscript: Essay from in *The Ecologist*.

"The industrial society in which we live, and that we take to be normal, desirable and permanent, is in fact aberrant, destructive and necessarily short-lived. Rather than further increase our dependence upon it, we should, on the contrary, reduce such dependence and set out systematically to phase it out." - Edward Goldsmith

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