

August 15, 2006

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Dear Phil,

Thanks for the notes and for writing at some length about "Observing Natural" I don't know who your website audience may be, but everyone needs to be told in no uncertain terms that their favorite clichés about "growth" are as wrong-headed as they are dangerous. Unfortunately, however, world politics and chrematistics are hooked on growth and can't stop it short of collapse. All of us in the prevailing society are active participants in and supporters of the debacle — the consumptive disease of increase — whether we acknowledge it or not. Of course, it is for the true systemist to ask how so many brilliant and important people can be so crazy, for surely there is a higher order cybernetic reason for cybernetic perpetuations of foolishness just as for everything else that goes on. Perhaps the answer is obvious: Population is growing (US doubled in my lifetime) and consumption is too (US at least fivefold per capita during my lifetime), so in the pyramid scheme of world culture people have little choice but to tell the big lie that "growth is good," thus to convince one another that there will always be enough to go around for all. As always, the compounding effects of such a positive feedback cycle of violence to nature and the truth will have to continue until something breaks down; and, as is usual in any confidence game, the people most fooled are the promoters who most believe. The Western Rational Tradition of indoctrination in linear causality makes people especially vulnerable to such tripe.

In matters of abstraction concerning the traces of vital signs of systemicity, it is high time for someone to build upon Arthur M. Young's concepts of the roles of higher derivatives and, beyond the mundanities of velocity and acceleration, appreciate the manifestations of control in the third derivative and of destination in the fourth, the former in its role of holding a level dynamically and the latter being associated with establishing new levels. Beyond von Foerster's changes-of-changings and his belief late in his life that "functors" provide the mathematical answer to questions about the cybernetics of cybernetics, it is the change of change of changings, etc., that matters. It requires a higher order of dizziness than is commonly supposed if any sense is eventually to be made of goings on, and as your essay correctly states, it requires higher dimensionalities of connectivities in models and in metaphors, e.g., "perpendicular to the page." It also takes perspective, something which we cannot in general have, since there is no vantage point for a super-observer (G.M. Weinberg). In particular, we can only be sure whether a system was really "under control" due to negative feedback cybernation if we can see the entire perspective of its life cycle from development through operation to demise. In other words, we cannot be sure something was going on systemically unless we know something of the situation with it and without it. It is no wonder that people will always have a legitimate quarrel about whether the trace of an exponential changing indicates a part of a developmental process from one level (stage) to another, a part of a catastrophic collapse, or merely a rough spot in a much longer nominal level. Of course, since Mother Nature bats cleanup, it is not likely that the human species will ever know what hit them.

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for now, part
of reality

could be
transmission
of ideas
not within
rational
trad.
even mathematics
misses the pt
tho...

gives it
the point!

A question related to the cybernetics of cybernetics was asked many years ago at an ASC conference by the late Stafford Beer. He dismissed the conventional wisdom that gambling is simply an inclination of human nature or a byproduct of greed and supposed instead that the growth of legalized gambling in the USA was the result of increasing disparities of income between the richer and the poorer, i.e., that the possibility of a big win made the poorer imagine that with a little "good luck" they could in one day jump right up over the (former) middle class. (The same argument can be applied to jock-ism and the supposition that some narrow ability, e.g., to throw a ball through a hoop, will turn the game into chrematistic leapfrog.) Beer's thesis was all the more important because the possibility of working one's way to wealth was becoming much less possible during that era. The false hope of striking it rich, he conjectured, kept people from rising up in arms against the fat cats and their political cronies. Stafford always included a dose of radical politics with his social cybernetics, but he may have been more right about this matter than he realized. It is probably not a coincidence that state lotteries crept into favor about the same time that the leveling of personal income despite the rapid growth of gross national chrematistics began to be apparent (as you have documented), which was also the time when legalized gaming leapt out of Nevada into Atlantic City and spread into every riverfront and reservation soon thereafter. With or without graphs such as yours in view, people intuit change and make (cybernetic) accommodations thereunto. The deep cybernetic reasons for such adaptations are all too seldom examined. Stafford Beer made very elaborate five level feedback models of social cybernation which may have been too finicky for the real world and too esoteric for ordinary people to comprehend, but he was another of the workers active in the 1970s who was trying to "get with it" cybernetically. If we are reminded that Weinberg, von Foerster, Forrester, Beer, Powers were all doing definitive but independent work during that decade, we have to wonder how it has happened that their results have been ignored or forgotten. Easy answer: to attend to these materials would undermine the status quo of what is going on. It has been said that no human endeavor persists unless someone — indeed, every stakeholder — perceives benefits from it. (In the 1970s this led to scholarly articles such as "Who Benefits from Illiteracy?" by the late Warren Ziegler.) Our goings on certainly do have a powerful psychosocial cybernation to them.

parallel turning pts?

yes I say
see clearly
just don't
know how
to start

I suggest that you never gloat about but nonetheless never apologize for making people dizzy with tales of circular causalities. It is better to go ahead and make the most extreme statements: "All processes are circular" (von Foerster) and "All causality is recursive" (von Foerster) and "It, i.e., everything, rests by changing" (Heraclitus) and "The eddy is the entity" (me) and "It must go around to go on" (me) and "Error is the mother of perfection" (someone) and "All logic is circular, as is every definition" (?) and "Every story is stirring." One can even assert with confidence that "all thinking is (necessarily) circular," with "points" being only provisional and "conclusions" being nothing but (temporary) steady states in the dynamics of cybernating thought. Any challenge to accepted beliefs is going to produce resentment, so one might as well incur a maximum dose and then use the fracas to sneak some re-education into the process. Could anything in ordinary experience be more obvious than that thermostats and cruise controls hold steadiness by continually adjusting? How could anyone compare a spinning gyroscope to a stationary one and not see the regular changings of the former as a potent source of stubborn constancy? Does anyone ride a bicycle without making continual corrections? Generalizing from the mundane to the esoteric may be as logically flawed as David Hume and Karl Popper supposed, but then William Powers taught that logic isn't the last word in reasoning, so let us indulge in radical inductivity and hope for the best. If systemicity in general is to be conceived around a (virtual) axis, for example, the fact of "keeping on" is itself recurrent, if not in exact loops then in fractal cycles or respiratory spirals or messy semi-repetitions. If the unwashed masses are going to hang you for telling the truth, your feet won't be any further from the ground if you have told the whole and unvarnished story.

with the axis
of the circle.
being the point
not far said.

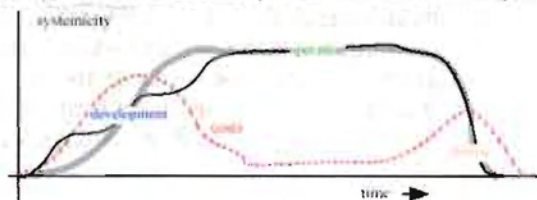
all that through
requires adding
new dimensions



that pair
is to be seen
calling for
amplifying the
growth sector.
the calculator
financial growth
improvements.

agruing to
You can't function in big world going into a return on investment
with which they can multiply businesses that will agree to that.

In the old days when teaching about systemic development was considered to be a worthy matter for scholarship, a *deliberate* development to create what you call a "system event" was inevitably analyzed as a trace of vital signs from adolescent sigmoid to senescent decline such as below where there might be several ascending stages, e.g., version levels in an evolution, followed by a more or less level period of operation which eventually declined toward geriatricity (possibly after some spasmodic attempts at resuscitation) and terminated with a relatively sudden plummet into oblivion. This pattern can be observed in human situations from computer product lines to old age homes, and as the red trace suggests the costs associated with various phases rise and fall and eventually rise again at senescence, even as functionality declines there.



For pedagogical purposes it was also important to examine the nominal phases of a development as below and to be reminded that there could be some early under-shoot and late over-shoot in a developmental process. Other illustrations emphasized inner iterations during development, spin-offs, and the possibilities of failure or unintended collateral success at any time. That deliberate development of systems and "natural" developments have analogous phases is surely not coincidental for cybernetic reasons.



In matters ecosystemic, there is a nice PhD thesis waiting to be written as a scholarly comparison of recent pronouncements by James Lovelock on population and such, Willard Fey on "ecosystem dynamics," Meadows and company on "limits to growth," and Al Gore on "inconvenient truths." One could also throw in with Howard T. Odum's "systems ecology" and the ruminations of his student Michael Burnett about negative discount rates (enclosed), and Richard Coren's "evolutionary trajectory" could add some spice to the mix. Garrett Hardin's "tragedy of the commons" applies to the world more every season as humans become increasingly over-connected in increasingly over-developed societies, thus holding more and more in common, hence to incur the likelihood of more and more abuses. Many of the points which you make (or score) in your essay would fit well with all this, and some ideas from von Foerster, Young, and G.M. Weinberg would make a big difference as well. Despite the fact that several of the luminaries mentioned above were fairly disciplined classical cyberneticians, none of them seemed interested in second (and higher) order cybernetics, in the topology of networks, or in turning arguments about "causes and effects" inside out, e.g., from spheroidal to toroidal. Abstractions from excessive classical physicality reified in the desire to trace direct, forcing relationships cripple the discourse. If you can develop your arguments concerning discontinuous continuities, media of connection, and series of exchanges to enrich the discourse, you will make a substantial contribution. The people who study "semiotics" per se and the people concerned with "media ecology" are fumbling in the same wilderness. Studies of culture and tradition — of second and higher order habits of thought and action — are kindred and partake of the same subject matter, but without any cybernetic sensibilities whatsoever, and the people in "social cybernetics" don't seem to get it either. Even those of us who are conversant with deep cybernation (such as what Powers offers) find the topology of sociality to be an intractable tangle. It's all just a congeries of verbal combatants talking past one another and failing in the potentially important communicational exchanges. The cybernating tori of social exchanges are so far from being appreciated as to be out of the picture indefinitely, but the sociocosm and the psychocosm are undeniable parts of the ecocosm, and the whole is richly interwoven with cybernetic

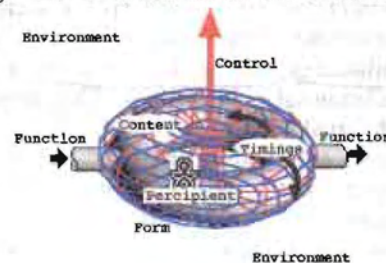
— saw lots
didn't really
understand why
the subject is
so confusing.

reinforcements against systemic change. The real story is not about artifacts conventionally named "incompatible worldviews" or "differing motivations" or "misunderstandings" but rather about cybernations — internal and external — which are layered and knotted and stable in the extreme. That is one reason that political and military interventions work so badly. Unless the invader is willing and able to create a vacancy without naming a successor, i.e., wipe out the life of the "enemy" altogether, the system lives on. In Iraq the unholy affiliation of disparate tribes which was forced into place after WWII and coerced into restless submission by dictators after that is "the system" which is more ancient than any written scripture, and whether it appeals nowadays to variants of Islam or to some other excuse, there is no way to end blood feuds short of draining the blood out of them, though certainly not by the methods currently being deployed. Reconciliation is for people who have deep systemicity in common but have parted ways over superficialities; it is not in the vocabulary or the repertoires of those who would not admit they had a common interest even if such a thing were to be discovered. To view and to label and to treat other people as lower than animals is time-honored in propaganda and in practice. I won't live to see it otherwise.

*except under
standing how
their self-interest
are mixed?*

Where it comes down to pictorial representations of concepts, I think that most of the ideagrams in your essay are effective, at least to someone who has already considered ideas similar to what you are trying to express. That they are necessarily metaphorical more than analogical is an occupational hazard. WRT thought favors the literal and the expedient and the concrete (where it is firmly set), so there is no right way to break loose except to try everything and turn every which way (but loose?). While in your experience it may be that "a more static model as a teaching tool" serves better, I have received lots of static about the stationarity implied by my illustrations and been told that only a kinetic display, e.g., a simulation in motion, would fit the subject matter. Audiences differ, so we'll never get it right, except through trial and error. Sometimes a point can be made in spite of the confusions, as when one finally sees a glimmer of understanding that the wooden hole in the dynamical whole of the gross topology of a living tree is just as good a non-consubstantial hole as the air hole in the gross topology of a doughnut is. Your points about discontinuous continuities have "obvious" physical manifestations as where an electrical circuit made of conductive copper wire contains a dielectric capacitive gap or a permeable chemical gap, e.g., a battery. Series of non-consubstantial media, interfacing, and the interactions among "mediums of exchange" are what it's all about, but in the WRT those tend to be treated as exceptions, hence the need to turn conventional conceptions inside out.

In the matter of differences in structural kind which need to be recognized between different echelons of order at different magnifications such as you point out, these are consequential on their morphological merits but they necessarily have in common the topology of negative feedback cybernation which must be operative for any level to persist as such. The reason that my preferred model for the systeme as a unit of systemicity explicitly includes aspects of *form*, *content*, and *control* as well as the cybernating aspect of *function* or process is not merely an homage to what the literature of general systems has considered to be "important stuff" but rather an acknowledgement that at a given echelon of order there are essential aspects of a perceived system which are not apparently in process. For example, a chunk of iron taken to be part of a system may remain relatively inert, even though the microcosm of its subatomic processes is very busy and even as it participates in the macrocosm of stellar processes. It is my conclusion after re-reading Powers that his negative feedback loop as a unit principle or *cybername* of organization per se is necessary but not sufficient and that a *systeme* such as at right is closer to being a practical as well as a theoretical fit for what people perceive to be going on.



Finally, as for the cutting of the stem of the tree, I think it has the same effect in an ideagram as it has in nature ... that last cut kills it. I am not quite sure what problem you are trying to resolve with that last cropping, for if I were I might be able to suggest alternatives that would satisfy you. Under the heading of *interfacing* there certainly might be representations which better express more about media of exchange, discontinuous continuities, separate closeness, buffering, ephemerality, intermittency, temporality, gross anatomy of dynamisms, etc., than any I have drawn heretofore, and it would be worthwhile to keep on searching for improvements. Certainly, a more literal and botanically correct drawing of the topology of the living dynamics of a tree could be rendered to show a multiplicity of (seasonally adjusted) circulatory loops from roots to leaves and back with no croppings whatsoever. For now, I have only my "Reframing ..." paper and my "What's Going On ...?" paper and the "Construing Systemicity" pages to offer as other suggestions for further exploration and clarification.

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Best regards,
Don