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Dear Don,

Boy it's great to have someone respond both positively, and in a way that recognizably builds on my own directions of thought on the various issues. It does sort of take a little wind out of my sails, however, to realize that I'm still struggling with that extremely elemental step after, what is it, about 30 years of doing this. It might be the global strains on holding the old 'paradigm' together as the world flies apart, or just that the waves of emerging new thinking take longer to regenerate than we'd perhaps like. I might also be simply mistaken that there's anything happening to make the world more receptive, and I'm just noticing a handful of other people who have also been waging long solo underground campaigns slowly getting it right.

Well, actually, I don't have much of a list, except you, Bob Ulanowicz, Stan Salthe and maybe Peter Allen. Still, from a list of zero a year ago the progress is definitely infinite! Another sign is that the journal ECO seems to be emerging as a place for people to creatively explore the properties of autonomous complex systems. The ECO community gets some of it's motivation from the tentative idea of 'edge of chaos' promoted by the cellular complexity theory and Alife communities. What little I can follow of that discussion it seems to identify several disparate features of natural systems and to not explain them accurately, but it's an important development. Creativity sometimes brings profit and having a thread of understanding leading toward what makes nature creative could possibly profit a true systems theory too! The growth machine has primed everyone on the rewards of being creative,... and we're certainly going to be needing creativity to put an end to the growth machine and come out smiling too!

Peter Allen's summary of his teaching method in ECO Vol8#2 explains system evolution in terms of variation as a means of 'exploring' a kind of phase space of potentials. It's a great lead-in to the model I describe in my plankton paper. If systems actually have cybernetic structures (rather than just being statistical amalgams as usually assumed) then variation will tend to be localized at unstable extremities of the structure, rather than in the stable core. The peaks and valleys in a 'fitness landscape' or 'potential space' would then produce feedback to multiply variants of the same kind along their positive directions. That models true exploration and provides a basis for evolution and emergence to be the same thing and to happen by growth.

On the 1992 paper you enclosed by Michael S. Burnett I noted some margin notes that fit quite closely to the text, reflecting the developmental phases of growth seen in each of the derivatives of the rates. That's certainly how I'd consider the context in which the proposal is being raised. I've pushed aside the idea of 'negative discount rate' (NDR) before, for not understanding it. I can't say this

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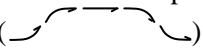
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version gives me what I'd need to see what's proposed. Perhaps it's proposing a more realistic means of accomplishing my rather radical notion of simply unplugging the growth multiplier. I think mankind could conceivably make a collective decision to stop multiplying unearned income by choosing to replace reinvestment with spending (flipping the 'SR' feedback switch). Maybe both are necessary but need to come in sequence with other things. The simplest beginning of an SR switch would be to cut the income tax on unearned income that is spent. These issues need to be worked through by real economists who happen to also understand the problem pushing 'steady growth' to it's natural end in systemic collapse, and willing to learn from natural systems.

What I like about NDR despite not seeing how it would work at all, is that it suggests that each government could have local control over the intensity of competition within it's own economy. One of the major world problems I see is that development aid to undeveloped countries usually doesn't give them a protected environment in which to develop, but accelerates exploitation from the outside. The purpose of NDR sound like it might change that. From what I know of economics, however, it might also have the opposite effect. As I understand it, when the Fed cuts the discount rate it means that businesses can borrow money at a lower cost and it intensifies competition. Even if I think an NDR approach might work backwards from the intent, the intent discussed is excellent, and does aim at adjusting existing government stimuli for individual self-interest choices in response to the current stage of whole system effects, i.e. actual steering.

The dilemma of business is that you can't function in business without agreeing to give investors a return on investment with which they can multiply businesses that will agree to that. That blows up, destructively. It may not be a sufficient problem to solve, but it's a necessary one. Whatever path to whatever solution has to answer that. Turning from multiplying what we've done in the past toward building the world of the future is clearly the turn that matters at present.

There's lots I'd respond to in your discussion of theoretical issues, but let me be brief since I'm falling behind. I'm so glad you note that, "it is for the true systemist to ask how so many brilliant and important people can be so crazy..." It's a question that all humanity will be asking more or less shortly I think, and so, by asking it, all become true systemists perhaps?! It is entirely appropriate for every little thing about mankind's whole mammoth disconnect with reality to be treated with great suspicion! For some large community it will be seen with appropriate awe as a stupendous display of nature, even if at the same time it's also a major pain in the ass that we'll all be fumbling to make sense of.

You also say "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.." That's the whole idea of interpreting things in terms of their place within the universal life-cycle (  ). It gives you the super observer perspective so that images of the future are then no longer just projections of the past, but also recognize an interplay with evolving experience within and without.

Regarding my taking liberties with your toroid, slicing what was a smooth connecting surface in half, does seem a little drastic, and I apologize. The seam between direct and indirect (or between chains of push and pull) is what I'm after.

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In some of my notes and sketches it's not a sharp break but often a blend, merging gradients of widening and narrowing gaps and such. In terms of a physical tree, the products released by the roots into the xylem are wastes to the root cells, stuff they're done with, and don't become useful products until the cells of the leaves gobble them up. It's that mystic gap that many system flows seems to cross that I'm trying to represent with the 'mediums of exchange' and 'broken links', and what you note as a substantial contribution to the discourse of "discontinuous continuities, media of connection and series of exchanges".

Anyway, as I think we both largely practice, models are for raising questions more than answering them, if the fit of using symmetric gaps in the loops of systems inside and out is uncomfortable some places, that could be productive. If you don't find it productive at all, of course, I'd be very interested. I hope you see a little of what I like about the matching the separations within and without. That was actually sort of an afterthought implied by the model geometry that surprised me too. Perhaps every model needs to not quite fit in order to get people to think about the real ones.

Best regards,



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