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Dear Don,

Well, I'm delighted to see that you've been continuing to add and adapt your models, and glad you've found some progress in mine. I've been exploring a lot of the popular literature and going to a number of scientific conferences. It's drawn my attention to a number of unusually clear examples of how and why people cling to insolvable ways of defining problems. I've also been working on developing measures for whole system behavior that casual observers could make good use of. Casual observers make fewer of the kinds of errors that formal rule making causes. Rule making does not seem to allow an understanding that limits in natural systems are approached as learning curves, for example. That's something that informal thinkers could use to help formal thinkers discover how our world is made of differently organized individual systems. That view of systems as individuals is one thing you and I seem to see that almost no one else quite says directly, that systems emerge as individuals from their own environments, just as it would naively appear!

For casual observers to see what they have in common with 'organisms without brains' is a challenge indeed. Very little of what I've tried has worked as the starting point for them yet. I'm getting some response from non-system thinkers to the approach in the enclosed short paper. When formal thinking represents environments by replacing individually behaving parts with fixed definitions as in scientific models, it hides all their independent behavior from view! It's a kind of map that almost guarantee's you'll be flying blind. Some of the notable environmental mistakes fit quite closely with that way of misrepresenting thing, like treating individual behavior as random rather than responsive, for example. It means scientists and economists, etc. won't catch their mistakes until their whole models fail. The enclosed draft takes a more general discussion approach than my first one. My first draft started to be a more thorough but was running too long for the journal it was aimed at so I put it aside: <http://www.synapse9.com/drafts/Cosmo-SciMan.pdf> Hopefully these, as you say, "sharpen and consolidate" what I have to say.

The other thing I'm having some success with, sort of where I originally started, is with discussing the phases of systemic change as 'learning processes'. Many people are beginning to recognize that our societal learning process for making the earth sustainable is heading up an ever steeper slope... and beginning to stall. The conferences I've been going to make it quite clear that all the technical people are feeling the burn as the complexity of their solutions is blowing up, and the public and politicians are falling down dramatically on their part. People are not quite seeing that as a major problem yet, interestingly, and still just thinking that everyone should just try to redouble their efforts.

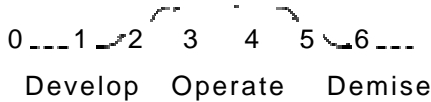
I like your way of saying the schema of comings and goings as "development ->operation -> demise". I did get Stan to agree with my way of numbering where to look for the different types of change it involves to make up his statement of {immature-> senescent} match mine, dividing those two

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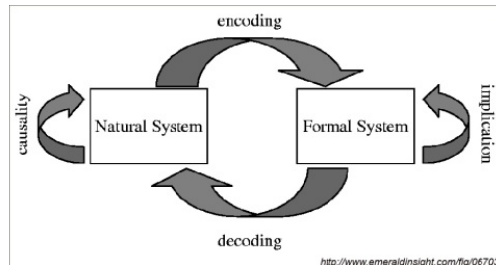

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development periods in two and putting a possible period of stable operation in-between. I use the same numbers in the sequence to refer to the points of change and the following processes of change. Context can show whether you're referring to the changes in direction (feedback switches) or the developmental process periods that follow. That then makes a map of 11 different organizational transformations to look for in things and to plan for in thinking things all the way thorough.

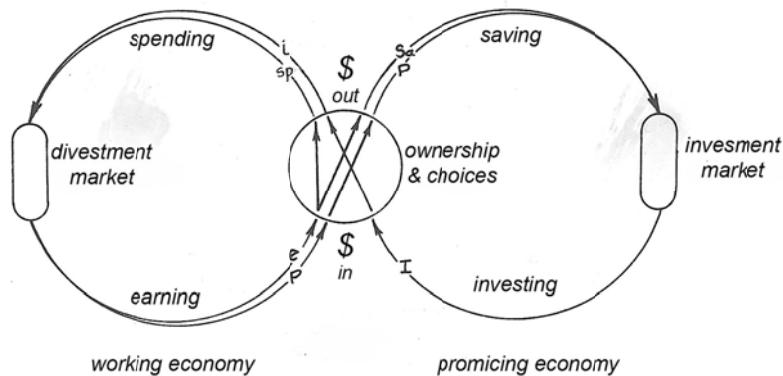


Another diagram that seems quite useful is one that helps explore the connection between our mental world and the physical one, from Robert Rosen.

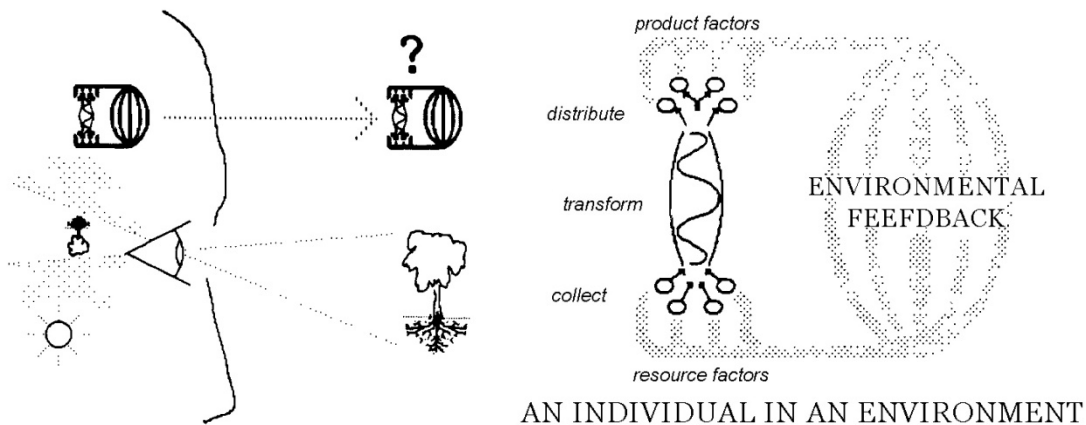


How one uses it can vary a lot, of course, and Rosen himself continues as most scientists, to represent natural systems with formal ones, despite having found by his own means that that can not be relied on. My observation that formal systems have no independent parts is a far larger slip-up, it seems, than the technical uncomputability of life his mathematical work seems to expose. Formal models simply define away all the individual behavior of life. I have used several variations on the same mental model for years with the labels a little different. Often the two 'boxes' are 'process'(nature) and 'perception'(images), with the tantalizing starting observation that 'encoding' and 'decoding' are natural system processes which are localized within each mind.

Following are the two ways I diagrammed the natural/formal system relationship in my 1985 SGSR papers. One is in the form of the relation between money and choices in the economic system. The other is a depiction of encoding and decoding of systems in the environment, by a system in an environment...



The circulation of money between image and reality



In the mind's image, wondering if the place holders point to the things.

When perception leads to fixed and self-consistent climax states of thought it tends to (mis)represent a world full of differently consistent and independently behaving parts as a machine of fixed relations. I think I got to that from noticing that the process of turning vibration in the air or dark splotches on a page into meaning is a very private creative act that resolves an individual's own self-constructed world view, only. That there is no actual information input-output device between people, only a creative reinvention device, is sort of a dead give-away. That perception works at all for communication is the surprise of course. That every meaning we find in the world is of our own invention would explain much of why our attempts to communicate limp along as they do. I hope it helps people see how it hides the individuality of the living things around you to represent them with fixed images. That looking behind your fixed images for the life you've been missing... is the higher objective, of course.

So as you say, systems are not produced by a universal tendency, but "what cybernates by happenstance or by design", or as I'd say "whatever develops". The individual thing referred to by it's name or image needs to extend to include the whole self-defined cell of the cybernating internal network of relationships as it emerges, stabilizes, operates, falters and fades away. The puzzle is how to connect that with the appearance that 'cybernation' needs to be a discovery process as well as a control process, a learning by 'experiment' of some kind. If development is not a pre-existing rule then it needs to be a rather efficient way of putting together found opportunities in new ways to make others with little but an environment of broken parts to feed it. The cybernation of nature has both those aspects of repetitious and inventive and responsive adaptation.

The great privilege of having close to no one at all to listen to me for so very long has been having complete freedom to think as I like, and this time I seem to have finally given up on being so frustrated by it, and just being casually playful with the whole thing. Little whispers are all an inquisitive cybernation needs, however. All we can hope is that nature is kind and allows us to quickly see what's happening as she rips down our foolish edifice to get our attention...

Best,

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From 4/27/08 email Stan Salthe & Phil Henshaw – text indent's removed

Phil --

Stan,

Phil -- see below

Stan

Phil –

S: On refining the canonical developmental sequence from 3 stages to 5, it all depends upon whether you have an example that requires the richer description. The sequence for most natural (all abiotic) systems is really only two: immaturity senescence. A stable maturity was the invention of biology. As for growth and development requiring substages of immaturity, I usually find the two going on together. And as for 'disintegration and decay, I find these occurring after senescence has finally collapsed, not as aspects of senescence.

[ph] 0---1↘2 3 4 5↖6--- is the latest version I have of it, with each number used to either name the point between the period before and after or the period after it.

[ph] For me the main interest is in organisms and systems that do have distinctly different organizational processes in phase 1 and 2, and they commonly exhibit a true self-stabilizing state 3, and phases 4 and 5 with distinctly different organizational progressions. It is popular to say that there is no such thing as a steady state because it only seems to occur in things that we can't make sense of. Still, active homeostasis seems present in all kinds of things and that seems good enough for me.

[ph] There are also possibilities of true extended steady states between period 1 and 2, for example, like processes that accelerate to a constant velocity and then stabilize for a while before declining. I've also mentioned that, for me, the diagram could also represent the derivative or the integral of some measure. Everything begins and ends. There are going to be lots of processes for which traces of their measures will have a clear phase 1 and 5 but no clear individual phases 2,3, or 4. Those bear investigation.

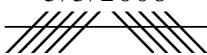
S: Much depends upon how you define your 5 stages and on the kind of system you apply them to. Carefully done, it might fly.

[ph] Great, the first line in my definition, though, says 'go look', then I suppose you'd have a discussion of things other people have found when they did that, like each having a table of properties?

S: The canonical developmental trajectory is based on commonalities found in the developments of many systems, from abiotic to biotic.

[ph] At a point you get to the mathematical definition of continuity and derivatives for implicitly connecting the dots. That's needed to sharpen the distinctions, deal with the ambiguities and give computers something to do.

S: I have not yet seen a program that models the developmental trajectory. It

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would involve information / information capacity tradeoff and energy throughput (specific and gross).

[ph] I sort of approach it from the idea that natural flows that connect the 'dots' of discontinuity in physical systems are the behaviors of physical things that makes calculus useful and that are what all science is about, so this is just an exploration of what the validity of science is based on.

[ph] One thing I'm unsure of is how you'd incorporate senescence.

S: Beware this term. I have found universal objection to this concept, and eve to the term itself. This touches a raw nerve.

[ph] but you use it a lot, and you seem to have a consistent reference to physical phenomena. I might prefer to use 'aging' for general discussion so people know the subject is the same thing as what they see themselves, but it's the same thing if what you're referring to are the intricacies of the physical process rather than a theoretical construct by itself.

S: They don't like 'ageing' ether. The whole concept of development leading necessarily into senescence is anathema, drive by unreasoning fear. On thing needed now, with aging population is a reconception / reconstruction of ageing / senescence as a necessary stage in the life cycle.

[ph] In some ways breakdown an decay are represented by phase 4 and 5. In other ways it's an ongoing process from the beginning, as continual organizational breakdown and overdesign even during organizational immaturity.

S: In biology, average mass specific metabolic rate begins to decline at fertilization, remains high in early development but has dropped precipitously by birth and gradually after that onto an asymptote. With fluctuations of course -- daily drop off, lactation, fever, etc.

[ph] does that mean btu/gram?

S: Yes.

[ph] I was seeing the concern of senescence as the continual breakdown of organization of various kinds, concurrent with growth and decline of the whole system in total, not the derivative measure of throughput per unit.

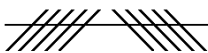
S: The energy throughput is crucial to healing and maintenance.

[ph]Another interesting specific rate would be the energy accumulation, as well as throughputs.

S: Information accumulation is crucial. After a system is definitive, continued input of info (as in scarring, etc.) tends to disrupt the free flow of energy allocation within the system. I don't see 'energy accumulation' as being a factor.

[ph] All systems seem to record continual accumulations of 'noise' and overdesign might be there too. Maybe that's somewhat independent of the four alternating developmental feedback directions from beginning to end as seen in the trace of any variable. I don't know. I mainly use the scheme, of course, because it's a reliable way to force people to think about both extending and reversing any given directions in the same thought, to get them to look for the life in things.

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One of my other favorite patterns is a transition from patterns with solids than gaps to ones with more gaps than solids. Going from beginning to end for systems is often in 'flurries' of behavior, intermittent to regular and then when declining becoming intermittent again. When things fade in and fade out like that, sometimes its moving from one state to another, or a channel switching from one user to another. I mainly throw that in because there may be several kinds of 'stories' on the time line of comings and goings· though all would contain an 'immature' transition and a 'senescent' one.

S: This might be useful to depict he development from vague to more definite.

[ph] Yes, that's a main subject, since a great many things seems to develop with unpredictable flurries of activity and then 'sleep' for a while before the next flurry. Sometimes irregular development is still regular fluctuation with clear growth & decay trends about a central norm (homeostasis about an central developmental continuity).

S: I think 'homeorhesis' is a better concept for all but the mature stage.

STAN

[ph] Even without with irregular discontinuous flurries you may still, in retrospect, find growth and stabilization in their scales and frequencies. What sort of environmental memory connects one flurry to the next that then leads to increasing then decreasing frequencies of others would be a question to ponder then, if, the pattern satisfied enough of the definition of 'apparent continuity'

Best,

Phil

[ph]Do you think Robert would accept that his 'Ascendency' might be one of these kinds of 'stories' in the life history of system individuals?

S: Not sure. In any case, I think he is busy these days moving to his new post-retirement situation.

STAN

Phil

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