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MEETING DRAFT FOR

A PEOPLE'S SYSTEMS SCIENCE

GST/n
Discovering Natural Designs of Emerging Systems In Context
and
A Genome of Language

(Green Italics for draft text & and notes)

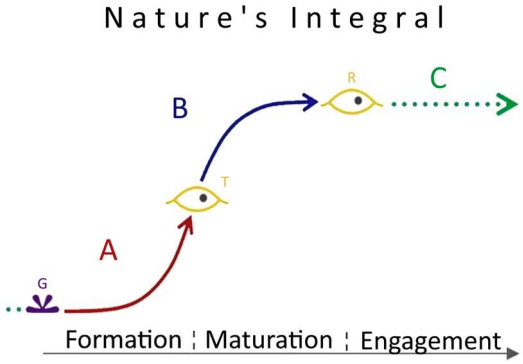
Abstract

We are pleased to present this advanced version of a new general systems science theory and method as a GST/n for everyone with some experience in reading the meanings of what is happening around them. Our world is mostly made of self-animated and self-organizing systems that emerge through their exploratory processes to grow their working relationships in their contexts. Physics and its applications in many fields have been wonderful for identifying useful deterministic behaviors. GST/n, as a People's Science, is used to recognize more of the opportunistic behaviors of systems within, between, and around us.

The text also presents a collection of broad views of our terrible struggle with the global crisis enveloping us in dangerous change. It boils down to a cognitive problem: not understanding why the rules we trusted have become threatening. The evidence is that we keep pushing things too far and do not understand why they misbehave. Natural systems are like us, and we are like them. So, our lives are increasingly challenged on all scales and sides. So, this is a storytelling paper with a few references to theorems and studies as points of reference. It also aims to be useful to all people in their languages, based on the universal translation of everyday experience, as a foundation for some to go further.

Keywords

control v. care, conceptual v. contextual, theory v. experience, abstract v. relational, right brain v. left, continuity, growth, steering, general systems, homemaking in global crisis



Note –Writing this initial draft paper has been a very enjoyable creative process. Switching back and forth between writing for people who mainly learn about systems from theory and those who learn from experience helps connect them. One separates learning from contexts to use math, while the other uses words to refer to systems in context instead. They could do so much more if they worked together.

1 | Introduction

The emergence of systems science in the 1950s from two prior decades of new key insights was thrilling to many theorists. At the same time, popular cultures around the world were emerging around the radio, inspired by people everywhere who were newly able to hear and share their embedded systems of thinking through each other's music. Both inspired great hopes for better understanding did not fulfill that great promise. They also did not connect. Today, we again find ourselves in a time when new misunderstandings seem to be growing faster and faster.

One of the most troubling patterns in history is that human civilizations go in cycles of great hope and tragedy, doing a lot but maybe not getting anywhere. I have been using some of the old tools for looking closely at the world in a somewhat new way, which seems to permit recognizing much more of what we cause and what nature does.

One key is that the use of them to represent nature has been common, but they simply do not correspond to nature in a great variety of ways—presenting a "radical mismatch in variety" between theory and subject. So, in my view, we still have not located the right foundation to organize our thinking about nature around.

History is so much a story of great misunderstandings, from Adam and Eve to our recent centuries of rapidly increasing disruption of natural systems everywhere on earth and in the sky, so evidently, for millennia, perhaps, it is clear we have a problem. Why would the smartest, most expert, and generally most caring species get itself in such horrendous trouble? Well, let's start with the radical mismatch in variety between the rules we follow and the designs of the world they affect.

One possibility is to look at the difference between scientific 'left brain' thinking for explaining things with rules often of control. Cultural perspectives that are more 'right brain' thinking focus much more on relationships. We seem to have evolved both abilities to have minds that can do both, as highly useful working together. For some reason, in the modern world, they tend to be kept apart.

| 01 Paths to systems wisdom for people who learn from experience

Here, we are asking what is the general systems view of nature's designs. In the abstract systems thinkers' wonderful insights, there is a great deal left out by excluding the knowledge gained by experiential systems thinkers. So, theory detaches itself from reality in that sense.

So, it seems science needs to adjust and find ways to connect with those who study systems in context, not primarily in abstraction. Now, there could be an open door and path to each finding the other more useful, like comparing results. Today, we have an existential crisis in the world, and we need to tip the balance the right way.

The new possibility of a "People's Systems Science" starts from the universal way people learn about the systems of life from experience. A hidden major asset for that is that we all learn language and don't realize that nearly all words come from ancient ways of referring to the systems of life that matter to us.

The systems of life also seem to be the ones we get in the most trouble with. Science has also been less able to study them because of the mismatch in variety between the nature of living systems and rules. So the opportunity is to find how to connect the honest experience of systems we learn from and the honest roots of natural language lasting for thousands of years because of the reliable deep meanings found attached to words (and their syllables) that have proved useful for so very long.

One way to look at why our understanding of life goes wrong so often is how we mix abstract ideas (made of definitions, not relationships) with natural language rooted in the reliability of its roots in nature. The mismatch is not only between referring to the reality of the natural systems and the attractive rules that represent theoretical ones.

The substance and meaning of natural relationships are entirely removed from abstract rules. I think that may be the main reason people often act as if they have no idea what they are doing. Following rules eliminates all reference to the contexts of systems and is detached from "its meaning "in context."

One key implication of physics (see § 5.0) is that all working systems (energy systems) must emerge by growth from their contexts to avoid any discontinuity of causation, commonly observed as connected with the smooth shapes of all the S-curves of life. Another key implication is based largely on observing growth systems, which consist of system organizational processes that build on a never-visible beginning. They also exhibit opportunistic behavior, almost as if primed to take any suitable opening.

That is not a deterministic behavior. That is like us, as we grew in the context of a womb and exhibited our unique opportunistic behaviors, but we also appear to start from the same animated root of natural design as any other working system.

| 02 Natural language – words connected with nature

The heart of a systems science for everyone is learning to recognize in life what the ancient words of our languages refer to in common experience. Language has both very meaningful and meaningless words and word usage. Having more of the latter seems to be a primary source of our cultural breakdowns.

Words also serve as wonderful catalogs of the deep insights into nature that the wisest of our species coined and found to be so useful that they circulated globally and never changed their root meaning. Is that an exaggeration, perhaps? Well, yes, it could be. What has not changed are most of the root experiences for people with sound minds living in nature.

Common questions like these are the very kind we need to keep asking to help keep our languages honest, and we hope to refresh the root experiential meanings on which language is formed. It seems to be the critical difference between how one defines things, *either detached from nature or referring to recurring experiences with nature*.

Over the centuries and more recently, the association of words with recurring experiences has been chipped away by the substitution of abstractions. For example, changing the name of a place with an advertising slogan is very common today but detaches the place from its history and relationships.

Yes, we have all become accustomed to that, but we have also developed a collective detachment from nature as we try to endlessly multiply our power over nature. To be honest, we should all say, "How dare they!" and prohibit the practice of replacing nature with abstractions. However, they are so embedded in our culture that the least disruptive way to begin to recover the damaged roots of our languages is to to reconnect them.

There is a simple method that, over time, would be an excellent guide. Just looking at how artificial images differ from natural subjects or experiences turns the artificial image into a way to illuminate the roots of language. It could guide people back tp the forms of meanings that developed as people recognized the systems of life and learned to attach their features and meanings to exchange with others.

There are various catches, of course. The main examples of abstraction replacing root meanings are from leading sciences and economics using mathematical models. Now that our use of the earth has crossed the limits of nature's resilience in so many ways, the error in relying on abstractions with only numerical meaning for life decisions becomes fairly obvious.

Looking back at history, we have had this same problem, letting abstract ideas blind us to our real contexts of relationships and being overwhelmed, in one place after another, from the very start. There is evidence on both sides. Some human species and cultures generally do not become affected by the most dangerous forms of detached belief. Others that do keep recurring appear to me as either infected by neighbors or from within.

In section 3|02 below, there is evidence that the common genetic root of all later human species emerged from a great dieoff of all the other variants, leaving the one genome that came to travel the earth and invent new ways of living about 850 thousand years ago. There is no direct evidence at all of that, but the amazing study that found that everyone alive today descended from a small number of ancestors at that time is both marvelous and possibly a warning (Hu et al., 2023).

| 03 The paper –

To report on the foundations and survey the work, the following subjects will also be mentioned:

1. How the natural continuity of energy shows that energy conservation requires emerging systems
2. historical views of how human understanding of abstract and contextual systems developed,
3. simple case studies of connecting abstract and contextual understanding of our roles in nature.
4. the roots of natural language one can use to observe the relationships of contextual systems.

2 | The change in scientific methods

Perhaps the most radical steptaken here is the shift in interest to the self-organization and opportunistic behavior of natural systems, the ones we are made of and rely on. They really don't fit and can't be reliably predicted by normative rules, patterns, and models. There are some normative models that are particularly useful, but natural systems can also be expected to surprise you like the weather.

| 01 The change of focus

Nature is simply "lively," making that the subject and what is so much fun to study. Still, baseline models can still help highlight departures while looking for the telltale signs and signals of system change that are the main concern. We rely on those because systems hide what is going on inside systems. It is also important to learn the difference between different signs that might be confused and not suppress signals of new opportunities, for example. Signs of things going right can mask things going wrong and the reverse.

Because of these nuances in understanding what is happening, a general natural systems view is not entirely unlike one's normal view of another person, culture, or business. You feel things out and make friends while going through stages of increasing familiarity, but you are always looking for how to get along with the unknown.

The crux of our current problems is the vast difference between the boundless rules we came to run our world by, representing the delightfully varied and impermanent systems of nature with equations. Here reversing the scientific method for finding the best equation is suggested, not using them to predict nature, but to help examine nature, like shining a light on the differences, to see how the living systems work differently is the advantage hoped for here.

Already mentioned is how natural systems are prone to misbehavior or collapse if pushed beyond their limits. The particular limits crossed vary, but the signs of distress are fairly universal: more and more hesitations and little, then bigger things going wrong. That often comes from either draining the resilience that all systems depend on for cohesion or disrupting higher-level or lower-level networks of system relationships. Nature seems to only communicate on all levels at once, and it all seems to matter.

| 02 The connecting with the established paradigm

is that the former uses evidence and experience to help direct attention to natural systems as they grow, mature, and engage with their environments, each system developing individually and having a somewhat different nature (Henshaw 2023). The latter makes an effort to represent systems with sets of defined relationships to study with models and predict. Of course, the two could work together as something of a "right brain," connecting with a "left brain" approach to the same things.

Natural system studies tend to include both how systems individually behave and misbehave, the latter often of as much value as the former. This is not less like how medicine studies the variety of human illnesses but more inclusive, like how behaviorists might study the misbehavior of healthy systems not just sick ones, in normal and abnormal contexts. Theoretical systems science more general in that way, too, as with Len Troncale's system isomorphisms, processes, and pathologies (Friendshuh & Troncale, 2012) (Troncale, 2013).

Studying systems in context allows research on their true behaviors and misbehaviors. In contrast, theoretical systems science relies on definitions and equations, that evidence suggests, generally don't behave or misbehave like natural systems. In lieu of a citation for that, let us just consider how the world economy, organized by the best economic scientists and institutions, using all branches of science, aiming to maximize services and profits, is misbehaving in the extreme, causing ecological collapse, climate change, and massive dissension throughout humanity.

The reason for that seems to be that definitions representing nature with numbers without comparable requisite variety to the subject. It detaches research from the subject, flattening the image, removing contexts and the nested worlds of relationships that are essential parts of natural systems. Any other approach could jump to conclusions about subjects as undefinable as nature, but it seems combining sometimes diverse approaches does help each catch the shortcomings others.

| 03 Language that points to systems and their meanings

Words in any language accumulate very large varieties of meanings and associations according to their generally understood usage, changing according to fads and fashion. However, there is a core body of words in every language that relate to each other and express the variations of meaning coming from a common primeval source. Language came from associating vocal expressions with meanings and learning about life from experience, just one-syllable expressions for a long time.

European regional languages likely formed from tribal languages as southerners occupied the lands as the glaciers retreated nominally 10,000 years ago. Spoken multisyllabic Greek and Latin may have started to be spoken before the Bronze Age (Wiki1, 2024) recording generation after generation of the wise talkers in the Bronze Age, later translated into and before who created all the languages. The meanings of words varies quite a bit dependending on the context one is talking about.

The origins of language help a bit, though, the word "system," for example, has two syllables with the very useful root meanings of "together" + "to stand, make or be firm ." The also useful root meaning of "organ" comes from its two syllables meaning "work + doing

Perhaps the early scientists missed the evidence that language itself came from an abundance of understanding of systems in context. A sign of that is the ironic source of the word 'physics' from the Greek term pronounced more like "physis" meaning: "nature" and "to be, exist, grow." That suggests a natural reason for the abstract rather than the contextual focus of science, simply that the rules for how to control energy grew like crazy. So that is also what everyone, including the philosophers, studied. So, maybe we should.

What about my saying that the root meanings of most long-used terms of language appear to refer to recognizable systems, to their process, to their results, and to the varied cultural meanings and values we attach to them? So, a word for a process could become a "vector" of { thing, process, end, value} that language somehow made possible for us to discuss fluidly.

For example, consider the word {coordination}. The etymology of its syllables {co, ordin, ation} is found by studying the root meanings of each in common use, roughly {together+center+make}. Together that refers to the coordination {process, practice, result, design, and meaning in context} for a universal system transformation, wouldn't you agree?

So we could call such words system archetypes, which might also contain various Isomorphisms, as the iconic "shapes" of coordination. See how useful it might be, especially if we could use the approach to communicate to others the problematique that pushing any kind of whole working system to its limits will cause it to misbehave as a whole. Might we be able to do that?

My entirely NON-herring claim is that these readily explored system geometries of language are what people all over the world are using to talk about what matters. Knowing that could be very useful.

| 04 A simplified case study

The difference in language is using terms defined by reference to the things one is studying, usually recognizable in the world. The exception is using physics principles, theories, and observed or experienced behavior archetypes (Isomorphisms) to contrast with natural system patterns, such as for comparing Figure 1 and Figure 2 below.

The simple place to start is by asking, "What do you see?" In this case, when comparing the archetypical energy event life cycle of beginning (A, B, C) with the historical data curve below. In the data curve, there are three periods (1720-1940) (1940–1960) and (1960-Present) with different shapes and patterns of data points that tell both a dramatic and fuzzy story. Do you see connections between events in history or your experience in the data curve that match locations in the general new life plan?

Exhibit I : Data telling a story

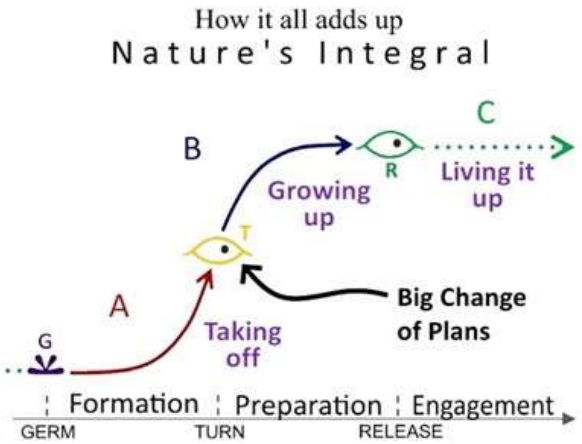


Figure 1 : The archetypical energy event life cycle

Here, the abstract model is used to help one look for these kinds of progressions and new directions as the emerging system and its context as they evolve. It is most helpful for systems of importance, to care for or to defend against, etc. Knowing what the system is going through makes it easier to notice and understand unexpected behavior in systems that might need special support, protection, or resistance, for example.

One can develop long lists of "things to watch for," like unexpected hesitations, search patterns, and struggles. Most systems are doing what animals and we are doing all the time: looking around for things to respond to, being alert to, etc., in their relationships with nature and each other. With experience, changes in "normal patterns then signal the need for deep dives into the context to find out what is really going on.

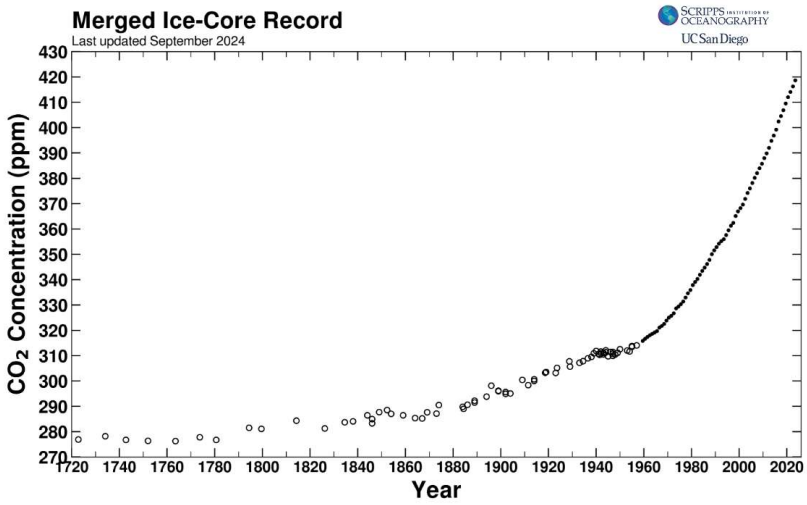


Figure 2 : The long recent history of Scripps Institute atmospheric CO2 (Scripps, 2024)

3 | Systems have Stories

| 01 Noticing what is happening

The most common pattern of life is how lively life is. all events seem to take energy and organization and depend on where the energy and organization come from and how they and other things respond. Together, they produce the pervasive pattern, on all scales and in all places, that "life is lively," self-organizing and animating, as well as reactive. The first thing one tends to notice when anything "happens" is a burst of energy that marks an energetic cascade of organization, the kind of growth seen in a seed sprouting, the blink of an eye, a group of friends forming, global cultures, etc.

Why events are drawn as curves in Figure 1, as well as elsewhere, is to reflect the theoretical continuity necessary for energy and organization for change to connect from beginning to end.

Exhibit II : What we first notice

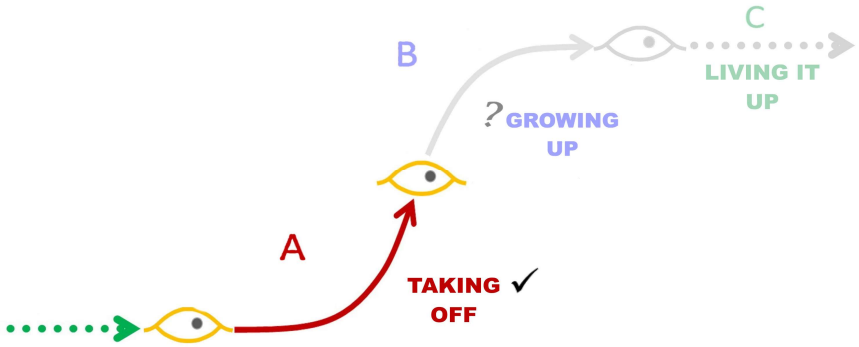


Figure 3 : For events, we often do not notice what is happening at the right time. We usually first notice the energetic burst of things happening; however, it is often too late to respond, and then we might jump to the wrong conclusions. We also often react too early before we see quite what is happening. The useful part of this map of the whole process of any "change of state" is to help with both looking back and ahead from wherever and whenever you notice things happening. That is possible if

your first reaction is to fix your initial impressions to secure your least biased sensory impressions to go back to as you figure our what to do.

Exhibit III : A System is an event emerging from a context

250 ma Exponential Increase in Ocean Bio-Diversity

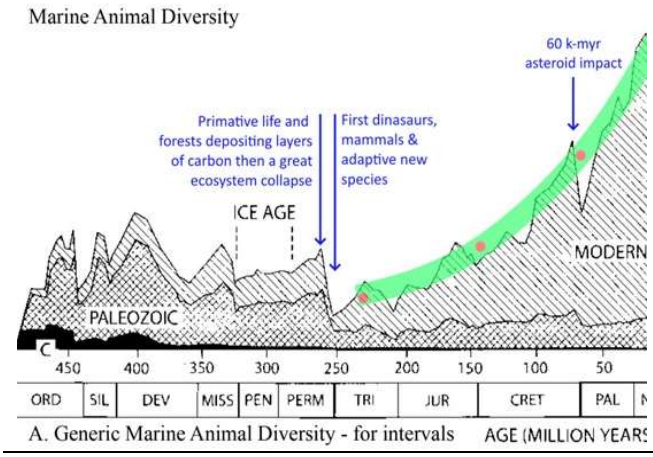


Figure 4 : Earth's Great Change of Life For 250 million years after the great Permian Extinction of 90% of the ancient species led to the emergence of the dinosaurs as the first of the modern species. The curve shows the exponentially growing diversity of ocean species since then, likely still underway, though right now populations are in sharp decline around the world. (Stanley 2007)

The Collapse of the Great NYC Crime Wave

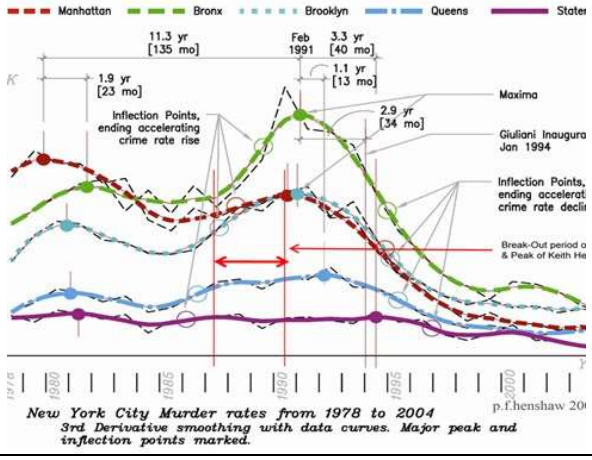


Figure 5 : Collapse of New York's Great Crime Wave A whole society convergence is what brought New York's worst drug and crime culture to an end, as the whole city responded to the life-destroying crack epidemic. - Hip-hop's "crack is whack" and its better things to do robbed it of young recruits. Pushed down and undercut, it collapsed.

You can feel the roller coaster rides in Figures 3 & 4, as the "bust & boom" life of the earth in the first and the "boom and bust" of the latter. It is in the motion of the curve. The direct experiential communication of non-linear acceleration seems to be one of the most universal "signals" that nature provides to alert any organism in the area that things are changing. That is the main general technique for turning ordinary perception into a highly sensitive skill in monitoring the behavior around you. Actually, we are nearly all rather good at sensing the changing directions of change in familiar contexts. We just need to build on that to expand to getting direct messages from life in other contexts.

We are talking about "contexts" so much here because context combines two syllables meaning "together" and "weave" in case you are wondering why it might be so important. It is the weaving together OF the working relationships in a place, a conversation, a situation, or a period of time that gives whatever goes on there its meaning. If you think about it, only very special events might have meaning independent of the context in which they occur, or have importance in.Prosperity and Disparity in the cast system of modern life

| 02 The lively stories of the creative working systems

The effective population size of the communities of human descendants.

Exhibit IV : **A System is an organization, so it has a story**

The Bottleneck Emergence of Humanity

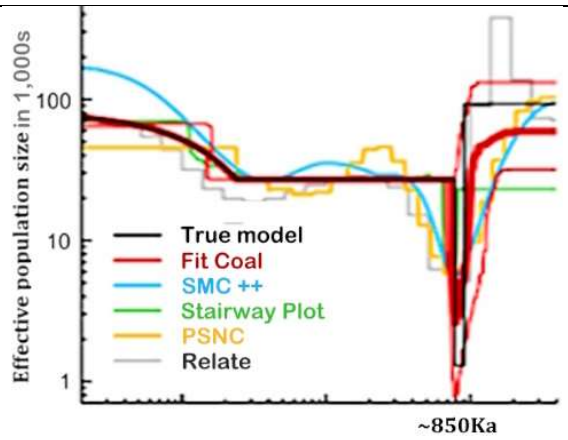


Figure 6 : Catastrophic reduction of human variant: A sudden population reduction occurred about 850 thousand years ago in the diversity of prehuman cultures that existed a million years ago. Only about 1500 genomes survived to populate the shift to humans as we became the great migrating species that traveled the earth. "Our results provide new insights into our ancestry and suggest a coincident speciation event." (Hu et al., 2023)

The Try, Try, Again Emergence of a Plankton

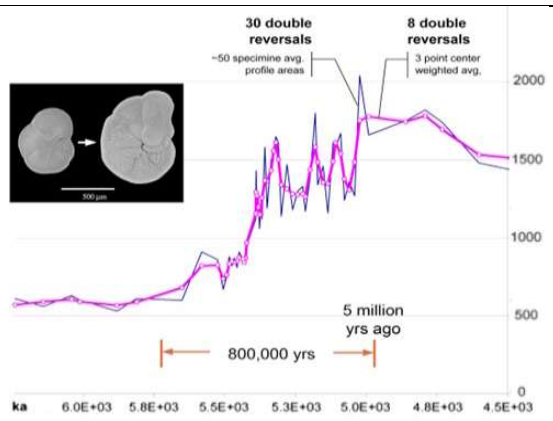


Figure 7 : The 800 Kyr Emergence of G. tumida The average sizes of a new plankton species rose over 800 Kyr of connected 100 Kyr-year spurts and fallbacks as it emerged. Tests on the data verified the continuity of the transformation from one size to the other. The progress stabilized after a last extreme overshoot peak and fell back to then mature. (Henshaw, 2007).

Exhibit V : **Throbbing flows in the world order is collapse**

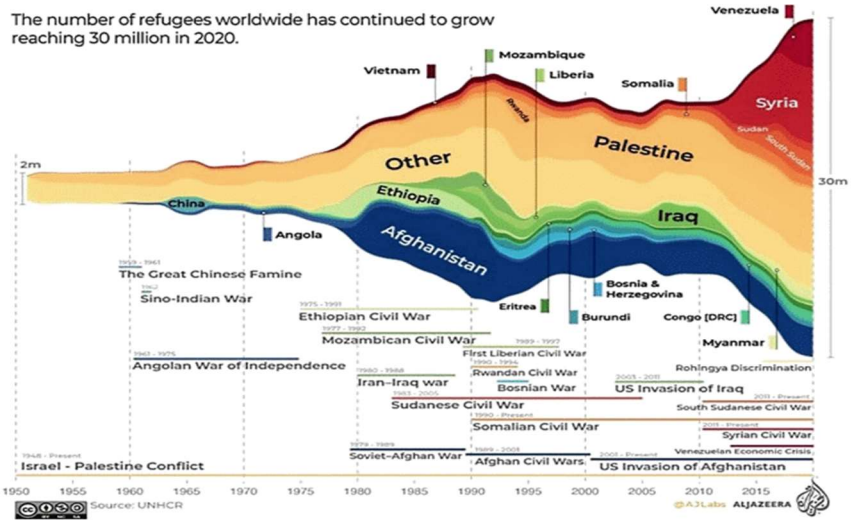


Figure 8 : Escalating World Refugee Crises: The past 70 years of escalating crises around the world are illustrated here by UN data on the global number of refugees, presented graphically (Aljazeera, 2021). There are many, many other world crises building up exponentially as these are (Henshaw, 2023). From a systems view, it is a "signal" of a need for a system change of purpose.

The disparities of modern life seem to have appeared in every wealthy economy, with the exception of the more successful indigenous cultures, such as the peaceful Bronze Age Societies (Henshaw, 2000). Pathak

Sharmiladevi (2018) provides an overview of the refugee crises of the past century. The current dramatic escalation of disparities is felt around the world, not just by the dispossessed, in a great irony in a world designed around maximizing prosperity. The reason for this disparity is evident in the design, but nowhere can one find it in the intent. Ironies like that are wonderful clues to what is really happening, so long as one follows them with an eye to the exceptions to every theory one invents.

In this case, it does appear that the heart of the matter is the global effect of investors multiplying the wealth they extract from wherever the returns are highest, steering the whole system with impacts on every part of the earth and humanity. As purely an arithmetic choice, it is quite blind to what is being invested in. The resulting dynamic global competition for rising in the world's societies is then what seems to split society naturally and ultimately degrade both societal and natural resources and system resilience to the breaking point, all by accident, it would appear.

| 03 What thinking tends to go wrong?

It seems to be clinging to certainties. Just be ready to question what comes along, using your experience to fit it in, and find how to check.

That seems to be what goes out of control when we follow the rules certain to change dramatically, like endless growth. For example, literally, everyone already knows that any system pushed to the limits of its organization and parts will misbehave and potentially collapse all at once as systems organized to work as a whole can. That is a very clear risk for attempting limitless growth, for example.

Abstract science has taken humanity very far, indeed, giving people amazing powers and expanding our minds to see the beauty of life. However, it has also substantially misrepresented nature and people as equations and laws. Scientists certainly know those are approximations, and many care deeply about nature and society.

However, following rules formed out of context, mentally detached from nature, will appear to work by themselves. That appearance comes from blinding the user to their effects, so they do not make choices about them. That seems to be where the irony of nice professional family people running an economy increasingly disrupting the natural world

Growth always starts that way, with its benefits and positive returns accelerating it. However, side effects invariably grow at the same time, and it is the growth systems that respond to their and their environment's new needs that, like we did as we grew up, take growth to long lives. However, if blind to the new needs emerging too, following rules for multiplying profit can undermine everything profitable.

Other things might contribute, but historically, that seems to be the most direct systematic cause of humanity's many great collapses of civilization (Tainter, 1988) (Henshaw, 2007, 2023). Blind to how success in gaining wealth and power in changing contexts changes their mutual meaning, allows disruptions of what once worked to grow too. As we see in our lives today, without our noticing it we slid into a trap, a natural design for collective suicide for profit, just because science didn't see how to study why pushing systems to their limits causes them to misbehave, sometimes catastrophicly.

| 04 Our long chain of Civilization Collapses

I would like to apologize for posting an easily misunderstood comment, now deleted, that mentioned the great celebrations of surviving terrible experiences that Jewish life can seem centered on. I meant it to ask for help, given what seems a truly "Biblical" moment of desperation that our world faces today.

Does the community have any tips on what to do? Judaism is clearly one of the oldest, most learned, talented, creative, and mature cultures. It is also somewhat involved with the mechanics of the global systems that seem to be spinning way out of control.

I only know about Judaism from having been raised a liberal Christian and now living in New York with Jewish friends—oh, and being a systems scientist, having broadly surveyed our present world's cultural roots, sciences, and societies. Today, growth has given us a world of multiplying pressures throughout every culture that are starting to feel rather threatening.

A look back at the archeology and history of our civilization's birth, there is a thread of using money to multiply wealth power until it collapses, that current threats come from too; I wish there was room for footnotes. The origin looks like the collapse of the ancient tower of Babylon, which was said to have been made by a society with just one language that fragmented into many discordant tongues when their tower collapsed.

Those who survived it apparently passed improved versions of its limitless growth formula to the Bronze Age Eastern Mediterranean "Atlantis" culture, the first great multinational world of prosperity, that also collapsed, erasing all its stories. Why is unclear, except that it built next to no defenses, and most of its great cities were invaded and burned. That ended in the 200 yr. 'Greek' Dark Age.

The Greeks recovered, and Rome picked up on the excellent Greek science versions of the formula for power, going much further in taking over the world with it than ever imagined before. Its collapse left the 200-year 'Medieval' Dark Age. Then, the Renaissance (rebirth) led to further expert refinement of prosperity without a bound plan, now coming toward the end.

Major technical fixes, like sharing the rewards with the people tasked with doing work, were key to each stage. Even though the plan entailed destroying civilization in the end as well as building it, everyone involved felt highly rewarded and eager to do the work.

So... IS THERE A SENSE ANYWHERE IN HUMAN HISTORY OR CULTURES for a way out of this cycle to avoid repeating history?

All life depends on caring for the security of its homes, but humanity does not. Is that a "sign?" With the escalating pressure on all that holds our lives together today, even our home life cultures feel threatened.

What about nature's way of starting lives with a focus on rapid growth, then turning to use their power to survive, caring for what grew - and - its home? Where are the traditions for that, taking growth to an about-face to care for life instead?

4 | Language that directly reads nature's signals

All animal lives survive by responding to the nonverbal signals from the world around them, from roots exploring the soil for nourishment, plants shedding leaves to preserve moisture, and, of course, all the very numerous ways to notice and respond to their surroundings, each other and each moment's circumstances. More and more of these environmental signal-reading abilities are being noticed every day (Smith, B. D. (2007).

There is also an extremely important universal kind of signal from remote systems that has not gotten much attention and is a systemic feature of our environments. That is the telegraphing of "vibrations" of different kinds, particularly from non-linear change. All people and animals are very responsive to signals of the suddenness and persistence of rapid change; it would seem, conveyed by high derivative rates of change. We all personally recognize how the signals of surprise are highly effective in getting our attention. How to characterize that and other kinds of natural non-verbal signals that individual organisms use to navigate their lives is, of course, problematic, but … a good place to start is by noticing people and animals responding to things they notice. It is fun and a wonderfully useful secondary way of reading nature's signals.

The geometries of meaning that one finds between syllables in compound words are interactions of the ancient meanings attached to them, as units of ideas meaning that had originally been expressed vocally. It

is hard to say, but as Latin and Greek record their conversion from vocal to written dialect, it appears most of them predate written language.

So they appear to come from sounds and gestures *referring to* natural phenomena and experiences, repeated over and over for their usefulness and added attached meaning, that formal language developed from. So, as long as they live, those informal, accumulated, culturally sustained, and diversified packages of experiences, feelings, and insights remain attached to the direct reference to the subjects of the word.

| 01 Language signals to nature's designs

The broad language pattern of root meanings of words associated with how their syllables refer to systems and system designs, features, behaviors, and meanings is a marvelous resource to uncover. It might well expose humanity's original knowledge of nature before the use of abstractions to represent human interests detached from nature. So learning to read etymology can be a real gift in that way, helping one to understand the roots of language as well as the root meaning of the words studied.

Exhibit VI : Keys to the meaning of everything in prefixes and suffixes

Noun Suffixes: Norquest

Suffix	*Meaning*	*Example*
-acy	state or quality	privacy, fallacy, delicacy
-al	act or process of	refusal, recital, rebuttal
-e/a nce	state or quality of	maintenance, eminence,
-dom	place home being	freedom, kingdom, boredom
-er, -or	one who	trainer, protector, narrator
-ism	doctrine, belief	communism, narcissism,

Quality Suffixes

Suffix	Meaning	Example
-tific	in the manner of	scientific - well-defined
-fine	make finite	define - To fix, bound, limit
-ivity	potential, bias	captivity, longevity, activity
-ow	in a manner of	narrow, widow.shadow
-ence	a contextual force	science influence presence
-lapse	slip, expire, cease	collapse, relapse,

Table 1 : Reading systems from the roots and modifiers A great source for listing all the words with the same prefix, suffix, or other syllables is the Etymonline.com Dictionary and the OneLook.com Thesaurus

Quoting from the prior ISSS paper (Henshaw, 2023)

> **"**Indo-European terms '*werg'* and '*ano'* that means respectively 'work' and 'do'[1] Combined, they mean "thing that works." So in the word '*org-an'* the prefix '*org-'* refers to *the thing,* and the suffix *'-an'* to the *doing*, and "*org-an-iz-ations*" can be read as "*creations made of working relationships.*" So natural systems, as the "*working relationships created for the work of nature*," seem to be both organizations and organs in the traditional sense. So, no dark matter, just a better understanding of the meanings of the common language.

Quoting from an earlier paper (Henshaw, 2015)

> Take simple words ending with "-or," for example. That suffix adds the natural design meaning "doer" to each one, as in the words "activator," "actor," "projector," or "progenitor." The root words alone refer to some condition, but the suffix then associates the root state with the source of its causation to mean a lot more. The combination gives the new word strong "emergent properties," as with most compound words.

Fig 15 shows how the meaning of the word "community" is assembled from its syllables, combining "comm-" meaning '*together,'* and "unity*"* meaning '*one*,' referring to things brought together as one. It is the emergent meaning from combining names for 1) the quality and 2) the instrumental process to form that captures the transformative meaning of the important natural design. To confirm that would take explore other examples to see how that way of enlarging the meaning of word roots operates. From there the next step would be to study the overall pattern of natural relationships as a nameable design and identify the implied "forces" and the "unifying organization" that presents them as a nameable ideal.

Exhibit VII : **The Geometry of Word Meanings**

• Pattern words that identify natural 'centers' •

"Community" = comm + unity
as
"together" made "one"

The word structure turns our attention:

- to the common natural occurrences,
- to it having natural properties and design
- to a great variety of examples we each know of,
- and the diverse and layered associations we are all familiar with.

Words built to name natural patterns of design

To better understand how modifiers reshape root meanings, such as to often indicating the manner of their roles in nature, it helps to look at whole lists of similarly modified root meanings. In Table 4 below, for example, are very few of the over 2,000 common words in English that have the suffix *"-tion."* It helps to study the whole list of terms with that suffix to appreciate the kind of new meaning the suffix consistently associates with the root[2]. That then helps one turn one's attention back and forth between the meaning of

[1] Organ – Etymonline: https://www.etymonline.com/search?q=organ

[2] OneLook dictionary search for words ending in "tion": http://www. onelook. com/?w=*tion&scwo=1&sswo=1

the word root[3] and how the modifier[4] transforms its meaning, in this case, to create names of common transformative processes and the associated ends states that result.

| 02 Reading ironies as evidence of system design

While displaying some good thinking about it, the real corrupting power in society, looked at from a natural systems view, is that success becomes a trap. Many times, people cannot escape, but they might with the right help. Most of the time, people are able to break free, but they are compelled by friends, family, or others to "Break out of it!" For world society, it is not so simple, and so everyone's successes tend to multiply toward the collapse of the whole system, now seeming to be in stages of accelerating.

The direct cause is simply that nice people do not see what they are doing; only till one learns more can you not see who or why someone is "not getting the signals" that the only survivable end to compound growth is one of the ways to stop compounding. That addiction to using profits to multiply profits is what needs to be creatively broken. The fixation on that simple rule seems to blind investors to the natural change from investing to growing profits serving to enrich society to threatening its collapse.

There are SO many examples of how to do it successfully, and the one you have the most experience with is likely the one to start studying. People are all skilled in doing it locally, getting something going, and then using the profits to care for it. So, it is amazing that the rule to seek profit appears so central to our ways of thinking that it is nearly impossible to question it.

*In *every* life that thrives after its growth, though, the creative way to change is to then care for what grew, for yourself, your relations, or projects. It is spending the profits that takes them beyond infancy to higher levels of success.*

That critical survival step applies to societies, too. However, competition seems to get locked in by profit investors who fail to see any reason not to fund maximizing growth. That seems to be the suicide formula. The opposite is Nature's, and our own, universal plan for making good on early success. We should use it to make good on our societies, too.

| 03 Guiding general principles of reading change

Noticing what is happening all around you is something we all learn how to do from the day we are born till we watch the light eventually fade away; much of it is just appreciating the qualities and situations that all kinds of life find themselves in, being unique in the universe as being both self-animated as systems, and able to become self-controlled. So, the Book of Change is very BIG, and the stories are rich and deep, but learning to read them always starts with **noticing something happening**. You might look up the etymology of those three words to understand more clearly the kind of relationship between you as an observer and the life around you that you observe. [[to make known] + [a subject] + [surprise running]]

I study upwellings like these as a natural systems scientist. In the US and many other places, people become frantic about finding what to blame for their lives being forced to change. We should connect the dots to the other out-of-control forces of change, too. So sympathy for, not blaming, the extremist right is also needed.

Change is always somewhat disorienting, and we live in a world organized around ever more rapid, compound growth producing ever more rapidly accelerating change. At times, it has felt wonderful, but it

[3] 'root' http://www. thefreedictionary. com/root "The element that carries the main component of meaning in a word and provides the basis from which a word is derived by adding affixes or inflectional endings or by phonetic change."

is now ever more disorienting for literally the whole world.

"What objections to looking at all planetary boundaries have you come across?" I saw that as asking what barriers I see.

The barrier I see most is people immersed in their cultural realities, not either having the natural receptiveness or having lived close to nature long enough to be familiar with the narratives of natural system change. You sort of need to be adept at quickly reading the derivatives of change, speed, acceleration, and jerk. Exponentials will all three increase in proportion to each other. That alignment is a signal to respond. It is what you feel as "something coming on" or "taking off."

Everyone is familiar with how pushing personal relations to the edge, with no clear purpose, tends to raise an alarm and feel like a severe threat suddenly. The same applies to all other natural systems, except we don't see or feel their distress. So, we need to recover our ancient skills in "reading nature's signals" to become responsive to change in our own time.

I can affirmatively prove that we once had them. If you look broadly at the root meanings of words, it is largely all those ancient important experiences with relationships and nature that words refer to.

Can we translate the familiar signals of our own systems being pushed till they misbehave to imply that the world around us is being pushed too hard too? I think so, and may be a first step to recognizing more.

My brief accounting of the major global breakdowns growing with growth was intended to communicate that way of understanding what is happening to us, pushing every system's limits too far. Today, in the news, economists are seeing mostly free sailing ahead, being blind to the multiplying crises they would face if they could see.

*We need more people to think of how to respond to crises that can only be healed by *generally reducing* our economy's overshoot and its *still escalating* pressure on ourselves and nature.*
https://synapse9.com/_r3ref/100CrisesTable.pdf

| 04 Risks of Not Learning to Read Nature's Signals

TBD

5 | Defining GST/n (general study of natural system designs)

The general systems study of nature's designs, of course, started from the time humans noticed that nature had all kinds of recognizable and useful designs over 2 million years ago. The interest here is in the development of articulate discussion of system designs and uses. The first evidence of complex fabrication seems to coincide with the emergence of *Homo sapiens* ~200,000 years ago, and home-making arts seemed to emerge only ~75,000 years ago.

When did we start babbling all the time about our feelings, needs, and desires, becoming perceptive about nature? I think it is possible that it coincided with homemaking and the universal one-syllable words for the homemakers, *ma,* and *fa,* later compounded to *ma^ther* and *fa^ther*, words that seem to have spread throughout the Indo-European languages and also beyond. That suggests we knew and thought a lot a very long time ago.

So, my timeline for natural systems science begins there.

| 01 Studying the roots of word meanings that refer to natural systems

First, it might mean reading words and pointing to "vectors" of natural design. A word for a process, such as growth, could interpreted as a "vector" to correlate the word with the subjects of nature that the work has accumulated experiential meaning for, making it easier to discuss.

project - root meaning of syllables = {pro, ject} = *drive, and also means {design, process, context, end, value}

"coordination" This notation connects with the etymological reading of word syllables such as

{co, ordin, ation} meaning together+center+make"

"Composition" has three syllables: com-pos-ition, not two, as in the citation. So I think the root is com-pos and the ition then refers to the organizational process of making the presentation.

That is a very different sense of the term compared to presenting it as two syllables, com-position. I think the three meanings combined greatly enrich the etymology. I think that needs to be included in the citation in Etymoline.

That gives us much more insight into what the "sapients" of the Bronze Age were doing as they assembled the structures of language. Here, it simplifies and further specifies what a "whole greater than the sum of its parts" means. It means the parts are coordinated. Other verbal forms include:

{process, practice, result, design, root and contextual meanings }

for a universal system transformation. The use of this method helps one define and refer to archetypes of natural form. That is related to the rather different effort of the great systems theorist Len Troncale (Friendshuh & Troncale, 2012) (Troncale. 2006, 2024), who closely examined 110 system processes; we could test to see if the general system vector format might help us see what the parts art that make them whole. The first four in his list are:

Troncale Process	GST/n correlation of words with natural system forms
Process	forward, move/yield}
1. Adaptation	https://www.etymonline.com/word/process#etymonline_v_2600
2. Allometry	{adjust, join, fit} https://www.etymonline.com/word/adaptation#etymonline_v_25997
3. Allopoiesis	{measure, heights} https://www.etymonline.com/search?q=Allometry
4. Amplifiers	{other, creation} https://en.wikipedia.org/wiki/Allopoiesis

So we could call such words system archetypes, which might also contain various Isomorphisms, as the iconic "shapes" of coordination. See how useful it might be, especially if we could use the approach to communicate to others the problematique that pushing any kind of whole working system to its limits will cause it to misbehave as a whole. Might we be able to do that?

My entirely NON-herring claim is that these readily explored system geometries of language are what people all over the world are using to talk about what matters. I think that could be useful.

| 02 The contrast map for reading lively change revealing changing relationships

Exhibit VIII : Discussion Figure: Levels Of Natural Timing Signals

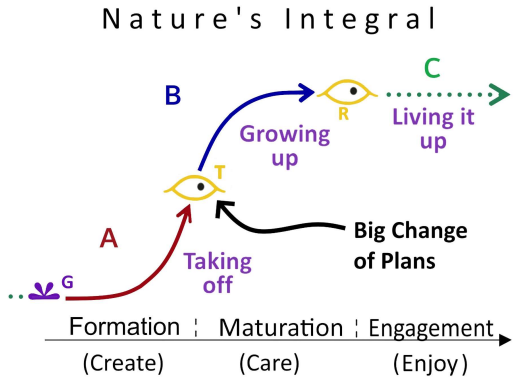


Figure 9 : The natural integral of system change
A driving B limiting & C neutral feedbacks make the radical system change smooth. Ask how each begins and ends with a new purpose and direction

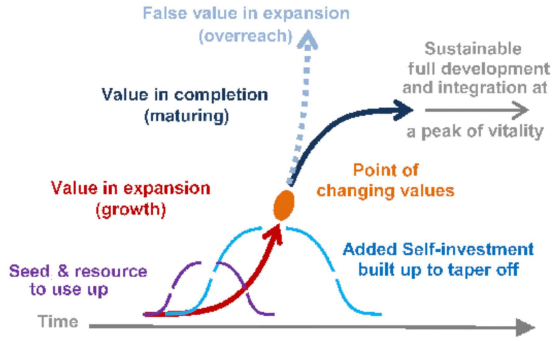


Figure 10 : The comparison of likely paths
Starting with the data, draw the best sense of continuity, its rates, and accelerations so far, and then the context to see what it has run into before and might ahead/

| 03 System Implications of energy-conservation systems

The relatively simple thing to prove and verify is that flowing systems are required for energy uses to have continuity. Logically, too, if the beginning and end did not connect, the end would not happen.

That part of my work led to the general "Law of Continuity." It can also be looked at as a "Systems incompleteness theorem." It explains the discrepancy I noticed that equations cannot start from 0 with a discontinuity, as energy conservation prohibits infinite energy intensities needed to do that. That implies that systems come from some emergent growth process, allowing the hidden process of continuity so that energy processes can begin and end.

The theorem explores what kind of continuity is needed: some accumulative non-linear continuity. We do, in fact, see those all over and can closely study them in many places where "something happens." We seem not to have previously had a way to explain beginnings and endings, but a great many we refer to as 'growth,' a term referring to the emergent [scale, rates, energy use, working process, designs, and values} all at once, typically associated with all kinds of S-curves.

The example below is a study of time series data that seems exceptionally random but, looked at closely, exposes intricate "flowing non-linear transitions" produced by the emerging systems by the growth processes as they begin and end. There are various tests one can do, like:

- approximating equations for the emergence process
- examining the details of the internal and external emergence process
- or, mathematically, reconstructing the derivative continuity of the process.

Here, the NASA satellite data recorded for the BATSE 551 gamma-ray burst shows a neutron star collapsing into a black hole. I did not use an equation, but 3rd derivative smoothing (minimizing the 'jerk') as a mathematically derived type of derivative reconstruction. It very sensitively interprets the system dynamic implied by recorded time series data.

I think it will often be more valid than the common methods of derivative reconstruction, but I have not done that work. I think the common methods tend to blend everything, not completely eliminating what

averaging does, and often hide the growth processes a sensitive eye might discover looking at recursive non-linear local smoothing.

As the image shows, the smoothing kernel has a hole in the middle of a five-point bracket, implied to minimize the 3rd derivative at the center of a 5-point bracket based on the points before and after. I developed my "Curve" software package for that in LISP, for which I have not had a platform for 10 years.

Exhibit IX : Studying time serries data for systemic continuities

Matching intricate continuities in 6 subsets of the raw Gamma Burst data

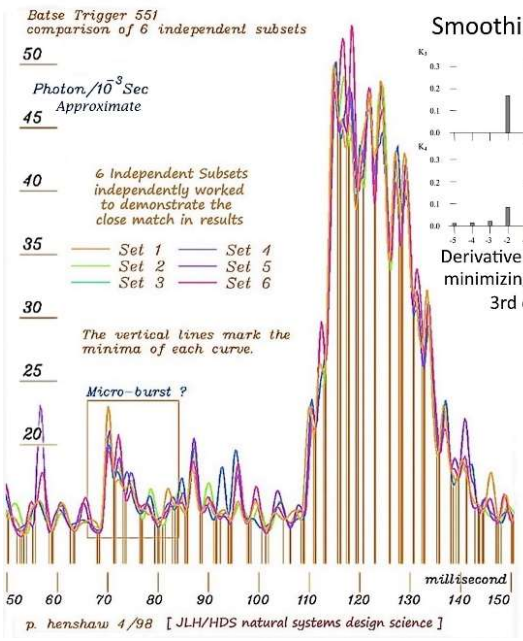


Figure 11 :

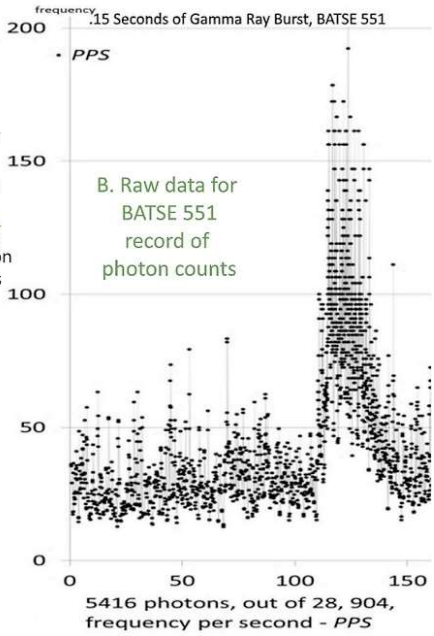


Figure 12 :

Using these tools and looking for where growth processes create new systems or then also destroy them fairly often is what I have applied to the "problematique." What I think I found now is that the whole thing comes from humanity so often getting "stuck."

We seem to often design our startup growth systems to be permanent and become unable to exit. Every living thing responds to the approaching trains of excess growth, but people and societies can get carried away and hold on till the feedback destroys what they are doing. I have a very nice LinkedIn post summarizing it. Do let me know what you think.

| 04 Law of Continuity that makes life lively

Laws of conservation and continuity (quoting part of ref 1995 & 2010)

Column c in Table 1, "Limiting Rates," lists the physical limits of energy transfer, starting with the speed of light as the limiting velocity in line 2, $v_j < c$ (3.2.2c). Because it takes time for a derivative to accumulate change in an integral, as for an acceleration to change a velocity, the limits of one rate apply to the others. That is shown in Table 1, as follows:

For: **i**, **j**, **l**, **n** - integers; $\mathbf{k_i}$, $\mathbf{c_i}$, u_i - constants; **c** speed of light, **m** – mass; **a**-acceleration; **v** - velocity; **s** - distance; **t** – time **r**-rate; **Δ**-finite difference; **d** – differential

	a) Conventional Form	b) Unified Form	c) Limiting Rates
1. Conservation of Energy • sum of energies is constant • 0 derivative level	$\sum_i \frac{1}{2} m_j \cdot v^2{}_j = k$	$\sum_i m_j \int v_j \cdot dv = k$	$s_j < c \cdot t + k_1$
2. Conservation of Momentum • sum of momentums is zero • 1st derivative level[1]	$\sum_i m_j \cdot v_j = 0$	$\sum_i m_j \frac{ds_j}{dt} = 0$	$v_j < c$
3. Conservation of Reactions • sum of forces is zero • 2nd derivative level	$\sum_i m_j \cdot a_j = 0$	$\sum_i m_j \frac{d^2 s_j}{dt^2} = 0$	$a_j < c_2$
4. Unnamed • Sum of 2nd accelerations zero • 3rd derivative level		$\sum_i m_j \frac{d^3 s_j}{dt^3} = 0$	$r_j < c_2$
5. Principle of Continuity • Sum of higher accelerations zero • n'th derivative level		$\sum_i m_j \frac{d^{n2} s_j}{dt^n} = 0$	$r_{j_n} < \mathbf{c}_n$

Table 1 : Defining the variables

That the conservation of energy would prevent all change unless there is a path of continuity for energy flows requires a path of creative design for systems to emerge where there were none, but perhaps what we can see developing where life is acting in a lively way, compound growth of new designs for building designs.

Exhibit X : The argument showing change requires continuity

*For some large **n**, the **n**th derivative rate r_n is taken as finite and between some lower and upper bound pair of constants representing the limiting propagation rates for the process of energy transfer:*

$$u_n > r_n > l_n \qquad 3.1$$

*Integrating the **n**th derivative rate with integration constant $\mathbf{c}_{n-1}$ also chosen between some upper and lower bound limits of propagation rates for the process at that level of acceleration:*

$$r_{n-1} = \int r_n = r_n \cdot t + c_{n-1} \qquad 3.2$$

*In general, as the number of derivative levels **n** increases and the number of times $\mathbf{r}_n$ is integrated **i** equals **n** the form of polynomial expansion approaches that of an exponential.*

$$f(t) = r_0 = \frac{r_n}{(n-1)!} \cdot t^{n-1} + \frac{c_{n-1}}{(n-2)!} \cdot t^{n-2} + \ldots c_{n-i} \qquad 3.3$$

6 | Language within and between systems

Communication between systems is like communication between cells, people, circles of friends, governments, professions, and cultures. The strange part that hints at the real magic is that every system effectively turns its back to the other, as the designs of systems are through external contact. That sharply limits the kinds of communication possible, of course. Somehow, though, it can still work.

Messages between cells ultimately all come from the internal world of one and how something simpler is internally recomposed by the other.

The sender's "message" is only a hint that must be interpreted and fit somewhere in the reader's internal world. That seems like a guarantee of miscommunication, but it is indeed what the whole design of nature appears to be built on.

What makes it possible is hinted at in the word itself, in its ingenious combination of syllables that take on different material meanings in context. The etymological meaning of communication (Henshaw, 2024)

{com+muni+ca+tion} = "together public impart process"

"come to a common meaning"

The strength of language that attaches meanings to direct references to the natural things experienced also takes on the nuances of the versatility of their contextual designs without detaching from them. It is not pure speculation, but more of an educated guess that this property of natural systems having rich meaning from developing as contextual systems might physically also come from the continually leaving and adding impressions of each other as they interact.

Exhibit XI : The domains of language

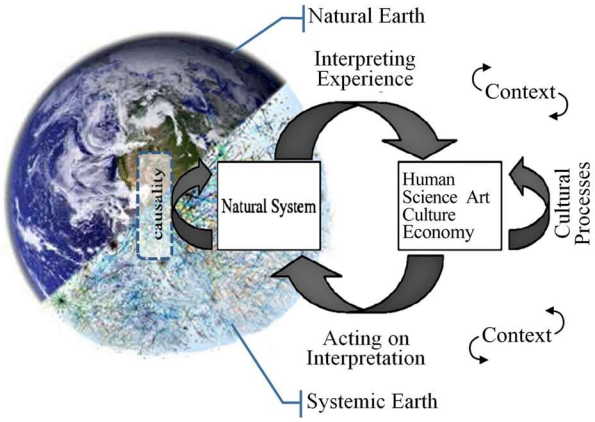


Figure 13 : The earth's nature systems with the Rosen model for how systems (like us) learn from engaging with the richness of the earth as a home full of meaning and living systems of all kinds.

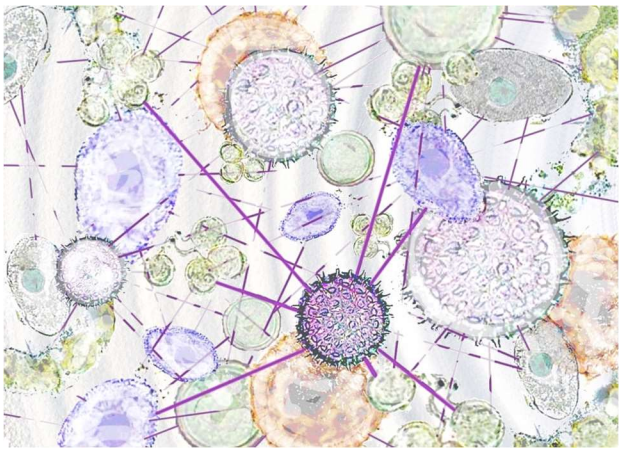


Figure 14 : All systems are physically defined by how they hold together and work as a whole. In most kinds of systems, there may be several relatively separate networks that physically overlap but do not really connect, a fascinating pattern we also see in social communities.

That accumulation of impressions of what is interacting with them, at more of a granular level than we normally think about, seems like an important part of the similar softness of nature. As if a living patina of subtle messages that accumulate, they would add shared contexts of experience in which people,

communities, or systems of other kinds can communicate. Of course, factual communication is aided by this kind of familiar context, too.

That all language communication is "bubble-to-bubble" with no direct connection is also nature's favorite form of communication. She uses it in synapses, for a kiss, for bursts of response to tiny hints of intrusion, expressing close relation without connection. For humans, it explains much about the creativity of listening to brilliant speculations that harmonize as we hear trace hints of meaning in the words others offer. Then it is the back and forth of [com muni ca ting} that refines and details the mutual understanding that results.

In some ways, language seems to work like computers do, sending messages in some manner and listening for a return message that matches. Certainly, in a conversation, you would likely notice if another person misunderstood, but for complex organisms, it is certainly more complicated than for machines; people generally "imagine" what another says, using the context of the situation and experience to give them confidence in what was said, and the same happens in reverse. That can convey some quite unexpected results, like two people finding after ten minutes of pleasant chatting that they were talking about quite different things.

So, a basic problem *for language meaning* is *its* cellular design, that no part of life sees much of what *i*s happening, either locally or remotely*, outside our cells of relationships*. The evidence, though, is that all kinds of animated systems appear quite successfully *to* respond to the animations of others. So, the task of making language work has to do with learning about what comes naturally and, if possible, finding how to translate and accumulate its meanings.

| 01 Natural and Human Languages

A familiar distinction between natural and human languages is whether they are directed to us as humans or not. However, any sign or signal, a drop of rain or a crooked smile, is defined by what we discover from it and so meaningful in that way. If signs or signals come from an ordered language, it depends on how familiar you are with it and its current internal context. So, one kind of acknowledgment from someone else might express something quite important or not, as it is like you would not know what it meant to them, so treat it lightly.

Maybe it is from some ordered language, as nature and our communities are chock full of ordered systems, all speaking in their own language at once. What we read from nature is not intentionally offered to us, so we can start by saying that it occurs without intent. To us, that is not a system OF communication but signals from some independent system we read and incorporate.

| 02 Internal and external communication.

| 03 Our own internal and external languages

7 | <u>Internal and External Cultural Languages</u>

| 01 Verbal Language and Etymology

The stunning thing about verbal language seems to be how the roots of important word meanings are faithfully inherited from their origins. By referring to meaningful common experiences, anyone can refresh and adapt to the moment without using the original. Etymology is a key, along with

For example, consider the word {coordination}. The etymology of its syllables {co, ordin, ation} is found by studying the root meanings of each in common use, roughly {together+center+make}.

Together, that refers to the coordination {process, practice, result, design, and meaning in context} for a universal system transformation. Wouldn't you agree?

So we could call such words system archetypes, which might also contain various Isomorphisms, as the iconic "shapes" of coordination. See how useful it might be, especially if we could use the approach to communicate to others the problematique that pushing any kind of whole working system to its limits will cause it to misbehave as a whole. Might we be able to do that?

My entirely NON-herring claim is that these readily explored system geometries of language are what people all over the world are using to talk about what matters. I think that could be useful.

| 02 Languages of science

The difference between natural and theoretical systems science is that the former uses evidence and experience to help direct attention to natural systems as they grow, mature, and engage with their environments, each system developing individually and having a somewhat different nature (Henshaw, 2023). The latter makes an effort to represent systems with sets of defined relationships to study with models and predict. Of course, the two could work together as something of a "right brain," connecting with a "left brain" approach to the same things.

Natural system studies tend to include both how systems individually behave and misbehave, the latter often of as much value as the former. This is not less like how medicine studies the variety of human illnesses but more inclusive, like how behaviorists might study the misbehavior of healthy systems, not just sick ones, in normal and abnormal contexts. Theoretical systems science is more general in that way, too, as with Len Troncale's system isomorphisms, processes, and pathologies (Friendshuh & Troncale, 2012) (Troncale, 2013).

Studying systems in context allows research on their true behaviors and misbehaviors. In contrast, theoretical systems science relies on definitions and equations, which evidence suggests generally don't behave or misbehave like natural systems. In lieu of a citation for that, let us just consider how the world economy, organized by the best economic scientists and institutions, using all branches of science, aiming to maximize services and profits, is misbehaving in the extreme, causing ecological collapse, climate change, and massive dissension throughout humanity.

The reason for that seems to be that definitions that represent nature with numbers lack comparable requisite variety for doing so. It detaches research from the subject, flattening the image, removing contexts and the nested worlds of relationships that are essential parts of natural systems. Any other approach could jump to conclusions about subjects as undefinable as nature, but it seems that sometimes combining diverse approaches helps each one catch the shortcomings of others.

Systems Isomorphies - When looking for where Len's isomorphies fit in systems science, I also found it helpful to consider the context of science in general.

The Isomorphies Len collected, rooted in the patterns of science, are a catalog of the forms of scientific systems. Morphology is the study of shapes, in this case, of scientifically recognized systems, expanded to include some shapes of system behavior, such as cycles.

However, what made science so useful were the shapes of systems that accomplished work, the energy systems that people could control, and which science could record in the shapes of measurements. So, following that model, systems science also described the shapes of nature as images taken out of context to study separately.

Systems science might have emerged as a highly useful science of systems in context, as the economics of Keynes and Keynes' great follower, Ken Boulding, advocated and demonstrated but did not get included. However, to be useful, it would have taken finding a paradigm of science for studying systems in context and the way people live.

So, I think we should explore that further, asking: What are the isomorphies of systems in context that might be useful to people? There seem to be many reasons for such a large paradigm shift not occurring,

of course, even just that there could seem to be so many such familiar morphologies as to confuse any attempt to arrange them.

The origins of language help a bit, though, the word "system," for example, has two syllables with the very useful root meanings of "together" + "to stand, make or be firm ." The also useful root meaning of "organ" comes from its two syllables meaning "work + doing."
see: https://www.etymonline.com/search?q=system

Perhaps the early scientists missed the evidence that language itself came from an abundance of understanding of systems in context. A sign of that is the ironic source of the word 'physics' from the Greek term pronounced more like "physis," meaning: "nature" and "to be, exist, grow." That suggests a natural reason for the abstract rather than the contextual focus of science, simply that the rules for how to control energy grew like crazy. So that is also what everyone, including the philosophers, studied. So, maybe we should.

Systems Archetypes - Being suggested here is a new class of scientific systems design and property references, those recognizably informative words of common language that refer to systems in context, which cannot, therefore, be defined except by reference to their observable occurrences.

| 03 The Languages of Ecosystems

Introduction

8 | How growth systems survive the impossible goal of infinity

The remarkable reality is that we closely study very many kinds of growth systems that typically grow to a designed limit and stop. It appears that somehow, researchers have not been curious about how blind to the normality of things behaving normally perhaps.

| 01 Gain H

What might be the natural cause of the imperative for maximizing growth followed by leading businesses? I think it may well be that blind investors force blind businesses to seek to be in the lead, as the contexts in which both operate change and growth becomes self-destructive.

Does that seem about right? That both sides of the economic system steering system seem to be acting blind and not paying attention to the changing contexts makes that then seem to be the real cause. It appears to be both A) systemic that growth systems form as self-referential feedbacks as if growing in a kind of womb, blind to their future till sensing a change in context, and B) human minds easily become fixated on the artificial reality of abstractions, and so, blind to their changing contexts.

History seems to be clear about that being one of the most powerful forces in both our societal and perhaps biological evolutions. It is a power that becomes extremely advantageous and extremely threatening without doing anything and so rather easily missed!

9 | Conclusions

The idea of language as a powerfully useful systems science is based on the deep materiality of every language's working parts, the words. It is the majority of words that refer directly to material experience with natural systems, from multiple views, having accumulated all of a culture's shared meaning and usage over time. That is what appears to create the richness of words, their role as extensive libraries of meaning on what is known and appreciated about some particular thing.

The materiality of language comes directly from the very ancient formative centuries of language, building on material references to the material subjects of life, initially to utterance, later becoming condensed into

syllables and combined into highly informative structures of insight into the world around us. Somebody did that, and it was not overnight, not by the dates when it was first noticed or first used. It would have been going on long before.

The aim is to understand the materiality of what you are saying; you can be understood by others and understand what others are responding to.

When studied, words are found to be specific references to recognized familiar natural designs, not arbitrary definitions; their features, processes, purposes, qualities, and meaningful experiences, shared, added to, and passed along over the generations over tens of centuries, remaining faithful to their roots, because of the material realities they refer to.

10 | Recommendations

There are both overarching and particular things to notice. For both, it is to learn to notice the natural designs and behaviors and what systems communicate and connect with in their contexts.

| 01 What is the economic materiality the world needs?

I think it is:

1. Taper off compounding to slow the collapse and
2. Then ramp up investing our spare time and resources to profit from the care of our cultures and our world"

Everything misbehaves when pushed too far! We are experiencing the initial stages of what happens when systems are drained of their resilience.

Yes, that was inconveniently left out of the models of physics and economics, as they modeled the growth of our power over nature and each other to infinity, so… that could be the source of the misinformation on it in the Times. Happy to talk about what I have on it.

Could it be that finding it so hard to see the future comes from our separation from nature, hiding from us where things are naturally going? Might that fit with mistakenly thinking that reality is in our minds, so we can't possibly see what nature is doing except in hindsight?

Figure 15 : Space Oddessy is what we have been on; however, so much of that was in our minds, not on earth, and we seem to have forgotten a few of the old lessons.

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