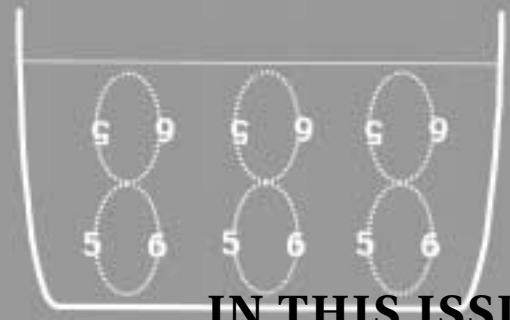
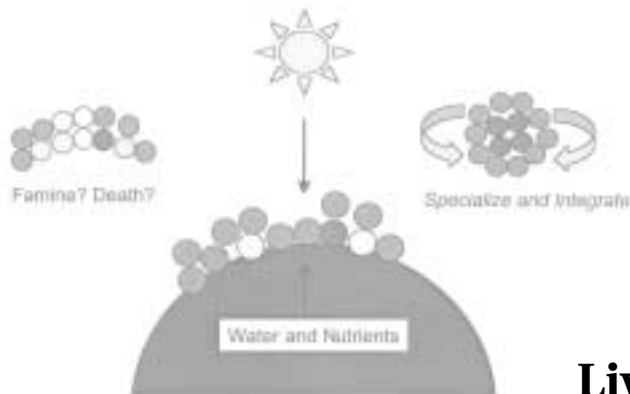


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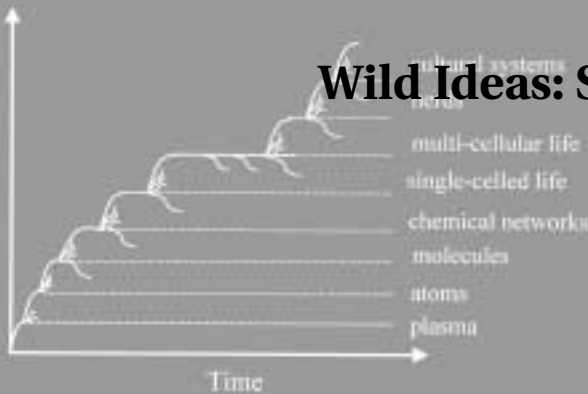


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A quarterly to stimulate public discourse

ideas THAT MATTER™ Editor's Notes

THIS IS THE FOURTH ISSUE of the first Volume of *Ideas That Matter*, rounding out our initial foray into the world of journal publishing. We appreciate the responses we've had from our readers and look forward to producing Volume Two! *Ideas That Matter* is proving to be of interest to a wide range of constituencies and we particularly appreciate the support of our subscribers. If you're reading this now, and have not yet subscribed, [we encourage you to do so.](#)

This issue includes submissions from two keynote presenters from Jane Jacobs '97: engaging science writer Janine Benyus and maverick academic Sally Goerner. Benyus was a last minute invitee to the Jacobs-fest, replacing Hernando de Soto who had to bow out because of a family illness. Benyus – when reached in the wilds of Montana and asked if she knew of Jane Jacobs – thought she was being asked to reply to a skill-testing question. Since her inspiring presentation on that day, reprinted here, and the immense popularity of her book *Biomimicry*, Benyus has continued to urge us to look to nature as the source for innovation and models for solving problems within the human system. Whether it's velcro mimicking the barbs on weed seeds, or the biomimetic architecture of the Sydney Opera House which resembles milkweed pods, ingest Janine Benyus' view of the world and you'll see anew. (<http://www.biomimicry.org>)

Goerner was also a presenter in Toronto and her piece here is a fast ride through evolutionary theory and an introduction to the shift in science away from causal, linear, mechanistic explanations to the adoption of a non-linear, self-organizing, chaos-embracing 'web' called complexity. Goerner, like Benyus, looks to nature to help us understand the built world, and both are prescriptive about where to look for solutions. This wave of 'seeing' has penetrated management and organizational development literature. Goerner cites Jane Jacobs' early observations of cities and economies as the first mainstream identification of self-organizing principles at work in the world.

To augment this issue: two fresh voices. Former *Wired* editorial writer Paulina Borsook crossed the *Ideas That Matter* radar screen as her first book, *Cyberselfish*, was about to hit the stands. On a brief stopover in Toronto she joined a group of us to discuss what impact the Internet may be having on the values of those who have created and sustain it, and by implication, those who use it. (<http://www.cyberselfish.com>) And finally, a special entry this issue from Stan McRoberts, a recently retired public servant turned consultant, whose narration of his work in Vietnam reflects the complexity – even chaos – of human systems.

Mary W. Rowe
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November, 2000

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Wild Ideas: Sustainable Solutions Through Biomimicry

Janine M. Benyus

CITIES THAT WORK, great cities, are fertile seedbeds of innovation. People with different skills and different views are close enough to cross-pollinate. If I could arrange a pollination between two types of thinkers, it would be biologists and engineers. Just imagine what would happen if they could flower in the same place.

Imagine an innovation neighbourhood – a mixed-use, wildly diverse and yet interconnected enclave. It's a comfortable mix of biology labs and engines of enterprise, where life scientists and engineers pursue their separate inquiries. Unbeknownst to them, they are asking related questions. The engineers are asking, "How can humans live sustainably on the earth?" while the biologists are asking, "What has life already figured out, through 3.8 billion years of evolution, about how to live sustainably on earth?"

They are holding two pieces of the same locket. They should really get to know one another.

In most universities, biologists and engineers would be zoned into separate spheres by the reductionist model and would probably never have the chance to talk. But this neighbourhood is different. Here the park benches allow them to mix, sharing what they know and what they need to know. These park benches are like natural estuaries, where salt water meets fresh, and fecundity happens. New ideas can be born.

On a typical Monday, an agricultural engineer plops down on the bench and begins to feed the pigeons. She is distraught, having

just completed a report on the problems in agriculture. She has come to the conclusion, as Wes Jackson of the Land Institute says, "It's not the problems IN agriculture, it's the problem OF agriculture." Our crops are mostly annual plants grown in a monoculture. Because they are annuals, we have to dig up the soil and replant each year. This causes soil to bleed away. To make up for

fuels – ancient sunlight compressed 60 million years ago. Burning petroleum in the earth's atmosphere is like burning the furniture in your house with all the windows closed. It would be best, thinks the engineer, if we could rely on contemporary sunlight instead. But how do we create efficient solar cells?

A plant biologist happens by and begins to explain how exciting things

What has life already figured out, through 3.8 billion years of evolution, about how to live sustainably on earth?

lost fertility, we have to add nitrogen fertilizers – a petroleum product. Because the plants are grown in a monoculture (an all-you-can-eat restaurant for pests), we have to apply pesticides, another petroleum product. It's gotten so we're spending ten kilocalories of petroleum to produce one kilocalorie of food. We're growing crops in oil, not soil.

Along comes an ecologist who listens to this lament. The ecologist brightens and says it doesn't have to be that way. On the same soil in which we are growing grains, the tall grass prairie managed to build soil, sponsor its own fertility and resist pest attacks. Its secret? Perennial plants grown in mixtures – perennial polycultures.

Wouldn't it be great if we could recreate our agriculture in the prairie's image? A domestic prairie of mixed perennial grains.

On Tuesday, an energy engineer, also a little blue, slides onto the bench. With all our advances in energy efficiency, he thinks, we are still relying on nonrenewable fossil

are in photobiology these days. For the first time in history, we have pictures of photosynthetic reaction centres – where light is turned into fuel – and we know how plants work their magic.

Wouldn't it be great if we could mimic this chemical reaction and build solar cells that worked like nature's solar batteries? These tiny, molecular-sized energy harnessers could generate electricity or, even better, they could split water and bubble off hydrogen gas. Hydrogen is the cleanest fuel there is, says the engineer. When you burn it, you get water which is the feedstock for more hydrogen fuel. If only we had an efficient solar battery to help us split water. Perhaps it's time to make like a plant and photosynthesize.

On Wednesday, a materials scientist sits down on the bench and admires the wood grain. Materials scientists make it their business to design the stuff that we ride in, sit on, pour from, build with, even write on. Materials. Most of the high-tech materials are synthesized these days

from petroleum. The typical recipe is “heat, beat and treat,” using high temperatures, high pressures and toxic chemicals to take a bulk material and carve it down to what we want. This creates lots of waste, and lots of what we don’t want – like brittleness, high fracture rates and nonbiodegradability.

Is that so? says a spider researcher who has just pulled up a seat. Amazing, because the spider makes its materials “on board” and so it can’t take a chance with heat, beat and treat. Instead it templates its proteins from the DNA up, weaving a fibre that is precisely what it needs to be – strong, tough, and resilient. In fact, it’s five times stronger than an equivalent diameter width of steel wire, twice as strong as anything we can produce. Even flak-jacket Kevlar pales.

But the spider takes flies and crickets at one end, does chemistry at room temperature and in water, and produces a biodegradable, miracle material at the other end. Wouldn’t it be great if we could learn to do that? Take abundant carbon, make it into proteins, and then squeeze them through spinnerets, where they would self-assemble into

we possibly screen the jungle efficiently, when assaying is such a tedious, cumbersome process? (To say nothing of the fact that species are going extinct at a rate of four per hour.)

Lo and behold, a primatologist sits down, a protégé of Jane Goodall. That’s easy, she says, after hearing the dilemma. Follow animals around and watch what they take to treat themselves – let them screen the jungle for you. She smiles as the doctor frowns in disbelief. The evidence is accumulating, says the primatologist. For example, we now know that primates and other animals can and do select certain plants to doctor themselves, and to even influence their own fertility. It’s a matter of following the self-medicators, then chemically analyzing the plant. Whenever we have done this we have found tremendous secondary compounds – drugs.

Wouldn’t it be great, they agree, if we would honour the know-how of animals enough to follow them to drug plants and, for that matter, to new food plants? As a culture, we’ve finally broken down and admitted shamans know a thing or two. Now maybe it’s time to listen to the older

ated computer in its own right, taking in signals and translating them into a decision – whether to divide, whether to release sugar, whether to fire or not.

But nature computes in a totally different way, he says. Instead of zeros and ones – electrons racing along wires – nature computes through shape matching. Three-dimensional molecules such as enzymes are in a chemical dance in each cell. They scan one another, recognize a pattern and then fit together like a lock and key. They fall to a solution, using the power of physics.

Wouldn’t it be great if we could create a computer in a jar by using molecules such as DNA that encode information and then zip together automatically? A computer in a thimble could be the learning, adapting eyes and ears of our digital behemoths.

Well, theory is all well and good, says the business entrepreneur who comes to the bench on a sunny Saturday morning. (Notice who’s the only one working on the weekend.) But I have to work with market forces. I have to make a profit. How can I do that in a way that honours the earth? The way we work now is set up for depletion of natural resources and destruction of the environment. We take raw materials and turn them into products and waste as quickly as we can. Instead of refolding most of the waste back into the process, we just dig up some new natural resources. It’s a linear free-for-all.

Well that sounds familiar, says an ecologist who is resting from roller blading. That’s the modus operandi of what we call a Type I ecosystem. They’re the colonizers in nature: the weeds in a farmer’s field, or the mice in a catless barn. Wherever there are abundant materials, they move in and exploit all they can, then move on. For instance, weeds move into a newly plowed field and absorb

Wouldn’t it be great, they agree, if we would honour the know-how of animals enough to follow them to drug plants and, for that matter, to new food plants?

a fibre. No noxious byproducts, and completely biodegradable. It would revolutionize the fibre industry.

Thursday, a medical doctor sits down and scribbles in a pad. He has to give a talk to a pharmaceutical company the next day about the future of synthesized medicines. It’s bleak, says the doc. We haven’t had the big drug breakthroughs in the lab that we thought we would have by now. It’s time to head back out to the jungles. Or what’s left of them. And therein lies the rub. How can

animals in the jungle.

Friday (what a week!), a computer engineer sits down and starts typing in her laptop. The problem: computers are good at many things, but in some categories, they are glacially slow, e.g., pattern recognition (recognizing a face), learning and parallel computing.

But every cell in our body is good at that, says a biologist who has been reading the engineer’s laptop on the sly. Every last skin cell, liver cell, blood cell and neuron is a sophisti-

resources as fast as they can, then turn them into minimal plant bodies and seeds, lots of seeds. That's so they can go off to their next horn of plenty. Wait a while and you'll see the real inheritors of the site – the perennial plants with roots that can survive the winter and make do with less. Behind them comes the ultimate Type III ecosystem – a mature forest. It stays put, so it has to be efficient and self-renewing right where it is. It has to recycle everything. The system – full of niches – is incredibly diverse, interconnected, and runs on sunlight and information. Lots of feedback loops.

Well, they agree, we humans have been unconsciously emulating a Type I system. The Type I strategy might have made sense when we were a small population in a large world. But now we are a large population in a very full world and we have nowhere else to go and colonize. The rules governing our species have changed and the Type I strategy no longer makes sense. It's time to change our niche to Type III. Redwood forest, not ragweed field.

Wouldn't it be great, say ecologist and economist, if we could do that by learning directly from mature ecosystems? By reading the operation manual that has already been written?

On Sunday, everybody rests and the pigeons hop up and snooze on the benches. At home, the lunchmates are thinking and ruminating – their tiny chemical computers are computing. The biologists think, you know, I thought we biologists had nothing to contribute to the so-called real world of humans and their machines, but that's not true. And the engineers are thinking, well, OK, I guess we could use some help.

It turns out we could all use some help and the good news is: We are surrounded by geniuses. They are everywhere with us, breathing the same air, drinking from the same

river of water, moving on limbs built from the same blood and bone. Every day we learn more about them. Biological knowledge is doubling every five years and we have the instruments now (from scopes to satellites) to actually understand how nature makes it all look so easy.

Believe it or not, every one of the examples on the park bench is now being biomimicked. We're trying to grow food like a prairie, harness energy like a leaf, weave fibres like a spider, find cures like a chimp, compute like a cell and run a business like a redwood forest. Biomimicry is a new science that seeks sustainable solutions by imitating nature's best ideas. Those consciously emulating nature are called biomimics and I think they are on the right path.

It's about time we started asking nature for advice. Perhaps just in time, in fact, biomimicry offers us something truly wonderful – a chance to fit in on this earth from which we sprang. This time when we come to nature, we come as students. We're no longer learning ABOUT nature, so that we might

circumvent and control her. Instead we're learning FROM nature, so that we may once again remember what it feels like to be a part of, not apart from, the genius that surrounds us.

Take a good long look at the nimble squirrels and the sun-smart maples around you. Watch overhead for the aerodynamic peregrines in a dance of "fast and faster" with their urbane pigeon prey. And think to yourself: how lucky we are to have so many willing teachers flapping and soaring and slithering among us. All we need to do now is pay attention, and then do as they do.

These ideas and others appear in the book Biomimicry: Innovation Inspired by Nature by Janine M. Benyus. She is the author of four books in the life sciences, including Bestly Behaviors: A Watcher's Guide to How Animals Act and Why. A graduate of Rutgers with degrees in forestry and writing, Janine Benyus lectures on science topics. She lives in the mountains of western Montana.

What's New with Janine Benyus?

"I'm working on a new book about the nature of home. A biologist asks the question: What makes us feel at home, and why? I'm drawn to this question because of my belief that no matter how technological we become, we are still biological beings. Therefore, feeling at home – where we belong, where we feel safe, where we can meet our needs and be ourselves – is vital to our wellbeing. Down deep in our biological roots, home was and is vital to our survival.

Strangely enough, there's not much written about the effect of home on our wellbeing. Contrast this with the scores of studies on workplace productivity. 'What makes us feel at home?' is not a trivial question, just a poorly funded one. So, I'm going to give it a try. I'll weave natural history together with observations by interior designers, architects, community planners, geomancers, human ecologists, archeologists, geographers, sensory perception scientists, evolutionary psychologists and more.

I'll investigate the way we choose a home, and the way we make a place a home. (Technically, it's the study of habitat selection and nesting behaviour in humans.) I'll play with several scales, from being at home in your body, to being at home in a favourite room, house, neighbourhood, motherland, bioregion.

Ultimately, I'll explore the two-way relationship between people and place – how we shape our homes and then, in a thousand different ways, how they shape us. When there's a fit, when we are well-matched to our habitat, we are at our best. It's the biological version of the home advantage. When our home (or our planet) can't support us, can't rejuvenate or shelter us, what happens? This, perhaps, is a question that readers of *The Homing Instinct* will ask themselves long after they put it down."

Living on the Edge: The Evolution of Integral Society

Sally Goerner

You will never solve a problem if you use the same thinking that created the problem in the first place.

Albert Einstein

IN THE BEGINNING, God created reality. Shortly thereafter people began creating models to explain how that reality worked. In the late 1500s, scientists struck upon a particularly productive model – the world as a machine. This model – also called the clockwork universe, the modern world, mechanism and Newtonian science – is of course exquisitely powerful. It has sent men to the moon, it has put computers on our desks and it is now mapping the human genome.

The machine sense of the world has been decried almost as often as it has been praised. Machine science is commonly associated with dissection, control, manipulation, cruelty, sterility and the oppressive kind of future envisioned in George Orwell's 1984 or Aldous Huxley's *Brave New World*.

Slowly this dichotomy between the evils and the marvels of the machine is being eroded and replaced with a totally new understanding of how things actually work.

INTEGRAL SOCIETY: THE RISE OF THE WEB WORLDVIEW

A subtle, but significant shift is underway in western civilization. Academics might call this a paradigm shift, while historians would describe it as a sea change or a great turning. It is a time when all aspects of a civilization undergo simultaneously a change of head, heart and soul.

Today's great turning is a powerful, corrective reaction which will sweep

through all facets of western civilization. It will reshape everything from how we build our cities and run our economies to how we educate our children. Why is this change happening and where is it going?

One indicator of this great turning is the shift away from the basic metaphor of a machine that suggests the world works in a linear, predictable way, toward an understanding of a more complex system resembling a web.

The environmental movement was the first to make web thinking common fare. "Everything is connected to everything else," ecologists told us. Gradually large numbers of people began to see the wisdom of this approach and the usefulness of the web metaphor in matters beyond the

- A renewed commitment to spirituality now defined in broader and more tolerant terms. Mind, body, soul and cosmos are seen as connected. Millions now believe a new planetary consciousness is emerging and a multitude of new approaches to spirituality have sprung up. Traditional religions are changing too, as many look less to dogma, and more to their roots, both spiritual and human.

- Efforts toward more integrated and empowering education

Whether it is teaching environmental respect or working toward better integration with the community, education too is already being swept up in the web revolution.

Scanning current events through the lens of a web (or ecology), makes it easy to see that today's great turn-

One indicator of this great turning is the shift away from the basic metaphor of a machine that suggests the world works in a linear, predictable way.

environment: computers connect us on the web, the global economy is interdependent. The web shift also shows up in:

- *Holistic alternatives in health*

Alternative healers see the body as an ecology. They emphasize health, especially as gained by proper nutritional balance and energy flow.

- *The sustainability movement*

These advocates see economies, social systems and the environment as one gigantic, fundamentally-entwined ecosystem. Since each facet depends on the others, the goal is to develop sustainable patterns of relationship within and among all three.

ing is taking place across the gamut of society. The official name for this massive change and embryonic new culture is *Integral Society* (see Paul Ray, 1996, Goerner, 1999)¹. "Integral" means "whole."

If this concept of an Integral Society will eventually reshape the landscape of civilization – as some of us believe – right now, progress is painful and slow. There are two reasons for this. First, the movement's solid potential is obscured by clouds of hype, misconception and wishful-thinking spread by the first new-agers. Years of grandiose promises which failed to materialize have now made

most people skeptical, even cynical, about paradigm shifts and utopian change – much less a great turning.

The second obstacle to its wider adoption is fragmentation. People working on one piece of the puzzle often don't realize that someone nearby is working on an important related piece. Consequently, there is little coherence or mutual support. There are those who explore how economies work like natural systems, and others who explore how natural systems work. Although they share the same intellectual puzzle, they rarely support each other because

brain research, economics, maths and physics. Computers and other electronic equipment have made it possible for researchers to study more complex relationships. As a result, every field is moving from seeing causality as simple and objects under study as separable to seeing causality as complex and objects as interwoven.

The web transformation in science means no longer seeing simple causal chains but rather complex, interdependent systems: an ecology. Thus, while machine-age scientists were apt to say one thing caused a particular outcome (e.g. calories cause fat or

have remained obscure. These include the evolution of consciousness and the field of ecological economics. Ecological economists, for instance, see economic activity as the outcome of a web of effects. This is in striking contrast to traditional economic theory which focused on simple supply-and-demand seesaw pressures and the perceived need to maximize production, literally at all costs.

To unify integral discoveries, one needs a scientifically sound story of why various facets and ideas connect. The only story capable of making such connections is a story of evolution which explains how brains, the biosphere and civilization all emerged from the same process. The patterns it describes range from the origins of matter to the latest cycles of civilization – and it all takes place in an intrinsically connected universe which subsumes the Darwinian story of biological change whose images seem embedded in the term. The late neurophysiologist Roger Sperry summed up the story succinctly: “In the eyes of science, man's creator becomes the vast interwoven fabric of all evolving nature – a cosmic scheme that renders most others simplistic by comparison.”

This is what I am calling a dynamic understanding of evolution.

DYNAMIC EVOLUTION AS A UNIFYING THREAD

We shall not obtain the best insights into things until we actually see things growing from the very beginning.

Aristotle

Dynamic evolution looks at how natural forces create organization. It sees the sometimes gradual and sometimes rapid progression of organization in the universe as a product of a subtle, highly connected ordering process which operates at all levels of existence – subatomic to societal. It is driven by energy and gets its shape from web dynamics – that is, the pulls and pushes of connected events. Nature also turns out to be more

The movement's solid potential is obscured by clouds of hype, misconception and wishful-thinking spread by the first new-agers.

economists and ecologists belong to different disciplinary camps. Even within the same discipline, collaboration rarely exists. Those who work on brain-based learning, for instance, don't link up with those doing cooperative learning, even though their end goals are largely the same. The people who try to save dolphins don't even work with the people who try to save whales. The list goes on and on.

High-quality efforts, across diverse disciplines, are part of the integral transformation. The movement lacks power because of differing language or vocabulary and divergent priorities. Bridging these gaps is the precursor to seeing significant global change.

INTEGRAL SCIENCE: THE SEARCH FOR UNITY, SUBSTANCE AND A GALVANIZING IMAGE

The goal is not so much to see that which no one has seen, but to see that which everyone sees, in a totally different way.

Arthur Schopenhauer

We see the great turning in virtually every field of science: anthropology,

genes determine heredity), integral-age scientists are more apt to see outcomes as the result of a complex mesh of causes, many of which tie into each other. Causality is more complex, objects are seen as embedded and multiple pressures are often seen as partners in change, which is seen most vividly in the ecology movement but is now being recognized in all fields. Integral scientists study how intricately connected processes create identifiable patterns of behaviour. Within these patterns, they can also identify discreet leverage points. The integral scientist seeks to understand first and predict second. Integral scientists study how the dynamics of interdependence play out in the human brain, in the global economy or in the biosphere. Others study how web dynamics work mathematically, in generalized ways. Today, these kinds of efforts are beginning to form a coherent view of the world, one with vastly expanded eco-logic.

Web-related insights have begun to pop up across fields. Some of these concepts have been popularized, such as quantum mechanics, Gaia, chaos, complexity and self-organization. Others (the vast majority, in fact)

orderly than previously realized. The key words are pressure, drive and attraction, plus exquisite and ever-present design.

Nature also turns out to be more orderly than previously realized. The key words are pressure, drive and attraction, plus exquisite and ever-present design.

In the end, the message is straightforward. We too are a part of nature. We too are affected by the way webs work. We are the products of an awesomely intricate, creative cosmos at work in our daily lives.

THE SELF-ORGANIZING UNIVERSE

We are now in the process of ... describing a long series of changes in the assembly and composition of energy, matter and life in the Universe.²

Eric Chaisson

In the beginning, we are told, the universe flew forth from nothing, as a result of what is now called the Big Bang. There followed from this one of the most important events of all time, the creation of matter.

In the first fiery sub-seconds, all was energy, most likely high-energy gamma and X-ray radiation compressed into an unimaginably small space. By 10^{-24} seconds after the Bang, energy photons colliding under colossal pressure began to form the first elementary particles, heavy ones such as protons, neutrons, and mesons. About a millisecond into the Bang, energy conditions had quieted enough that lighter particles such as electrons, neutrinos and muons began to form.

It was not until several minutes into the Bang that the first atoms began to form. Lower temperatures allowed charged particles to cluster, with hydrogen atoms being the first to form. This clustering process dominated the next few million years of our universe's life. Late in this period, cooling allowed gravity to pull clouds

of particles into vast swirls of gas and dust. These swirls were the fore-runners of galaxies and galaxy clusters and their formation became the

major event of the next billion years.

About 10 billion years into the universe, the formation of galaxies tailed off and the formation of stars took over. The first stars formed from dense clouds of gas and dust particles. These clouds became an increasingly coherent balls with fusion reactions throughout, which baked lightweight atoms in heavier types. During the stellar epoch, stars were born, grew old and died. Planets formed from their rubble, from stellar blasts and burned out heaps. Star ashes eventually provided the seeds for life itself.

Earth formed somewhere around 4 to 6 billion years ago. Life on earth is thought to have started around 3.5 billion years ago – about 11.5 billion years after the Bang. As always, the conditions were fiery. In the presence of intense energy, simple molecules such as methane, ammonia, water vapor and carbon dioxide fused to form the two dozen amino acids and nucleotide bases common to all life on earth. Networks of chemical reactions involving these and other compounds also began to form. As time progressed, these networks evolved into global chemical chains which cycled massive amounts of matter and energy through every corner of the planet. Thanks to these networks, chemical exchanges taking place in the smallest subterranean nook were always linked into larger cycles that embraced the globe.

This chemical circulation set the stage for life. Some of the smaller chemical circuits became the precursors of the metabolic processes we now see inside cells. Some created the membrane-like housing in which

metabolism was held. Yet others spawned copy-cat cycles of themselves, a process called replication today. About 3.5 billion years ago, these naturally occurring chemical circuits coalesced into the first living cells.

Thanks to networking, every chemical cycle within these first cells was also tied into massive circuits which spanned the globe. Such links between life's internal chemistry and the planet's great networks eventually led to both ecosystems and planetary wholeness becoming cemented by networks such as the famous carbon cycle we know today. Animals take in oxygen from plants and give back carbon dioxide in an exchange system which blankets the planet.

Soon the first living systems began to become more complex too. The first cells (3.5 billion years ago) were probably little more than metabolic processes in gelatinous sacks. The first evidence of a nucleus in a cell appears about 2 billion years ago. The first multi-celled algae appears about 1.75 billion years ago. All told, the world was an ocean of slowly complexifying blue-green algae for another billion years. Then, about 510 million years ago, things changed with a jolt. In perhaps as little as 10 million years, living organisms went from a few crude multi-celled algae to mollusks, jellyfish, sea cucumbers and an endless parade of arthropods, the ancient cousins of crabs, lobsters, spiders and flies. Even swimmers with rod-like spines emerged, the precursors of our own *Chordata phylum* (animals with spinal cords). Nearly every major branch of the biological tree emerged in a fantastically brief time, cosmically speaking. So sudden was this burst of development, that biologists call it the Cambrian Explosion or Evolution's Big Bang.

The Cambrian Explosion brought new multi-cellular creatures, which were not merely loose lumps of cells but collectives of living organisms whose highly cooperative behaviour made the term "whole" apropos. Cells

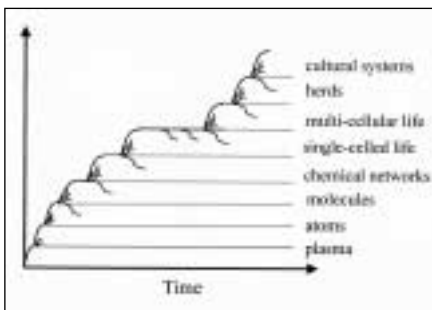
took on specialties, some serving as lung cells and some as guts, for example. All served the greater good because each cell was now completely dependent on others doing their job. These cells became so highly coordinated and tightly knit that we see them as a single large-scale organism, a multi-cellular creature.

ENERGY'S ROLE IN EVOLUTION

We shall find that the flow of energy is a self-organizing principle at both the macroscopic and the molecular level.

Harold Morowitz

This ends the description of what happened during dynamic evolution's great trek. We must now ask why it happened. The basic pattern is clear – simple organizations coalesce into more complex wholes. Under intense



pressure, energy coalesced into sub-atomic particles which, in turn, coalesced into atoms. Atoms became molecules which became galaxies, stars, planets, chemical networks and eventually life. Living systems also became more complex. Evolution, therefore, is an immense process in which the cosmos as a whole pushes elements within toward increasingly complex patterns of organization.

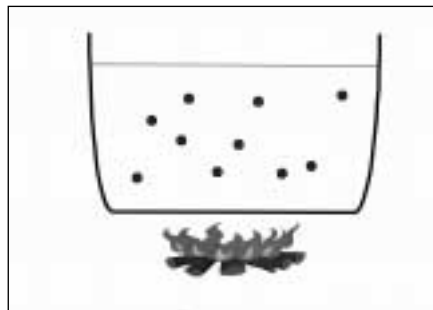
What makes organization burst into being and then become more complex? What process could account for all the different kinds of organization – molecules, ecosystems and life? Energy is the driving force behind a self-organizing universe. Within this, web dynamics give shape to all things.

A simple experiment reminiscent

of boiling water, which in science is called the Benard cell, provides a concrete example of how energy drives organization into being. It also shows the standard patterns by which evolution tends to proceed.

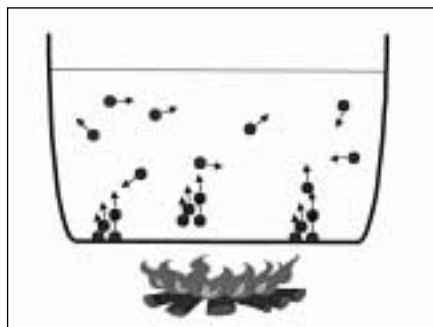
HOW ENERGY DRIVES SELF-ORGANIZATION AND THEN RECURRENT REORGANIZATION

Start with a pot of water at room temperature. Everything looks quiet from above, but inside, molecules are colliding furiously. If you put a fire under the pot, heat makes these collisions go faster still. Heat is a form of concentrated energy. Concentrated energy creates a force or a pressure to move faster – and that is exactly what the water molecules do. They start moving faster and faster as the heat presses them on.



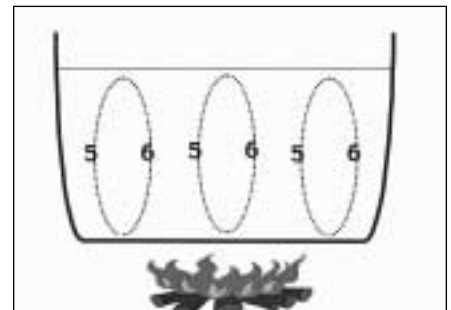
There is, however, a limit to how fast molecules in a given configuration can move. Unless one removes the heat (the pressure), the molecules in our pot move faster and faster until they reach that limit. The result is an impasse. Heat is pressing the system to go faster, but the current organization is going as fast as it can. The system becomes unstable and ripe for change.

Then, lo and behold, the system



finds a way out. Little pockets of relatively hot molecules have been accidentally coming together and moving apart all along. Hot collections are lighter and more buoyant than their cooler surrounds. The unstable context now puts this characteristic to use. Little hot collections begin to float upward. Eventually some collection rises all the way to the top, loses its heat and sinks back down pulling other molecules along with it. The entire region suddenly erupts into a coherent circular motion.

The system organizes itself into a pattern. That pattern moves energy faster. With the system pushed to its limits, this new speed is crucial. Pressure has made the system unstable. A faster configuration restores stability by answering the demand for more.



But the saga is not over. If the heat is still on, molecules will start accelerating in the new pattern (circular motion). When they can go no faster here, the whole process repeats. Naturally occurring diversity seeds a new cycle. The system will reorganize itself into a new pattern. This new pattern will be faster because it is more intricate, looking like a figure eight. Smaller circles are faster and linking them together makes the whole system faster than before. If pressure continues and exhausts the figure eight pattern, the whole cycle will repeat again and again, each time with a more intricate and complex motion.

We see results like this everyday. When the heat is on, small bubbles form around the edge of the pan and then a column of bubbles forms from

the bottom. Gradually larger bubbles and undulations emerge until a full rolling boil erupts. A series of patterns emerges and moves through

is, naturally occurring diversity) creates a conduit. Pent-up pressure pours energy in, making it swell from slight to huge.

pulling in energy at an accelerating rate. Unfortunately, growth brings new problems. Size brings bulk and inertia. The system becomes sluggish. Acceleration slows and eventually stops. Ironically, the system's very success – getting bigger – is now creating the conditions for the next round.

We are actually waiting to reorganize.

Great turnings are in fact huge reorganizations.

ever more intricate levels of organization. When the pressure is on, the drive is toward greater intricacy and faster energy flow. This is what the Benard cell tells us.

BASIC PATTERNS

We have systematically investigated the behaviour of...chemical networks of biological interest...The surprising result was that, in fact, they share most of the properties of hydro-dynamic instabilities.

Illya Prigogine

Though boiling water is a bit too simple to seem serious, many of the behaviours it exhibits are seen regularly up and down the evolutionary ladder. In the 1970s, Nobel laureate Illya Prigogine came to a startling conclusion: the Benard cell may be simple, but it provides a glimpse into the standard patterns of evolution, of things coming together, seen from the earliest moments down to our present day.

1. *The Basic Pattern of Self-organization* Prigogine called the process of coming together, “self-organization.” It has four main parts:

- Energy concentrations create a pressure to move faster.
- Organizations arise because they allow energy to move faster. You can think of organization as a bucket-brigade activity. Passing energy in an orderly fashion makes it move faster than random collisions.
- Diversity triggers self-organization and serves as the seed crystal for the next pattern of organization. As the system reaches its limit or maximum speed, pressure begins building up like a balloon ready to burst. Some small, non-uniform fluctuation (that

- Continual pressure pushes the system through periodic crises and reorganizations, always moving in the direction of increasing intricacy (and greater complexity).

This form of self-organization is actually a theory of growth and development. Pressure pushes systems through recurrent cycles of growth-limit-reorganization. Each new reorganization can be considered a new stage of development, if nothing else, because it is more intricate (structurally). The process is never finished – we have merely entered a new stage of development. Reorganization theory helps us see why evolution is on-going.

Finally, super-purified fluids show what happens if you suppress diversity. When you remove all the impurities from a fluid, you also effectively remove the diversity which gives rise to new patterns. Consequently, when you heat super-purified fluids, instead of reorganizing, the system explodes.

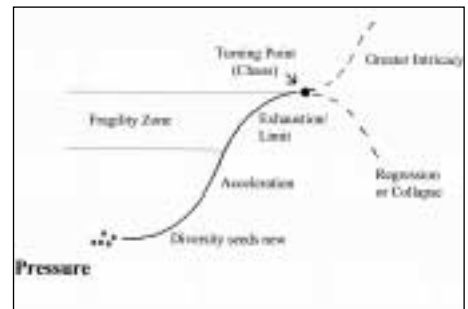
Our own time makes a perfect example of self-organization. Modern society is filled with tremendous pressure and huge pools of frustrated energy. Bubbles of reform are percolating already. We are waiting for those bubbles to coalesce into a coherent pattern. We are actually waiting to reorganize. Great turnings are in fact huge reorganizations.

2. *The Standard Life Cycle: The S-curve* Looked at from a different angle, self-organization also reveals a standard life cycle of development called the S-curve. This curve plays out roughly as follows:

- Emerging – Diversity seeds a new organization. A small tornado of organization rises by tapping a pool of pent up energy.
- Building – The organization grows,

- The Fragility Zone – The organization approaches the limits of this pattern and slowly becomes unstable. As acceleration slows, outside pressure begins to build. The bonds which hold the system together are also becoming stretched. Despite its size, the organization is entering a period of gradually building instability, called the fragility zone.

The system is less resilient and more fragile. It also becomes more susceptible to change. Pressure plus instability means that some passing fluctuation may trigger a reorganization. If the system does not reorganize appropriately, it eventually reaches its limits.



The S-Curve. If the horizontal axis is time and the vertical axis is size/speed of energy flow, then the standard life cycle of development is as above.

- Exhaustion (Crisis) – The organization can go no faster in its current pattern, but the pressure is unrelenting. The term “break point” suddenly becomes literal. Poised on the razor’s edge, the system must either reorganize into a pattern that can handle the pressure or it will collapse.

Human organizations actually face three choices: 1) become more intricate, 2) shrink, or 3) disintegrate. Businesses, for example, often simply cut back on staff. Shrinking doesn’t actually improve their process, it merely allows them to restore cohesion, at the expense of growth and development.

Developmental cycles help explain why evolution is punctuated, not gradual.³ Each new system of organization bursts into being and then enters a relatively stable period of growth, maturity and aging, until it reaches its limits. The cycle is said to be punctuated because it oscillates between long periods of relative sameness and short periods of rapid reorganization (or extinction).

These cycles also help explain why mavericks are so important at certain junctures and also why adopting change too late can be catastrophic to an organization. The best way to encourage safe change is to invest in many maverick experiments early in the fragility zone. That way, a sound new path will be open by the time current limits are reached.

3. The Complexity Catch – Why “Intricate” Infrastructure is Important

The S-curve also points out another fact of life: Growth is not easy. The bigger you get, the more the bonds which hold the system together get stretched. Weak bonds create fragility. If stretched enough, they break and the system collapses. Thus, evolution holds a hidden rule which I call the complexity catch. You can't keep growing in one big circle because huge circles eventually burst. Nature prefers small circles because they are tighter and faster. The real trick to getting bigger is to stay small and well-linked.

Nature handles the complexity catch by following a simple rule: if a system grows, it must do so by keeping small pieces tightly bound in a fine-grained web of connective tissue. The organization must not only fortify its infrastructure, but also make it more intricate. Intricacy is like a lace tablecloth. It involves lots of small, inter-linked circles woven into a sturdy mesh which aides resilience and strength. Any organization which tries to get bigger without increasing its intricacy, eventually falls apart.

Most organisms add intricacy by breaking into smaller sub-units which then link back together. We've seen intricacy increase in fluids. We see it

in armies built of platoons within brigades within regiments, etc. This

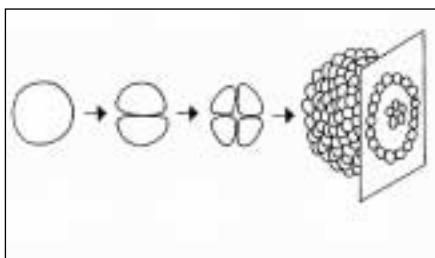
organization. To cement this understanding, I'm going to show how these

Any organization which tries to get bigger without increasing its intricacy eventually falls apart.

also helps explain why evolution often oscillates between getting bigger and breaking apart, for example in empires like the old Soviet Union, and spin-offs such as Saturn from GM today.

Realizing that intricacy applies in human societies gives one a whole new appreciation of fine-grained social fabric. American anthropologist Robert Carneiro⁴ has precisely charted the process of increasing intricacy in aboriginal villages. The upshot is simple. As village populations rise, they encounter regular breakpoints. When a village reaches a breakpoint, it either develops a more intricate internal structure or it splits into two smaller villages which then go their separate ways. Carneiro's work even suggests that the breakpoint⁵ in villages occurs at essentially the same breakpoint seen in biological organisms. (See figure on page 14.)

Patterns such as self-organization, the S-curve, recurrent cycles and intricacy are important because they provide a framework for understanding all



The Embryo as An Example of Increasing Intricacy
A developing embryo provides a perfect example of increasing intricacy. An embryo starts as a single cell which gets bigger. As the cell grows, however, the forces holding it together get stretched thinner. Nature's solution, seen in the embryo, is to divide into two smaller cells which then stick to each other. The process then repeats. Each cell grows, reaches its limits, divides and rejoins its fellows, now for a total of four cells. The next time it's eight, then sixteen, and so forth. After each round of dividing, the embryo is made up of more small cells and the connective tissue. The system is now stronger because each cell is smaller and thus stronger in itself. Linking together then gives the strength of many "bound as one."

patterns have played out in the evolution of intelligence (mind).

THE EVOLUTION OF INTELLIGENCE: FROM CELLS TO BRAINS TO CIVILIZATION

The Universe is built on a plan, the profound symmetry of which is somehow present in the inner structure of our intellect.

Paul Valéry

The emergence of mind makes complete sense in the context of an evolutionary process which is driven by energy. Intelligence began with the first cells. Hence, one of the most important differences between living and non-living systems is that living systems actively pursue the energy (food) they need to survive. Plants pull nutrients up their roots. This in turn means that living systems have to actively respond to hints (information) in the environment about where food might be located. Plants turn toward light. Information began as little trails of patterned energy: a photon here, a chemical concentration there. Cells already had metabolism which meant they could muster the energy to move. All evolution needed to do was to connect certain motions to certain types of information. Apparently this happened. The first cells had the first precursors of mind and intelligence, because they could take in information and respond appropriately. Eventually, living organisms like ourselves became quite adept at processing information.

Therefore, if one wants to trace the evolution of intelligence one should start with the first living cells. The real question remains: how and why did evolution move from crude cellular minds to the wonder which is our brain? Happenstance is clearly part of

the story because natural selection would favor any chance improvement in intelligence. After all, intelligence improves survival, by definition. Another more subtle process was also at work. As evolution proceeded, single cells gave rise to multi-cellular organisms which, as we've seen, were actually collections of specialist cells working together. Herein lies a rub of great importance to the evolution of mind: A multi-cellular creature has to stay integrated to survive.

Cells playing specialized roles in a larger system need each other to survive. Furthermore, they must communicate in order to stay in sync. For

cation was easy. Cells were either touching or in close proximity. Unfortunately, signals dissipate over distance. As bodies got bigger, internal cells began to lose touch with each other (literally). Members began to fall out of sync. Because breakdowns in communication are deadly, the evolutionary pressures grew. No doubt many organisms died as collaborations began to fail. Others stopped growing and settled into safe niches. Yet eventually, through some quirk of diversity, some organisms developed a new way of staying cooperatively connected. A new type of specialist cell emerged whose job was to carry signals between

began to emerge. We call this one a brain cell.

Brain cells had a unique view. Positioned atop a crossroads with information pouring in from all over, the information they got was rich and multi-dimensional. As a result, brain cells began to respond to extremely subtle patterns in complex streams of energy (information). The horizons this opened up were truly vast.

Brain cells began responding to rarefied patterns in massive amounts of information. In doing so, they were actually beginning to respond to conglomerate pictures which helped organisms see complex contexts and make complex choices. The brain's owner began to see how any bit of information fit in a larger whole. For example, an organism with a brain is able to see that food and a predator means something different than food alone. As brains learned to synthesize ever more complex pictures, the nuances of how bits fit got complex indeed.

Sitting astride mixing centres also allowed brains to coordinate incredibly complex response patterns involving all parts of the body. Like a keystone on top, brains solidified life's ability to perceive and act as a truly coordinated whole. Thus, brains are what brought life out of the ooze and

Living organisms with nerves became vastly more complex because new cellular specialties could develop and still stay in sync.

instance, if you are a caveman chasing a rabbit for dinner, your lung cells must know what your leg cells are doing because running requires energy which requires more oxygen for metabolism (this is why we breathe faster when we run). Cells coordinate their activities by exchanging chemical and electrical signals. Limbs, lungs, eyes, etc. can only do their jobs if signals are timely and correct. Failure to communicate properly inside leads to death just as fast as failure to perceive what's going on outside. Hence, if lungs don't get signals from legs, they won't breathe in more oxygen which means metabolism can't speed up which means the legs won't get enough energy to catch the rabbit. Our caveman starves.

In a collaborative world, growing apart is deadly. Yet the complexity catch tells us that growth always leads to pulling apart. Thus, oddly enough, the pressure to stay collaboratively connected has played a major role in increasing intelligence from nerves to brains to civilization. This bears explaining.

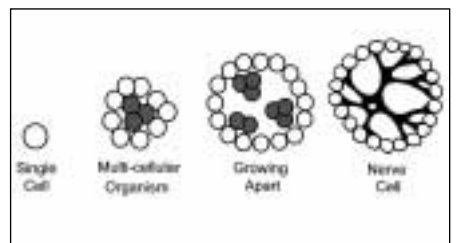
Since the first multi-cellular organisms didn't have many cells, communi-

distant groups. We call them nerves.

Nerves allowed organisms to grow more sophisticated in mind as well as body. The quality of an organism's response to the outside world depends almost entirely on its coordination inside. Better internal communication not only improved coordination, it also opened the door to more complex behaviors and vast new realms of specialization. Living organisms with nerves became vastly more complex because new cellular specialties could develop and still stay in sync.

Still, evolution was not through. In simple forms of life, such as the giant sea slug today, a single nerve cell often serves a whole organism. But as life became more complex, the same pattern of growth and crisis played out again. As bodies grew bigger, collaboration began to fail again. Pressure to stay connected grew.

At first, nerve cells multiplied, forming multi-lane information highways as it were. Nerve highways brought signals from all over and spread information throughout. Where nerves overlapped, signals from many directions intermingled. At dense cross-roads, a new kind of cell



allowed multi-cellular organisms to locomote with legs and fins.

Organisms with brains became great sorters of information which chose paths based on subtle patterns. Freed from knee-jerk responses, animals with brains began to explore the world and to learn lots of new lessons about how to survive. These lessons were not stored in genes, of course. They were stored in the brain of the beholder, in neural circuits etched by experience.

Storing lessons in the brain allowed organisms to learn faster and to learn without having to die. Learning, adaptation and survival all flourished with this wondrous new invention, the brain.

The irony of brains is that staying connected and in communication produced a whole new stage of evolution. Brains and other mixing centres (like ganglia) helped an increasingly vast collective act like a truly coordinated whole. Mind-like behaviours also began to take the forms we associate with minds today (choices, contexts, significance, meaning).

Still, the brain did not become the sole arbiter of intelligence nor the controller of everything underneath. This is a machine-age image. Instead, nature built new levels of intelligence while keeping the old. Local cells don't just send information to the brain and wait to be told what to do. Most bodily responses are handled locally and a lot of processing is done

is crucial. Without it, a life form would be too slow and stupid to live.

Binding this system together is the collaborative nature of the entire process. New levels of intelligent action always arise from communication between smaller parts and the farther up the line one goes, the more

two big agents here were modeling and signaling. Both are types of communication.

Since cooperation enhances survival, animals began to congregate in families or herds. Communication between animals in a herd has the same benefit as communication

In an integral view, therefore, mind and body are both built on a fractal principle of groups working within groups working within groups.

clearly those smaller parts are seen to be individuals capable of independent lives. Thus, everywhere you look, mind systems are made up of organisms working together. Neurophysiologist Walter Freeman calls them, societies of mind.⁶ A brain is a society of mind which is still integrated into a larger system called the body which is organized into smaller working groups, like lungs and liver.

between cells in your body. Whether it's a honey bee dancing directions to a cache of nectar or a deer signaling the approach of a predator, communication between members is an old and honoured way for individuals to survive better by working together.

Animal communication probably began in the usual haphazard way, with twitches that eventually became associated with a meaning. These eventually developed into clear signals. Active signaling also brought modeling. Young and old alike learned common signals and worthwhile patterns of behaviour. These lessons began to trickle down the generations. Learning accumulated from many members and was preserved over longer periods of time. The whole herd was now working on patterns of perceiving and acting. The herd as a whole was learning faster and more thoroughly as many individuals contributed their unique piece.

Perhaps you can guess the next step. In human societies the pattern blossomed into truly awesome forms. We communicate by speaking. We preserve lessons by writing. We collect information from billions of human beings over tremendous stretches of time and we process it using huge machines as well as billions of brains. This means civilization is a vast society of mind – a planetary brain.

We still have much to learn. To understand why, look at how the same patterns play out in the evolution of civilization.

Storing lessons in the brain allowed organisms to learn faster and to learn without having to die. Learning, adaptation and survival all flourished with this wondrous new invention, the brain.

at various stages from bottom to top. Processing information at lower levels increases the speed and often the appropriateness of the response. It is also one of the reasons one's body can operate on auto-pilot while one's thoughts spin off into space.

Thus, intelligence is actually distributed, fractally, down to lower levels. Each level has its own type of intelligence and its own functions. Each actively communicates with many other groups without waiting for the brain. The whole thing appears to work on a subsidiarity principle reminiscent of one used by the medieval Catholic Church (decisions should be made at the lowest level possible). Furthermore, this kind of organization

In an integral view, therefore, mind and body are both built on a fractal principle of groups working within groups working within groups. Everything is social and communication is crucial. This does not fit the machine-age picture of how minds and bodies work but, biologically speaking, it is an accurate description.

Increasing intelligence also did not stop with brains. Brains created a vast leap in animals' ability to learn to live in a complex world. Unfortunately, lessons stored in brains were lost when the individual who owned the brain died. The next great evolutionary leap came with the ability to preserve lessons by passing them between individuals and across generations. The

HOW THE LAWS OF GROWTH AND DEVELOPMENT HAVE PLAYED OUT IN THE EVOLUTION OF CIVILIZATION

Human societies (of mind) too are based on collaboration among specialists who must communicate and contribute to the common good. Societies are subject to the laws of growth and development including growing apart and the need to stay in sync as they get bigger. Over the centuries, human societies have developed many ways to maintain cohesion. In the small villages Carneiro studied, social cohesion could be strengthened by relationships such as kinship bonds and sub-units such as councils and professional assemblies (warrior, shaman, etc.). Myths and rituals also served to spread binding cultural mores. The invention of money helped too. According to anthropologist Denise Bessart-Schmidt, symbolic tokens used in exchange began to appear in villages when populations reached about 350 people; they no longer had enough close, regular contact to know everyone well. Money became a kind of information flow that aided collaboration and cohesion.

The catch is that this new level of organization was achieved by subjugation and still carries many of the same tyrannical tones.

The laws of growth and development are also behind the well-known progression of leadership styles and organizational patterns which are seen as businesses grow past certain breakpoint sizes: 10, 50, 100, 500, 1000, 10,000 employees etc. Different sized groups need different kinds of leaders and different types of infrastructure to hold themselves together. Communication paths must change and so must the cultural milieu which directs how people behave. Even the use of money – which began as symbolic communication and became little information packets used in reward and punishment – has evolved in step with

development, right down to our own day.

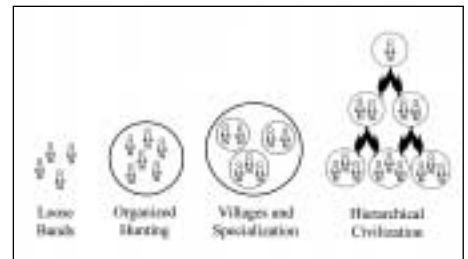
The same laws also played a major role in the evolution of civilization, including leadership styles, cultural styles and major social structures. The effects of growth laws are particularly evident in the emergence of the last innovation, hierarchical civilization. For example, as villages grew into cities, people grew apart. Consensus-building became difficult and bonds became weak. Unable to respond quickly, agrarian villages became easy prey for marauding tribes envious of their wealth. Consequently, the hierarchical alternative rose swiftly under intense selection pressure. One person deciding for all, using an efficient system of enforcement, allowed societies to mobilize rapidly. Thus, a king with a bureaucracy serves the same role in a large society that a brain with a nervous system does in a large animal. Both schemes allow a complex collective to act as a fast-moving, highly-coordinated whole.

The catch is that this new level of organization was achieved by subjugation and still carries many of the same tyrannical tones. Conquering chiefs made themselves kings and then creat-

ed classes and bureaucracies to manage the people they enslaved. The emergence of this system also followed a pattern of pressure and response reminiscent of the Benard cell. The early agrarians were peaceful and would probably have remained so if they had been left alone and ceased to multiply. Unfortunately, when desirable land fills up, quarrels begin to take a different form. Since it is no longer easy to flee, land becomes an issue. The focus of early wars changed from revenge and prestige to land (controlling space). The frequency and importance of war began to increase.

Both hierarchy and empire-building

came along with the wars for space. Thus, at first, crowded tribes try to annihilate their opponents. This eliminates threat and opens new land. Eventually, however, some chief concocts the idea of subjugation and creates a dominator society. A defeated village is allowed to remain on its land, but it is forced into becoming a sub-unit of a larger system controlled by the victor. These new social organizations are not only bigger, they are also more coordinated. Individuals who were successful in war are assigned the task of administering the



new areas. They maintain law and order and collect tribute (later called taxes). They also mobilize work groups from the now plentiful slaves and begin building roads, irrigation works and fortresses. Conquerors also constantly squeeze the conquered to get more tribute. Since administrative classes live off this increased productivity, they constantly pressure the lower classes to produce more.

All of this should seem familiar because the effects are still with us. War and empire-building are still major forces. Most hierarchies are still based on coercive relationships and domination of one sort or another.

North America remains a dominator society. What any would-be reformer should remember is that 1) it was not always so, and 2) it has slowly gotten better, usually in the punctuated pattern indicative of energy-driven change. The result is a series of S-curves rising recurrently throughout recorded history. From the Greeks with their democracy to the 18th-century Europeans with their Enlightenment, people of all races and creeds have struggled against abusive authority and advanced in sporadic steady

leaps. We think of this as a class struggle, rich against poor, but, in fact, many of the greatest champions of reform have come from the middle and upper classes. So let's be clear. We are not fighting against the rich or white men or even hierarchies per se, we are struggling against a cultural system which emerged 5,000 years ago.

Nowadays there is new reason for hope. Today's great turning represents another round of evolution, brought on by the same pressures of growth. It is quite possible that this turning represents the beginnings of a major new alternative.

INTEGRAL IMPLICATIONS

The Communities of the Future movement seeks a new governance system for the 21st century – a participatory democracy where the people at the top are not the rulers, but the facilitators of government. It helps a diverse society bring everyone in as stake-holders and focus the talents of the community on its long-range problems. It does this by redeveloping community, in the original, partnership sense of that word.

Louis Jaffe and Rick Smyre

This ends a summary of evolution's epic journey from the origins of matter to the present day. As you can see, the concept of dynamic evolution serves as a kind of glue for integral science, tying together threads from anthropology to physics. It also creates a startlingly new picture of humanity as firmly embedded in an evolving, self-organizing web world. Here the ongoing evolution of mind, collaboration and organization wind around each other creating invisible pressures that play out in regular, recurrent patterns. Human societies are part of the mesh and subject to similar patterns of growth and development. Humankind is a society of mind, struggling to learn how to live in an ever-evolving world.

The science behind this picture also creates a superb framework for understanding our times, especially the quest to find a sustainable alternative

to coercive hierarchies and the dominator culture.

In order to fully understand the type of society we need, we must fully understand what went wrong with the

Cognitive Corruption

As we saw in the evolution of mind, building an accurate, collective understanding of the world is an important human endeavour. Indeed, it is our

One reason civilization has improved over the centuries is that empires and coercive hierarchies are notoriously unstable.

dominator system. There is an obvious place to start. One reason civilization has improved over the centuries is that empires and coercive hierarchies are notoriously unstable. Each time they weaken or collapse, a new round of insurgents takes a whack at reform. The three consistent causes of dominator instability are:

Living at Odds (Inequity, injustice, inhumanity)

A coercive hierarchy is designed to control and exploit lower-level people in order to provide privilege to those above. Tyranny, injustice, inequity, oppression, callousness, cruelty – all such words apply. Growing apart, an inherent part of any self-organizing system, is a problem for all organizations, but it is particularly bad in dominator cultures because antagonism is built into the system.

Draining/Ravaging

Dominator systems are based on exploitation, at home and abroad. This means they ravage and drain much more than they grow or create, as the early agrarians did. Indeed, the only reason dominators stay ahead of the sustainability game is that the bulk of the society is usually still anchored in partnership ways of building and contributing. The more this partnership base is eviscerated, the weaker the society becomes. Thus, virtually every great turning is witnessed by a shrinking of the middle-class and a growing gap between the haves and the have-nots. This also include famines, plagues and a host of ecological disasters brought on by over-exploitation of local resources.

central survival strategy. Elites in a coercive hierarchy, however, have a vested interest in portraying the system that gives them privilege, as either necessary or desirable. Consequently, cognitive maps in dominator societies tend to become increasingly corrupt over time, as high-ranking people distort, rationalize, suppress and create propaganda which supports their best interests, regardless of the whole. Historically, most cognitive corruption takes place in religion and politics, but today even scientific reports are twisted to serve political or economic special interests.⁷

Any serious cultural alternative to the dominator system must stand firmly against all of its distortions and:

- Honestly seek to stop cognitive corruption, the twisting and distorting of facts and ideas in order to serve selfish interests, above the common good;
- Restore equity by seeking ways to reduce the vastly disproportionate gain (draining) by those with leverage and power;
- Stop the ravaging of human and earthly resources which today's economic imperialists so blithely pursue.
- Above all, any alternative must end "living at odds." Callousness, coercion, viciousness, inequity, injustice, inhumanity, oppression – these have never been sustainable practices and they are even less so in today's global village.

How can any system address these needs when so many well-meaning attempts have failed? The answer may come from a fifth need which is not on this list. Any serious alternative to

A FEW INTEGRAL TWISTS TO TRADITIONAL THINKING

We have trained people to pursue only their own political interest and we have trained them to do so destructively. We have turned "self-interest" into a socially-destructive art.

Kathy Rice, City Manager, Waco, Texas

DIVERSITY IS CRUCIAL TO SOCIAL LEARNING

Today, diversity is something businesses are required to include in order to look good and to salve discontent. In fact, diversity is something we must cherish and protect because it is crucial to social learning. Nature works hard at making individuals and communities endlessly unique because it is our differences that lead to new insights, new organizations and the unique talents which fill the many work niches that keep our complex society running.

COMMITMENT TO THE COMMON GOOD IS CRUCIAL TO HUMAN SURVIVAL

Societies only work when almost everyone contributes to the whole and few, if any, undermine it. Integrity, compassion and commitment to the common good are crucial. Today, however, the greater good is foundering because few modern adults take such commitments seriously. Instead, modernists encourage the belief that self-interest automatically produces the best possible world. One need not worry about the greater good consciously because battles between self-centred parties will automatically bring it about.

We live in a society which encourages self-centredness at every turn and this is not healthy. It also isn't what Enlightenment thinkers intended. For example, when 18th-century economist Adam Smith said that self-interest would make economies thrive, he meant self-interest which contributed to the greater good. He called this "self-interest rightly understood." This understanding has been lost. Self-interest only works when it is seen against the backdrop of commitment to the greater whole, but today's modernists imagine that completely unfettered self-interest will automatically make a society healthy. This is nonsense.

The term "competition" – an inherent concept of contemporary economies – too has been distorted. Competition actually has two meanings: 1) a win-lose struggle for survival and dominance; and 2) a host of diverse players putting themselves forth by displaying their unique talents. The second type makes economies thrive because it is a form of diversity building. Thanks to dominator culture, however, it is the win-lose struggle which dominates our thinking. This me-over-you kind of competition is antithetical to collaboration and often to the common good.

Modernists often portray individualism as "rugged" and somehow "separate," a matter of strong persons off on their own path. Society is again supposed to benefit without any concern for others being required. Integral thinking imagines a more bonded form of individuality called "interdependent individualism." Here strong selves and strong bonds are both important because diversity and commitment are both crucial. Interdependent individualism implies the kind of self-reliant and committed citizenry that grassroots education once produced. A tough-minded, self-empowered and yet caring populace is crucial to a democratic society.

HOW TO HARNESS SELF-ORGANIZATION AND SYNERGY

If one is going to run a school the way nature runs evolution, then "competition" should be an opportunity to display special talents and accomplishments (diversity). It should encourage children to develop their unique talents, yet it should show that everyone who contributes their best wins because all groups need quality, commitment and many talents. Competition should not be a method of ranking children.

If you are going to run a society the way nature runs collaborations, then you should nurture self-interest which adds to the common good and penalize behaviours which work against others. This may seem obvious, but many competitive/ranking practices in schools promote self-against-other behaviour.

today's system must pursue greater intricacy and a warmer, collaborative culture, some kind of restored partnership mode. Accomplishing this would go a long way towards assuring the other four needs.

In essence, we're saying that the first step in building an integral society is to rebuild partnership community in a more embracing, yet flexible way. Intricacy means a fine-grained fabric and a tightly knit people held together by many bonds. Partnership is a crucial part of such bonding.

Well-knit partnership systems help disrupt dominator cultures by instilling integrity in place of simple self-interest. Today, there is also a new reason to believe that partnership is about to take a dramatic step forward – growth pressures are playing out again. Nowadays, information-up/control-down hierarchies are too slow to handle the pace of change and level of complexity of the modern world. The larger and more conventional the organization, the more information is lost on the long dissipating trip up and down the chain. Bonds break vertically and the top becomes effectively disconnected from the bottom. Absurdity is common. So is disproportional gain and festering resentment.⁸

Thus, coercive hierarchies appear to have reached their limits. A more intricate social structure is needed, one that is more flexible and creative as well better connected. These needs are what point to partnership again, though this time in rather different form. Today's partnership society cannot be the simple agrarian circles that gave civilization its start. Rather, partnership must be reborn as a networked and nested system of communities of interest and place, of head and heart.

RULES FOR BUILDING A SOUND HUMAN ECOLOGY AND STRONG COLLABORATIVE LEARNING WEBS

Evolution from learning individuals to learning communities to a global

learning society is underway in our increasingly interdependent world.

Dee Dickinson

The best way to build a sound alternative, therefore, is to focus on building partnership culture filled with family-like circles linked in well-knit webs. Rick Smyre of the Communities of the Future movement calls them webs of intricacy. The other way to think of this is as a quest to develop a sound human ecology built around collaborative learning webs. We are back to humanity's quest to build better collective understandings.

SUMMARY:
ON THE EDGE OF
INTEGRAL SOCIETY

We are at a watershed in history, a time of a Great Divide, as U.S. society shifts away from the dominant force of Modernism ... Periods of transition, however, are inherently uncertain. On the crest of the Great Divide, history may slide either way.

Paul Ray

We are on the edge of a very large change, both socially and scientifically. Integral Society helps us figure out how to build sustainable social, political, environmental, economic and spiritual relationships. This is exactly what the dynamic view of evolution suggests is about to be accomplished.

Endnotes

1 Ray, P., "The Rise of Integral Culture," *Noetic Sciences Review*, Vol. 37, Spring (1996); and Goerner, Sally J. *After the Clockwork Universe: The Emerging Science and Culture of Integral Society*. Edinburgh: Floris, 2000.

2 Eric Chaisson. *The Life Era*. New York: Atlantic Monthly Press, 1987.

3 Gould, S.J. & Eldredge, N. "Punctuated Equilibria: The Tempo and Mode of Evolution

Reconsidered." *Paleobiology*, 3 (1977).

4 Carneiro, Robert. "The Evolution of Complexity in Human Societies and its Mathematical Expression." *International Journal of Comparative Sociology*, 28 (1987).

5 Break points occur when the volume (number of cells or people) reaches a certain ratio to its surface area (a good measure of bond strength). In biology, this ratio is called the surface/volume law. The famous British physiologist J.B.S. Haldane once remarked that evolution is a continual struggle to increase size in relation to surface area.

6 W.J. Freeman. "The Physiology of Perception." *Scientific American*, February, 1991.

7 For example, scientists in the U.S. Health Department watched helplessly as the bureaucracy changed warning labels for fruits treated with pesticides from, "Warning: This product was treated with dangerous poisons. Wash it thoroughly before using." to, "This fruit has been treated with products designed to improve quality by eliminating insects and other pests. These products are not known to be harmful to human beings."

8 Today's global entwinement also makes dominator pursuits more dangerous. Greed and self-serving soddiness are more dangerous because, in a high-tech world, small actions can have massive effects. Think of Chernobyl, the Exxon Valdeese, global warming and increasingly disastrous floods. Economic entwinement also means that injustice anywhere under-

mines well-being everywhere as exploited workers in one part of the world are used as leverage against workers elsewhere. Jobs are lost, pollution grows and national laws aimed at preventing human and environmental devastation are circumvented by star-chambers of economic elites. Gluttonous private wealth now also exerts tremendous political power. Political leaders find it necessary to keep alignment with the rich because they finance political campaigns. As a result, financial "powers-that-be" often design policy for themselves but against the common good, even in democratic nations. Tobacco and oil are the two most obvious examples.



Sally Goerner

Dr. Sally Goerner was a presenter at Ideas That Matter: Jane Jacobs '97. This article is derived from her 1997 presentation and from her most recent book, After the Clockwork Universe: The Emerging Science and Culture of Integral Society (Floris, 1999). Dr. Goerner is based in Research Triangle, North Carolina. She has advanced degrees in computer science, psychology and non-linear dynamics. Dr. Goerner lectures, writes and provides consultancy advice to international organizations.

What's New with Sally Goerner?

"I'm in the midst of setting up a Centre for Integral Science and Society at Virginia Tech. I'm also finishing up a book on how Integral Science sheds new light on K-12 educational reform, providing a framework for organizing existing efforts and also for understanding the needs of the emerging knowledge-age society.

I'm collaborating with two other folks, one writing a book on sustainability and the other working on ecological economics, both with themes similar to the education one only appropriate to these other fields."

Vietnam Diary

Stan McRoberts

Based on a diary kept during consulting trips spanning a six month period helping the Ministry of Finance in Vietnam develop a plan to privatize and improve the management of their state owned corporations.

HANOI

24 March

Things are moving slowly here with my counterpart in the Ministry of Finance. He is the head of a department that deals with State Owned Enterprises (SOEs) – apparently very similar to my division in the Treasury Board Secretariat of Canada, at least on paper. At our first meeting – there have only been two – he said he had to do a policy paper on foreign ownership. I provided an outline to help, but it turns out he meant that he was drafting a decision which I think is the equivalent of our legislation. So I gave him some suggestions for that. On Monday, he sent a draft over which took a day to translate. It will probably take another two days to draft and translate my comments. The inefficiency is driving me up the wall, although it is giving me the opportunity to read their legislation rather closely.

I am still awakening early due to jet lag – no doubt because I also go to bed early – 9 or 10 pm – waking around 3 am, getting up at 6 am, and going for a walk which is the most interesting part of my day.

Hanoi is a study in extremes – the people are poor, although many can

afford motor scooters. There's a limit to the size they can buy, thank God, because they create an incessant din! Everyone lives on the street – eating in small groups sitting on stools about six inches high and cooking on stoves that appear to be made from paint cans fueled with small coal bricks. There are many people selling produce – usually oranges and some type of green vegetable that looks a little like spinach. I don't yet know what prices they ask, or whether they are likely to sell out in a day, but even if they do, their incomes would be minuscule.

25 March

I just have a few minutes to bash this off. It's not that I am overly busy,



Morning exercises in downtown Hanoi – not everyone is up to the pace.

rather it is the competition for the computer. Last night I went to a French movie by myself, part of a film festival sponsored by the French government because of the upcoming Francophone Summit. The French are in the process of spending about \$50 million (U.S.) to improve the streets and the Opera House – an amazing piece of architecture modeled after the

Opera House in Paris. Hanoi's Opera has not been maintained since the departure of the French in 1954. It's amazing how a poor country like Vietnam is able to attract rich donors who seem to fall all over themselves competing for favour. Creates a surprising twist in the relationship – the Vietnamese are not at all subservient.

It is warm and humid here, although they say it is much warmer in summer; I perspire when I go out for my morning walk, even though it is still quite cool then. Hanoi is at its most vigorous in the early morning: groups doing Tai Chi or playing badminton; cooking breakfast on their little stoves; setting up shop with baskets of vegetables, fruit and rice; and thousands of commuters coming

into town on scooters and bicycles. I almost never see other Westerners and, surprisingly, nobody pays a lot of attention to me. The kids start school at 7 am; they arrive before then for breakfast, which appears to be some form of soup. Like kids everywhere, they love to ham it up for my camera.

26 March

There is no social welfare in this country unless you work for the government which operates a major job creation program judging from the excessive staff levels I've encountered. I mention this because you see some extremely disturbing situations on the street. The beggars are quite aggressive and some adopt the same tactics we saw in the Czech Republic, notably the use of kids as fronts. They are very persistent, making it difficult to generate much sympathy for them. There are many seri-

ously maimed accident victims; I suspect they are war victims whose plight is hard to ignore although the government seems to have no difficulty doing so. Perhaps because there is little or no safety net, people are very resourceful, making for a strange juxtaposition of official communist ideals with an extremely vibrant entrepreneurial spirit. Unfortunately it is



A street market in downtown Hanoi.

hard for the street capitalists to make much headway because the state controls most substantial enterprises and private individuals do not have easy access to financing.

28 March

I am starting to make reasonable progress. It has been hard to get the Vietnamese to focus on the fact that I have arrived, but I am meeting with them regularly and we have agreed on a work plan which I think will be effective providing we stick to it. I can arrange to meet anyone appropriate for the project although the process is quite mysterious. Apparently the Ministry of Finance must submit a request in writing, signed by a Vice Minister, to whatever agency I am proposing to meet. At the few meetings we have had, I have been pleasantly surprised at how forthcoming most of the officials have been about their problems and what needs to be done. As far as privatization is concerned, the Vietnamese want to avoid the mistakes made in Eastern Europe. I suspect they are concerned about undermining the stability of the regime, whereas the elimination of communist control through creation of democratic institutions was an explicit objective in Europe. The privatization program (or “equitization” as it is called here) has come to a grinding halt although the Vietnam-

ese have indicated they would like to get it moving again. I think they derive some benefit from these aid projects simply because they are a source of foreign exchange and often support foreign travel.

7 June

I switched hotel rooms last night even though I was told that my noisy, uninvited guest was just a gecko, an ally in the war against more offensive beasts such as mosquitoes and so not to be massacred which I fear I would have done had I laid my hands on him. Anyhow the gecko is safe and I have moved to the first floor at the back into a somewhat smaller, quieter room with an air conditioner. The only slight drawback is that I can hear the early morning news, which is broadcast on speakers throughout Hanoi, even more clearly. Too bad I can't understand a word.

13 June

The Vietnamese are strong believers in ghosts, particularly those of their own ancestors. They build little altars for them in their houses and sometimes at the base of the large and ancient trees along the street. They also burn incense as part of the ritual. When a Vietnamese family moves house, they have to consult a soothsayer to find a safe day for the move. On the day they move in, they pay a

tribute to the god of the kitchen, so a feast is prepared right away. The project director in our office was explaining this because he moved recently and had trouble finding an acceptable day. Ms Phuong, our office manager, went to the soothsayer and came back initially with the news that there was no good day for him to move this year – he should renegotiate. Most of this belief in ghosts is related to a very strong

belief in family institutions – particularly the position of family elders. If I can find one, I plan to bring back a rule book on this for my daughters.

14 June

Xin Chao. That's “hello” in Vietnamese. It's hotter than hell here and I'm working harder than is sensible, but I seem to be plugged in at a senior enough level – my new counterpart is quite “with it” and keen to kick start the equitization program.

15 June

I had my first official meeting with a state owned enterprise (SOE) on Saturday at 8:30 am. It was a cultural experience to put it mildly. The company is a small hotel (about forty rooms and ninety employees) in an excellent location on Hoan Kiem Lake in the centre of Hanoi. Apparently it is famous – for what I am not sure. Our delegation from the Ministry of Finance (MOF) included the head of Vietnam's SOEs, his Director of Equitization and some lower officials. I don't think the hotel had ever seen such a contingent.

After the introductions, the hotel director gave us a rundown on his hotel and his observations on the equitization process. Then they turned the meeting over to me which I knew was a possibility because the Vietnamese very quickly defer to

guests. I proceeded to quiz the hotel director which took about an hour and a half with no interruptions or questions from anyone else other than the MOF official, the hotel director and a senior official from the local party organization. While I would have expected one of their delegation to write up the notes, draw conclusions and make recommendations, this is unlikely to happen, so I am planning to do it. According to my translator, Vietnamese never write up meetings or discuss specific recommendations, but they must do something to draw out results. My suspicion is that the senior guy simply makes up his mind and tells the others how high to jump; if he says nothing, nobody jumps. My general impression is that there are a lot of people waiting to jump.

4 July

I have been quite busy trying to identify why the Vietnamese privatization process is going so slowly. My main counterpart has disappeared. He went to Saigon with us last week but has not returned. We tried to find him – starting with an inquiry to his boss. Turns out that his boss is “not available” either. My group is down to two people from the Ministry of Finance – both are leaving next week for a couple of days but at least they had the courtesy to inform me.

I met with a representative of the Economic Committee of the Communist Party yesterday – he was as much a capitalist as I have seen with a good intuitive understanding of the limits of bureaucracy and the benefits of market institutions. This morning I met a group from the State Securities Commission, which is supposed to be creating a stock exchange. It seems they have spent most of their time finding the nicest office in town,

but accomplishing little else. They think they might have a market operating in two or three years. In the meantime you can buy shares at the front desk of the hotel we visited last week; if you ask the hotel manager he will assure you they are a good deal – just don’t ask for audited financial statements.

7 July

Yesterday we went on a picnic high up on a big mountain called Ba Vi (about 3500 ft high) that rises out of the rice fields north of Hanoi with a number of people from the Ministry of Finance. Either the rice is entering a new growing phase or they are beginning to suffer from drought. To move the water from the ditches to the fields, two people stand about ten feet apart holding a rope with a bucket tied to the middle. They sway toward each other, the rope slackens and the bucket falls into the water. Then they move apart, the rope tightens and the pail rises out of



Preparing a cobra at a snake farm/restaurant in the Hanoi suburbs.

the water. Actually there are two ropes – one tied to the top of the bucket and the other to the bottom. They pull harder on the bottom rope so the pail tips when it gets to the top of the arc and spills water into the rice paddy at the higher elevation. There are many aspects of rice growing that I suspect have not changed in two or even four thousand years.

14 July

I have just returned from the snake farm on the outskirts of Hanoi – a truly fascinating cultural experience. We were lucky to have been accompanied by a Vietnamese fellow, Hung, who is working on another project. The first clue about what was in store for us was a large urn containing pickled snakes sitting on a buffet in a patio at the back of the enclosure. Hung says this elixir is consumed as a medicinal concoction by older Vietnamese – the seven snake species are precisely chosen to cover off certain elements relating to yin and yang. Behind the patio was a pond completely walled with a five-foot masonry fence and a small piece of hard ground on which there sat a small shed on posts. Our host hopped the fence, went to the shed, reached in and pulled out a cobra about six feet long. It was molting so he helped peel off the skin and prodded it to get some action. After a few minutes he took the poor thing into the kitchen and invited us to observe the proceedings. It was gruesome – he cut out the heart, extracted the blood, and otherwise prepared the snake for the feast which began with the delivery of the heart. Neither Hung nor the driver would touch it as it sat on the plate still beating. After discussing its features and the benefits that one could expect from consuming such a morsel, we moved onto the delivery of the snake’s

blood in a bottle which the farmer’s wife presented on a tray with a set of six liqueur glasses. Hung and the driver downed almost all of it – I could barely watch. Then a large variety of snake dishes arrived – everything is consumed: the snake flesh, skin, organ meat and ribs are initially fried and delivered on individual plates in sequence, then they are wrapped in

various leaves and otherwise reorganized so that if you were not inclined to consume the first mode of delivery you might try the second or third. Throughout the meal we had the choice of many different elixirs to help the snake go down. I stuck with beer. I also never want to hear another snake joke as long as I live. After a couple of hours we prepared to leave and the couple presented each of us with bottles of snake liqueur. Everyone agreed it was a great experience and we are now plotting our next moves with Hung, our newfound guide to Vietnamese culture; perhaps a cock fight or a meal in a dog restaurant.

15 July

I am putting together the results of six weeks of work and have identified a long list of problems with the Vietnamese equitization program, any one of which could be a show-stopper. It is certainly not a surprise that nothing is happening with the program.

Last night I tried out a new restaurant near the Regency Hotel. It was an interesting test of my communications skills since none of the waiters and waitresses could speak a word of English although one guy thought he was fluently bilingual. Without any advance notice, a curious concoction in a bowl was delivered to my table – maybe dried seaweed. A waiter showed up with what looked like a watering can with a three-foot spout (no exaggeration). With great fanfare, he stood back about four feet and tried to pour boiling hot water into my bowl. I froze in fear that were he to make one small twitch, my reproductive days would be over. Not being exactly sure what to do with the resulting concoction, I produced huge guffaws when I tried to use chopsticks to eat the seaweed. One of the waitresses promptly moved in to inform me that the brew was to be drunk and the lid that came with it was to be held on top to avoid choking on the seaweed. I concluded that this was tea, not a watery seaweed salad. Near the end of my meal, I pulled out my phrase book, trying to figure out

how to say “thank you”; in the process I managed to attract all the staff to my table. Our fractured conversation proceeded in many different directions, taking all the opportunities the phrase book presented. I learned the names and ages of all of the staff, how many brothers and sisters each had, and who their grandfathers were. This led to my receiving a free dessert – an intricately carved piece of watermelon that I hesitated to touch because it was a work of art. After about two hours in the restaurant, I called it quits and went home.

25 October

Downtown Hanoi is being spruced up for the Francophone Summit. Many of the sidewalks have been replaced with new brick – a huge improvement – and the Opera House renovation has almost been completed. They painted it with a combination of dark and light Vietnamese yellow (a standard around here) which is not how I would have done it.

While I think of it, please send me the recipe for cooking rice. I am slowly assembling the stuff I need to be self-sufficient.

27 October

Thanks for the info on cooking rice. Yesterday I spent the morning studying Vietnamese. My new translator, Mr Son, is a quiet but pleasant young fellow who is getting married soon and plans to have two hundred guests. Ms Phuong, our office manager, had more than one thousand people for her wedding. Apparently the festivities went on for two days. First the bride’s family’s friends had a lunch and then the groom’s family hosted their friends – about five hundred people at each event. Ms Phuong, as part of the Vietnamese tradition, moved in with her husband’s family and would normally be expected to take care of them.

Needless to say, she still works with us and has given no indication that she plans to take on these responsibilities anytime soon.

3 November

On Saturday night, I went out to dinner with Ms Phuong and her husband Tri (pronounced “chee”) at a place of their choosing: “Gustave’s” is a swanky French restaurant just down the street from the Opera, which is now a very elegant place in spite of the rather gaudy colours. The meal was quite French and we had a nice Californian Chardonnay. Ms Phuong had steak and fries – I am not sure how she managed that because I didn’t see it on the menu. I had captain fish – whatever that is – and it was very good. Tri had something I did not recognize but he seemed happy enough.

Tri runs his own business producing some sort of paper products. Entrepreneurs are an emerging breed in Vietnam and I think it is particularly rare for someone as well educated as he is to go into private business. Apparently his mother, director of a large SOE candy factory with four thousand employees, encouraged him to follow this route, even though she could have landed him a well paying government job or a position with a foreign venture in Vietnam. His mother set up her factory in a joint venture with a Japanese company to obtain technology and gain access to export markets.

The restaurant bill was about \$80 (U.S.) – not bad for one of the most expensive restaurants in Hanoi. Gustave’s is owned by some Vietnamese guys and last week they kicked out their French partners – according to the story in the paper, the management contract they had with the French partners expired. My suspicion is that the place started to make money. Bear in mind, Gustave’s is probably the classiest place in town, located just in front of the refurbished Opera and the Francophone Summit starts in nine days. The Vietnamese partners’ sense of timing is exquisite.

5 November

On Sunday night, there was a major disaster in the south of Vietnam. A typhoon hit about midnight, wiping

out hundreds of fishing boats, destroying many villages and leaving perhaps three thousand people dead or missing. The storm – apparently the worst in a hundred years – changed from being simply a large thunder cell to a typhoon in three or four hours leaving no time to warn the population. I saw a thirty-second clip describing it on Vietnamese TV. Based on local print media however, you would not know much had happened unless you paid careful attention. It is difficult to tell whether the muted Vietnamese reaction to the disaster is due to poor communications or real cultural/political differences. I'm curious to know if there were any reports in the Western media about this event.

6 November

Everyone is gearing up here for the Francophone Summit. Canada is sending a contingent of about one hundred which I don't think includes the Quebec delegation. There is only room for five people in the official meetings, so the embassy has to find entertainment for the other ninety-five. Guess what? They want me to give a presentation on my project – probably in French!

10 November

While I think of it, please send me a copy of *Alice's Adventures in Wonderland* asap. I think it would be a useful guide to understanding my client.

We received a call from the United Nations Development Program (UNDP) concerned because they had been asked by the Ministry of Finance to do an equitization project which sounded as though it might be related to my work. They were vaguely aware of the Vietnam Canada Financial Management Project. So Jean, our project director, and I trudged off to meet them at their huge office down the road from our little office. It seems everything the UNDP does is on a grand scale. No wonder the U.S. is fed



Entrance to a Buddhist temple in downtown Hanoi.

up with paying the bills – why isn't Canada? It turns out that the UNDP had met one of the Vice Ministers of Finance about a week ago. When they asked him about our project, he professed to know nothing about it. Bear in mind that my working group and I are supposedly preparing the equitization plan for Vietnam based on the recommendations from my last trip and that this Vice Minister supposedly asked that this be done.

I thought Jean was going to have a "serious accident" when he heard this. Given the amount of money they are providing, our funder will also be very upset that the Vice Minister for whom we are working does not know we exist.

So what's going on? Suppose two Santa Clauses were to show up on Christmas Eve. Would you ask one to leave or invite both to provide gifts even if it meant changing the script? The Vietnamese are clever and sometimes difficult to follow. The Vice Minister did not want to lose the UNDP project just because he already had one equitization project up and running.

One might conclude that they don't give a damn who does what as long as they get the money because they do not intend to carry through with any of the recommendations from these projects anyway. I don't feel confident reading these tea leaves. I think the smartest way to deal with these mysteries would be to consult a soothsayer, which is a huge industry here. The more I see the less I understand, which makes life here interesting and offsets what would otherwise be maddeningly frustrating.

11 November

Glad to hear the kids are back in school in Ottawa after the teachers' strike. The Vietnamese would have handled things differently – no room for political protests here. This is not to say that everyone is happy with their situation. There are grievances – I just heard on the BBC that there was an uprising in Dong Nai province due to the peasants' disenchantment with their economic situation. Apparently some of the peasants were fed up with the local officials who were corrupt. Hanoi sent in the army and quarantined the region – nobody is allowed in or out without permission. None of my Vietnamese colleagues had any knowledge of the incident since they do not have access to the BBC.

I had another cultural experience of my own today. I had asked my Vietnamese colleagues to provide a status report on the twenty-five or so firms that are currently in the process of being equitized. They gave me a report yesterday and it provides some but not all the information we need. In particular, it tells me that, in a seven stage process, about half are at stage zero and only two have passed stage four. The report does not indicate what the cause of the holdup is for each company. I suggested that we should obtain this information. My Vietnamese friends were clearly quite pained by this evidently ludicrous idea, making it apparent that it would

take a couple of months to complete the task. At this point I thought I had stumbled into a golden opportunity to demonstrate the value of Western thinking and technology: why not pick up the phone and call the manager of each company, I suggested. For the first time, the Vice Chairman apparently became quite frustrated at my imbecilic behaviour. (I say apparently because Mr Son, my translator, could not or would not translate the shower of coconuts, mangoes and bananas that the Vice Chairman was figuratively hurling at me.)

It turns out the Vietnamese would never think of using the phone to collect such important information – and it would not be provided by the companies over the phone even if we were silly enough to ask for it. The only way would be to write, or even better – we should visit each company. The Vietnamese love to travel and I think they were trying to convert a modest defensive position into a forceful offence, by appearing at the door of each of the companies.

13 November

Xin Chao Tout le Monde! One is struck by the large number of newspapers in Vietnam – each government department has its own and the content obviously reflects that department's interests. Only a few are in English and these emphasize economic news providing excellent coverage, much more focused on policy issues than our economic press which, by comparison, seems to put out much more company-specific information and much less policy material; this presumably reflects the relative role of markets (particularly capital markets) in the two systems.

Because the papers are controlled by departments, it is hard for the government to maintain a consistent line. For example, the Ministry of Planning and Investment (MPI) published its own plan for equitization two weeks ago and it is not consistent

with ours at the Ministry of Finance, which has formal responsibility for equitization. Then last week – surprise, surprise – the MOF published elements of our plan in the *Vietnam News*.

14 November

Today was the big day for the Francophone Summit. The only visible consequence of this strange event is totally chaotic traffic as little caravans of black Toyotas charge around town led by a single police car with its siren wailing. Vietnamese policemen stand at every corner ready to close streets, leading to instant massive gridlock. Closing a street is a fast but brutal exercise: Three cops move from the curb in unison blowing their whistles as loudly as possible. They pound any unsuspecting motorcycle driver who has not figured out what is happening or tries to move faster than the constabulary. At least three times today, I witnessed such acts of brutality.

I am not sure what the Summit is expected to achieve. At least the sidewalks have been improved, thanks to



Rice paddies in the Red River delta, southeast of Hanoi.

Uncle Jacques Chirac. I wonder what he thinks about when his entourage travels along Dien Ben Phu Street (Dien Bien Phu is also the name of the village where the Vietnamese defeated the French forces in 1954.) I have yet to find someone here who speaks French.

16 November

This morning I went on a search for a small state-owned company to which I might apply my simplified equitization process. Ms Luong and Mr Duc, two MOF officials, took me on their motorcycles to Bha Trang (pronounced “Baa Chang”), the so-called pottery village not far from Hanoi. Rather than going into the village where all the small family-owned operations are located, we continued up the road a few hundred metres and turned into the courtyard of a large complex of old white concrete single-storey buildings. Indeed it was a pottery factory. The director of the establishment took us on a fascinating tour even though we arrived without advance notice. Most of the factory was in operation, though not at full blast. It had two hundred employees and annual revenues less than \$300,000 (less than \$1,500 revenue per employee). Everything apart from the firing is done by hand and some of the artwork was quite amazing. I watched three artisans painting some items and they invited me to try. I declined and wandered behind the old kiln where there was a huge stack of what appeared to be either rejects or very low quality items. While I was taking some photographs, the director spied me and shouted at me to stop – turns out this stack was a special production of old style pottery which they did not want any competitors to find out about. Evidently there is something they know how to do that nobody else does and pictures might reveal the secret.

This factory is owned by the army. After the war, the army had to downsize but wanted to maintain a force at the ready in close physical proximity

to its bases. We would call these reserves, and while ours are somewhat dispersed, they are easy to muster, given our communications systems. Not so in Vietnam, particularly after the war. How do you keep a large number of young army veterans close to base but not pay them? Remember the programs Canada mounted after World War II to deal with exactly the same problem? I suspect one would be amazed at the wide range of enterprises the army is engaged in, but good data is non-existent. This causes me to be even more suspicious about the six thousand official SOEs. Cynics will say the army owns these facilities just so the generals can get rich. I think there may be some truth to this but it is an over-simplification. In fact they are necessary to sustain the army.

At the end of the tour, we sat down to have tea with the factory director in a sparse little office next to the factory gate. I put many questions to him and he did not wince at any of them. Most of what he said indicated this to be a very well-run operation, sensitive to the needs of the employees, but very much focused on the bottom line. For example, they tend to keep only skilled people on staff and hire unskilled as fluctuating demand dictates. Average pay for the full timers is about 1,000,000 dong per month (\$100 U.S.), which Ms Luong confirmed is more than she makes as a fairly senior public servant. (Average annual income in Vietnam is said to be about \$350 U.S., making it one of the poorest countries in the world, but I am not sure how valid these data are. In most SOEs, salaries are substantially higher than in government – yet public servants do not complain, even off the record. This suggests there are many informal sources of income not reflected in official salaries.)

What is amazing is that performance pay in SOEs can represent up to an additional 50% of basic salary, not just for executives but for all employees. It is dependent on individ-

ual performance as well as total profits of the company. Few capitalist firms in the West could match this. The director said he has no problem raising capital provided he has good projects and pays a fat rate to the army's bank. This certainly does not sound like the rest of Vietnam. We asked him whether he had ever thought about equitizing and he said they were currently discussing it, which seems quite surprising. The director said he thought it would encourage employees' sense of ownership and thus be good for productivity. When I asked if I could order from Canada, he said there would be no problem. Did I want him to deliver to Hanoi airport or ship a container through Haiphong? I think I will modify my recommendations – Vietnam does not need to equitize; all they need do is hand all the SOEs over to the army.

27 November

I am into production mode trying to produce a draft report. I think it is going quite well but have not given enough information to the Vietnamese for them to react yet. I am being highly critical of their operation, which is not news. I was very critical in my last report and did not suffer any adverse consequences. This time I am expecting my comments to land a little closer to home, so if you get a request for bail money from the Hanoi Hilton around Christmas time you will know what it's about.

Yesterday afternoon I started to print my report (aka Le Plan) which has ballooned to about forty pages and takes about half an hour to print on these old computers. When I picked up the stack of paper, I noticed that all the pages were blank. Now what do you suppose that does to the blood pressure of someone with my temperament? You explain it – I can't – I'm off to buy some incense for the Buddha.

17 December

Things are winding down here but the

last few days have been quite exciting as others react to Le Plan. I spent the whole of Saturday afternoon being told by one of the poohbahs that I did not understand Vietnamese equitization objectives, that they were not going to change (as Le Plan advocates) and I had better start rewriting. In the document I had reflected and critiqued in rather exhaustive detail everything this fellow was saying about their goals – I pointed this out to him and asked for a comment on my arguments, but this did not put the slightest dint in his armour.

Incidentally, the basic point is quite fundamental: they want to keep about two thousand of their companies (including all of the large ones in the main economic sectors) as monopolies and they want to equitize the weak little companies that the state can no longer support. I say this is nonsense and I think my working group agrees, and the document explains why.

Yesterday I met with my counterpart, who, for reasons that are only now apparent, did not attend the meeting on Saturday. I told him what the response was. He wrinkled his nose and informed me this was only the poohbah's views and we need not consider them gospel. Now that did surprise me and I quickly began to realize I was quite out of my depth in trying to figure out what was happening. Incidentally the poohbah is more senior than my counterpart and I cannot figure out where the power is all of a sudden. I am keeping my head down and have agreed that I will revise the document once the Vietnamese figure out what they want to do.

Such is life as a consultant in Vietnam.

Formerly Director of Crown Corporations in the Department of Finance and Treasury Board Secretariat in Ottawa, Stan McRoberts is now an independent economic consultant specializing in issues pertaining to state-owned enterprises.

Shape-shifting Values: Does the Internet Spell the End of the Commons? *A conversation with Paulina Borsook*

In its continuing examination of societal values and how they are developed and shaped, *Ideas That Matter* invited Paulina Borsook to participate in a small group discussion of the main thesis of her recently published book *Cyberselfish*, in which she laments the entrenchment of libertarian values and the abandonment of the commons. This article is excerpted from the transcript of the *Ideas That Matter* lunchtime conversation with editor Mary W. Rowe, Paulina Borsook, Michael Adams (author, President of Environics Research – a consumer polling firm), Alan Broadbent (businessman and philanthropist, Executive Publisher of *Ideas That Matter*), Seth Feldman (freelance broadcaster and professor at York University), Nathan Gilbert (Director of The Laidlaw Foundation), Paul Gorbould, Piali Roy, and Alison Gorbould (from CBC Radio New Media division), Marylou Morgan and Mario Davalah (community developers who work at Field To Table, a food re-distribution centre), Liz Rykert (President, Meta-Strategies), Don Stevenson (semi-retired civil servant, only participant not using the Internet), Kim Storey (principal with Brown and Storey Architects), and John Yudelmann (provincial civil servant working in the Ministry of Citizenship, Culture & Recreation).

ROWE: Built form and the way in which neighbourhoods are actually planned and developed have seemed to have had an impact on the values of people who live within them. They don't just reflect the values of the folks who designed and built them, they actually shape the values of whoever ends up living there. When I read your book, I wondered if you were suggesting that virtual architecture is going to make its users into libertarians?

BORSOOK: I would put it the other way: a lot of high tech grew up in an intensely suburban environment, in industrial parks. Nothing's going to get you thinking less about the commons, and less about community, than growing up in the ghastly, visually impoverished environment of Silicon Valley. You're not going to have a rich depth of experience and you're also not going to see the scariness of either poverty or a dense urban environment.

I'm a native Californian and, like other liberal arts graduates of the 1970s and 1980s, I ended up working with computers. So I've been high tech for twenty years. I got involved with *WIRED* magazine, a glorious and glamorous and enraging libertarian propaganda organ. I used to call myself the token skeptic humanist feminist on the masthead. And I was really fascinated and confused by the *WIRED*

mean a commonly held set of conscious beliefs, then this pervades all kinds of thinking in Silicon Valley; it's not just a voting pattern. I've met a lot of people who will say, "Well, I'm not a libertarian, but I believe the government interferes too much in our own lives" or, "I'm not a libertarian, but I think the market provides the best solution." *Cyberselfish* is a kind of tour guide. A lot of people are besotted with all the money that has been cranked out of high tech and they don't realize that there is a lot of ideological baggage that goes with the Silicon Valley way of being. I see this rhetoric and ideology percolating out into American culture and it's probably making it here to Canada. It's very free market and anti-government.

I think a lot of the high tech innovations are invasions. All the hip dot.com kings are moving to San

Nothing's going to get you thinking less about the commons, and less about community, than growing up in the ghastly, visually impoverished environment of Silicon Valley.

romance with libertarianism and high tech.

I grew up in the old, jet-propulsion-lab, Cal Tech, aerospace engineering culture. As an old hippy, I know the bad things government can do. High tech has benefited more [from government involvement] and suffered less than any other sector of society, so where do they get off acting like this? Anytime I don't understand something, I have to kind of grow into it and so I wrote this book called *Cyberselfish*. It is really an exploration of the dominant religion of Silicon Valley. If we understand religion to

Francisco. They are living in an urban environment. How will that shape the ideology? I wrote a piece for the Los Angeles magazine *salon* called "How the Internet Killed San Francisco" in which I described San Francisco as being beyond gentrification. It is being invaded by people at the top of the economic spectrum who are only there to make money. This is not the reason people historically moved to San Francisco. Even the fans of the '49ers included people coming from the bottom of the economic spectrum who could make sourdough bread or chocolate or jeans or any old wacko

thing. So, as these new, very wealthy people move into San Francisco, they are driving out things that made the city what it is. I interviewed an attorney who said he is seeing a big change in the composition of juries in San Francisco. Always famous for its left-wing progressives, he's beginning to see people on juries whose attitude is

Silicon Valley says virtuality is great. But we know that the real thing is what matters. For example, where do you want your kid to go to high school? The academy which is in a beautiful place with a marvelous view of the bay, where Steve Jobs' kids go? Or some on-line whatever? There's a gap between what Silicon Valley is

want a dead rat. And so, in high tech they throw computers at everything. About 12 percent of traditional corporate giving in the U.S. is in kind. In high tech, it's 50 percent in kind and quite often they're just writing off excess inventory and software.

In terms of public space, and just to reinforce what you're saying, I was in the Tech Museum of Innovation which I would imagine most people in this room would think had something on the history of Silicon Valley. But it is only a video arcade: rows and rows of computer terminals with on-line, interactive nonsense. It's not a museum by any definition and it's not going to explain to you anything about how this culture got created. You might as well stay home and get it off the world wide web. Why bother to go to this museum? But it's always crowded. I remember thinking, "I don't get this; there is no place here."

STOREY: As an architect, I applaud your position.

BORSOOK: Well, the building itself is fine, but the content and design of the exhibits is very poor.

STOREY: The whole issue of buildings

The Internet concerns me because I think it's a-contextual. There is never any point where you are in a room looking and talking directly.

"blame the victim, I'm doing fine so if you're not then it must be something wrong with you." They have no sense of the commons or that other people might be different than they are with different needs or concerns. This is a real change from the kinds of people who have always been in San Francisco.

STOREY: I've always been very interested in the issue of public space and politics. We've done open-space studies on the nature of public space and I think that the public square with people talking back and forth is a kind of touchstone, it provides a context. The Internet concerns me because I think it's a-contextual. There is never any point where you are in a room looking and talking directly. For example, here today I'm going to hear things I wasn't looking for. But on the Internet, you can live in a very thin layer, only looking at things that are selected for you. It may be wide open, but it appears to be more or less controlled.

BORSOOK: We need to distinguish between the libertarian culture, which is creating the businesses of greater technology, and what goes on in the discourse of the Net. The Net started as a wonderful communitarian social experiment of self regulation. Because there has been so much spam and flaming and noise, people have been increasingly turning to private moderated name lists, you know, communities that are hosted in a certain way. We're seeing a retreat from the commons even on the Net.

selling and what the people who are part of it really want.

FELDMAN: What I find interesting, is that all students have to be eventually referenced back to the real world – the physical world.

STEVENSON: If everyone is on-line, which essentially means you are in physically separated situations, then the whole issue of public space and the Internet is a question of zoning. It's the same as in the 1950s and 1960s when the common practice in zoning was to separate different uses. If on-line is the primary domain of all these

High tech's record in philanthropy tends towards what I call the "cat, dead rat" phenomena: if the cat loves you, it will give you a dead rat whether or not you want a dead rat.

people who have all this influence and money, then it seems to me that since they're not taking part in public space or participating in the public domain, then they won't understand the imperatives of giving charitably.

BORSOOK: I write a lot about high tech's complicated but mostly sorry relationship to philanthropy. It's a very complicated issue. They have a really bad track record but it's not just because they're all selfish creeps. High tech's record in philanthropy tends towards what I call the "cat, dead rat" phenomena: if the cat loves you, it will give you a dead rat whether or not you

and common spaces is to try and integrate those two into the city's core. You need to use urban/suburban cultures so that you are in contact with a whole strata all the time. You can't walk through your life without having a generalist's point of view.

ADAMS: You were talking earlier about the old money and new money in San Francisco. In the 1980s, people went to New York to be investment bankers with a certain life style, and they were completely isolated from the rest of society. How different is Silicon Valley now, from New York then?

BORSOOK: I'll tell you a story. I have

some friends who are sweet, smart geeks who created a start-up, but it's a real start-up. It's not just a business play. It actually does something. And, they got funding from the coolest bargain-with-the-devil venture capital firm there is with the best track record for taking companies public. I have

happening in the United States the Golden Age.

BORSOOK: What makes a Golden Age? There are so many people making so much money right now but nothing is spinning out of it because that culture is self-referring and narcissistic and I would say stunting. Let's

There are so many people making so much money right now but nothing is spinning out of it because that culture is self-referring and narcissistic and I would say stunting.

another friend – Princeton, degree in economics, worked in Wall Street, former CFO of another start-up – who I suggested might be a good candidate for CFO of their start-up. Now everyone in this room would think that he would be perfect for this, right? Well, because he doesn't have an MBA and the start-up he works for hasn't gone public, the funders said to my friends, "You can't hire this person even though you want to." The fantasy of a meritocracy is really just that. There's again a disconnect between how it has been historically, where you could be a high school drop-out and do this stuff, versus how it is now. And we have this misnomer: we call it high-tech, but actually, these days, it's just about investment planning, where the venture capitalists and the pension fund managers and the founders get their money out when the company goes public. It doesn't matter if the company's gone in six months. It's very much like Wall Street in the 1980s but at least those people were honest about what they were doing, whereas high-tech language uses words like revolution, innovation, technological change, or changing the world, you know – whatever the nonsense is. So, it's like the language hasn't caught up with the reality of what's really going on. But, it didn't used to be that way. It really did used to be that actual stuff was being created.

ADAMS: It's amazing. Right now you've got the media calling what's

say you are a director of some company making lots of money, what do you immediately want to do? Do you want to become an angel and help finance someone else's operation? There's no way. It is only a Golden Age if that means that all you care about is money. And, there's so much money sloshing around that it doesn't really mean anything either – except insecurity – because the payoff is in stock and not in anything tangible or real.

I read about a high-tech "hero" creating web sites for non-profits. The high techs don't want to donate money, of course, because money matters more than anything else. This hero gives the non-profits a website which, they discover, like any technology project, costs the non-profit more to maintain than it cost the high tech company to create.

Another version of this happened in Austin, which is becoming a high tech centre. After Boston and San Francisco, Austin has got the third highest amount of venture money – 30 percent of the population there is now high tech. So, people in Austin said, "Wow, we don't want to have happen here what happened in San Francisco. We should do something." A task force was formed between government and high tech. Guess what they did? They created a website to demonstrate greater civic participation. But, of course, no one's putting any money into it, so nobody's paying for any content and there hasn't been any updat-

ing. What can I say? This attitude is so pervasive.

MORGAN: Yesterday I was invited to a meeting of the CED (Community Economic Development) Network which is creating jobs for people who couldn't work in a normal workforce – they don't have the skills or behaviour or emotional stability. And, the Social Planning Council has been giving money to help keep this network in Toronto going with the condition that there has to be something high tech about the project. They asked us, "What could help you?" and the only thing might be a marketing aspect so we could sell the products we are developing on the Internet, but maybe we couldn't handle the demand for the products. It seems so unhelpful.

BORSOOK: There is a reason why the guy who fixes your computer gets paid \$100/hr. That is the way of a geek mentality: "I can fix this in 15 minutes" and six weeks go by. The technology is buggy and complex and tech support is so important.

STEVENSON: What a change in the general attitude towards the commons and technology. Last night I hauled out a report of a conference that we had in 1963 on automation and social change sponsored by a Conservative government. Experts from places like Sweden, the head of the International Machinists Union from U.S., social workers from around the world, as well as technological leaders discussed how to ensure that the technical revolution protected the people who might be swept aside by change. Today, obviously, there have been some changes. Can you make sure that you have some way of sharing the benefits, sharing the solution to problems?

BORSOOK: It's an interesting question because, you know, we joke in a gallows laugh kind of way that San Francisco is becoming a suburb of Palo Alto. And the commute is to the Silicon Valley. That creates a very complex problem because we have a lot of environmental racism, which is that the rich people of Silicon Valley will want to live in those Altos Hills

and they're very protective of that open space.

MORGAN: Our concern is for the poor people living where the rich people are moving in to.

BORSOOK: Well, in San Francisco, it's unspeakable what is happening. But, what do we do to make affordable housing? Do we take over all the good farming land in the Central Valley with the result that people have to commute three hours – but Silicon Valley and San Francisco don't look

communities of similar interests and values.

BORSOOK: Although the Net is a great organizing tool, I think the fantasy that we're going to have country-wide town halls and elected representatives who are going to correspond by e-mail is poppycock. But using the Net as an organizing tool for community interests and activists is fabulous. You wouldn't want it to go away. I'm actually more interested in the culture of the people who are creating it.

There was a lot of government subsidy, because Silicon Valley grew out of the defence and the electronics industries. Until the early 1990s, Lockheed Martin, which is not your idea of a cool, hip dot.com company, was the biggest single employer in Silicon Valley. People forget that.

that different? We could export the problem: there isn't too much semiconductor manufacturing going on in Silicon Valley right now because of environmental regulations. So, the manufacturing is done in Malaysia where they don't have good environmental health and safety or recognized workers' rights, so we won't have to see it. We can still go hiking in the Santa Cruz mountains and it looks really beautiful. We export the problems we don't want to deal with.

ADAMS: Is yours the story of the evolution of a culture, or is it the story of a transforming technology which may be the first in our history that we can't control through public policy?

BORSOOK: I don't know if we ever can control technology with public policy. I'm sure the Catholic church wasn't too thrilled by what Gutenberg was doing, you know.

ADAMS: But they did their best. And we have seen Seattle. Our Naomi Klein has written a wonderful book called *No Logo*. In my own look at the youth, I find at least two tribes: the autonomous post-materialists and the idealistic New Aquarians who are using technology to establish new

ROWE: Is this a story about technology you're writing or is it a story about American culture?

BORSOOK: There's a wonderful woman, AnnaLee Saxenian, a professor of city planning who wrote a book called *Regional Advantage* which basically talks about why Silicon Valley has become what it is. It was written in the early 1990s, before all of this craziness started. She talked about the unique factors that made Silicon Valley possible and part of it was there were these people who moved west. They wanted to get away from what they saw as the oppressive rigid values of the East and mid-West. I mean, there was a reason cowboys were in the West.

ROWE: It's the updated frontier thing.

BORSOOK: Yes, definitely. And there was a lot of government subsidy, because Silicon Valley grew out of the defence and the electronics industries. Until the early 1990s, Lockheed Martin, which is not your idea of a cool, hip dot.com company, was the biggest single employer in Silicon Valley. People forget that. They just see themselves breaking free of the oppressive chains of the East coast.

The frontier is the Americans' mythology. That hasn't changed.

GILBERT: So then it's not surprising that you don't find philanthropy. First of all, it's early in the life cycle.

BORSOOK: That is somewhat true, but you forget that not all the money is new. Some of these people have been around since the early 1970s and some got started in the late 1930s. There are fabulous community citizens who do wonderful stuff – they have all these foundations. But that's not the main culture in Silicon Valley. You could say engineers have never been high on social empathy anyway, so what do you expect? Or, hanging out on the Net doesn't give you much of the commons, so what do you expect? The culture of the Net is libertarian and libertarians always find one another. Saxenian writes about this incredible mesh of social and professional networks and all the government subsidy. At one time Silicon Valley was a very communitarian place.

RYKERT: There was an article earlier this week about conservatism and the rise of the kind of dominance of our culture that wouldn't dare want to be seen publicly giving away their shareholders' money.

FELDMAN: We are very interested, of course, in the public policy. Can we keep "control" of our culture?

BORSOOK: I think you can have the technology without all this other baggage. I'm a communications junkie. I got my first laptop in 1986 and went on-line. At that time, a modem was a \$400 accessory and only 10 percent of laptops had them. At the turn of the last century, if people had any idea about the grave, social impact the automobile would have, might they have done things differently? I don't think they anticipated freeways and suburbs and all the other costs to health and life. I don't know that Canadians want the kind of culture we have in the States, but it is so seductive because of the money.

ADAMS: It should be interesting to see how things play out with the pub-

lic markets valuing a lot of these companies at really outrageous multiples. I think there's going to be a tremendous amount of money lost.

GILBERT: But, the wrong people are losing money. The founders get out and put their money in the bank.

BROADBENT: No, they go to the next venture.

BORSOOK: They don't keep their holdings in stock.

BROADBENT: A lot of people have already lost money on this stuff. I heard about a company with wonderful technology which allowed you to make a telephone call on top of Mount Everest, whenever you wanted to. The only problem is it didn't work around large trees or indoors. And most people make phone calls from indoors. So the company, which had put up forty-five satellites, proceeded to fold and they brought all the satellites back into the earth's atmosphere so they would burn up.

ADAMS: That company had a market capitalization of a little over six billion dollars and that six billion dollars got burned up on re-entry. And that was Wall Street money, Bay Street money.

BORSOOK: Don't you think people now believe the game is real? I think it's called a casino society. There is a kind of this lottery approach. We're not paid for work in a decent way. And there's a cynicism, like I want to get mine too.

You know the other trend I'm watching very closely is the whole concept of a self-directed world that technology is enabling. Partly it's a League of Nations thing but partly it's that now you go to your bank machine instead of talking to a teller and you have self-directed RRSPs and self-directed bill payment on-line and you're doing all your own banking. The labour has been downloaded to you.

RYKERT: The whole self-directed business reality is starting to seriously erode things that we count on in our society like the United Way. People don't want to give money to undirect-

ed funds. They want to pinpoint those dollars right down to the spot. How do you turn some of that need for transparency that's out there in the right direction?

BORSOOK: But there's an interesting hypocrisy there because in Silicon Valley you have to ask someone if they're willing to allow outside control of some of the most trivial things – but in the non-profit world they want to exert totally unrealistic control of all

investments and his work is less and less a factor. I was thinking, "that's insane, it's nuts." He's thirty-three years old.

ROWE: Is it a common notion among your contemporaries that the meritocracy is a crock?

BORSOOK: Yes.

ROWE: And does that just come from reality checking or do you feel like your parents sold you a bill of goods?

BORSOOK: Well they got sold a bill

There was an article earlier this week about conservatism and the rise of the kind of dominance of our culture that wouldn't dare want to be seen publicly giving away their shareholders' money.

sorts of things, like human services or artistic endeavours. I don't mean that efficient and effective are not good things but they're demanded mostly from other people – who we somehow consider ourselves superior to.

ADAMS: Just the other night on West Wing, somebody said the unspeakable. He said, "I want education to be funded like defense." I have never heard anything that subversive before.

A. GORBOULD: When did this culture of flipping begin to apply to your career? I think it's got very much to do with demographics. I go back to the sort of whole Gen X theme and there's the feeling that I'm never going to get benefits out of the pension. We're always going to live in the shadow of the baby boomers; there is no meritocracy so the only way I'm going to make my money is by doing something fast and getting my money and getting out. There's no sense any more that I can build a career and do good work and eventually retire. It's just not there any more.

BORSOOK: This geek friend I was talking about, who's a computer scientist in his mid-thirties, was telling me his plan is to retire in a couple of years and basically his life, his work, will stop. He said for the last couple of years he has been more and more concerned with making better and better

of goods because weren't your parents the ones who were being downsized?

ROY: I think coming from a middle class background, I was raised with the assumption that I would have what my parents had: a big house and a car and a stable job until I retire. And the reality is, that's not what's out there anymore. And people just feel completely betrayed.

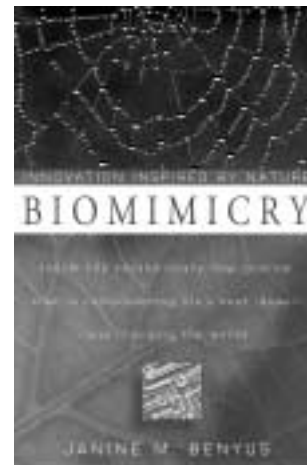
BORSOOK: Twenty-two year olds now expect to be worth zillions of dollars; they expect to be able to retire at twenty-five partly because that's all they really care about. And so they look at a thirty-eight year old top engineer and ask "why are you still working?" Nine out of ten start-ups fail and there's a lot of reasons why. I spent six months trying to find these people and what I began to realize was that all we ever hear about in Silicon Valley are the successes. Everyone for whom it didn't work was so ashamed they wouldn't talk to me.

Paulina Borsook was a contributing writer at Wired during the magazine's glory years. Her fiction, essays, humour pieces, and journalism on technology and culture have appeared in print and on-line in publications including Newsweek, Mother Jones, San Francisco, salon, suck and feed.

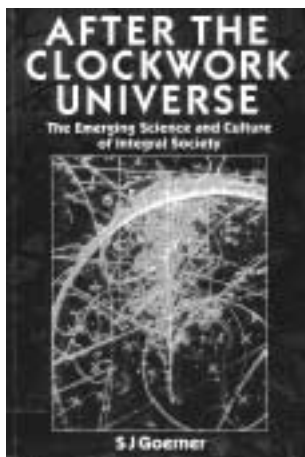
Books That Matter

Biomimicry: *Innovation Inspired by Nature* by Janine M. Benyus. Like Rachel Carson's *Silent Spring* my suspicion is that Benyus' book flags a sea change in thinking that's taking place everywhere and this book coins it. Benyus is a habitat writer. One of her previous titles, *Beastly Behaviors: A Watcher's Guide to How Animals Act and Why*, explains Jane Jacobs' affinity with her. They're both keen observers, interested in what actually works. *Biomimicry* is well written and straightforward. It's full of practical examples and anecdotes and resonant images. All you will ever want to know about a mussel's bivalve is here. The terrific thing is that Benyus can write; she tells a great story and is so darn excited about her discoveries that you'd have to be one hardened cynic not to enjoy this book. So when the text gets a bit rah-rah at the end and she's suggesting we start "interviewing the flora and fauna of our own planet" you can absorb it as a momentary pop culture lapse. Now available in soft-cover, this is a well-researched and thoughtful book.

Biomimicry: Innovation Inspired by Nature. Janine Benyus. William Morrow and Company, New York, 1997, \$33.00, hardcover.



I have a hunch Sally J. Goerner is a kind of rogue thinker. The biography on the back of her latest book *After the Clockwork Universe: The Emerging Science and Culture of Integral Society* tells us she has advanced degrees in computer science, psychology and non-linear dynamics. It's hard to imagine a traditional academic environment accommodating such diverse interests. This summer, Goerner convened a special session with Jane Jacobs and others as part of the World Congress meeting of the International Society for the Systems Sciences (a transcript of which we'll edit for future inclusion in *Ideas That Matter*), and it was clear by the attendance that Goerner is not alone as an academic practitioner who wishes to remain unaffiliated. This is a subtle way of saying that the conglomeration of people re-thinking systems organization, non-linear dynamics and chaos theory, and cybernetics are an odd – and very engaging – bunch. Like Benyus, Goerner abandons any sense of the natural world as simple cause and effect. She draws elaborate illustrations of energy creation and flow, cellular development, and organizational development. In this recent volume, Goerner details the contemporary de-bunking of a narrow understanding of evolution and then draws parallels in every imaginable field of pursuit. The danger here with suggesting such broad applicability for these ideas (and Goerner admits this in her article in this issue of *ITM*) is that none of it is taken seriously or it's mistaken for a kind of new age ideology. (References to the Great Ordering Oneness and the new agey tome *The Celestine Prophecy* don't help this.) But that being said, there is gold in them there hills as this book has some gems. The writing is far from linear and verges on elliptical. As a non-scientist reader, I found Goerner's sweeping pattern identifications and attempts to knit together science and anthropology and economics and town planning provocative and even comforting. You might just want to review the Bibliography for a sense of how broad – and therefore big – an idea this is. **After the Clockwork Universe: The Emerging Science and Culture of Integral Society** Sally Goerner. Floris Books, Edinburgh, 1999, \$40.00, softcover

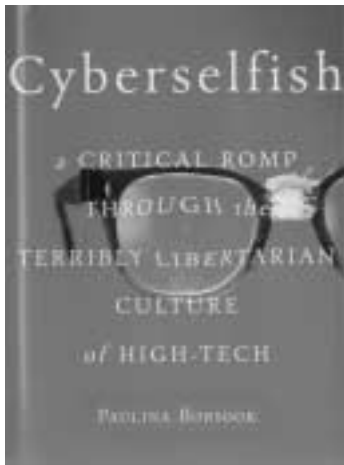


One of the patron saints of the new science/systems world is sociologist Paul Ray, who coined the term 'cultural creatives' in what is now deemed to be the seminal article in the *Noetic Sciences Review* in 1996. In the article, Ray codified a significantly large group of people who adhere to an idealistic, community-based set of values (not dissimilar to Canadian Michael Adams' category of the New Aquarian, which he described in his book, *Sex in the Snow*). Ray's much awaited full volume (co-written by Sherry Ruth Anderson) has just been released: *The Cultural Creatives: How 50 Million People are Changing the World* and is expected to be hugely popular, as his article became one of the most widely hand-distributed documents seen to be circulating at every 'progressive' event for the last few years. We're eager to see if they address Borsook's bug-a-boo: bionomics.

The Cultural Creatives: How 50 Million People are Changing the World Paul Ray and Sherry Ruth Anderson. \$38.00, hardcover



Books That Matter



Cyberselfish: A Critical Romp through the Terrible Libertarian Culture of High-tech by Paulina Borsook. You've got to love a book where the Library of Congress Cataloging-in-Publication Data lists as its second index word (after Libertarianism) the term geek. Oh how the vernacular shapes our world. Well once you've plowed through *Biomimicry* and you've emerged from *The Clockwork Universe* and thought it was safe to go out and mimic the garden, look out because Borsook is waiting with the dreaded bionomics, a concept she exposes in her early chapters. Here's the gist, written in fast, California-hip style: the high-tech world of the Silicon Valley is appropriating the notions of emulating nature to justify the virtual (!) elimination of government. She says bionomics "is a great system for the top percentiles, the endlessly entrepreneurial, the happy workaholic. But where in this ecosystem is there room for other kinds of species? What about the vulnerable? Bionomic fitness might also simply be an expression of nothing more than the growing gap between rich and poor in the United States and worldwide..." Got the picture? *Cyberselfish* is relentless in its rapid-fire, ranting style but at the same time, it's quite shocking the degree to which there even is a cyber-culture.

Since when did people who work in a particular industry adopt monolithic belief systems? Are all social workers 'lefties'? I don't think so. Those who are increasingly dependent upon this culture may be affected by its values. For those of us worried about the vanishing value that people seem to attribute to the public sector, this is not a hopeful book. But it is a curiously engaging one and I encourage you to read it, if only to anticipate when the geeks are coming.

Cyberselfish: A Critical Romp Through the Terribly Libertarian Culture of High-tech

Paulina Borsook. PublicAffairs, New York, 2000, \$36.50 CDN, hardcover

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