REGENERATIVE CAPITALISM

How Universal Principles And Patterns Will Shape Our New Economy

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This paper is a collaborative effort, and an ongoing work in progress. It is less a new theory than a rediscovery and synthesis of what is hidden in plain sight. I have tried to organize numerous insights from valued colleagues who are my teachers, together with my own thinking informed by my experience in the world of finance, my years of study since leaving that world, and the wisdom and intuition of the entrepreneurs I have had the privilege of working with as an impact investor. Nevertheless, what is presented here is by no means a complete picture, only a direction.

I am indebted to far too many thinkers and practitioners for opening my eyes to the ideas offered up in this paper than is practical to mention here. My work with Peter Brown, Bob Nadeau, and other members of the Steering Committee on The Third Millennium Economy project at Capital Institute has been profoundly impactful. In addition, my understanding of holism and the regenerative paradigm only came together through my engagement first with Allan Savory and Jim Howell, and then with Carol Sanford, Bill Reed, Ben Haggard and Anthony Sblendorio. I am also particularly indebted to Sally Goerner for her illumination of the empirical foundation of energy flow networks. Her contribution to my understanding and her thoughtful editing of this paper has been invaluable.

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John Fullerton, April 2015

PROLOGUE

When I resigned from JPMorgan in the spring of 2001 after a nearly 20-year career, I didn't know what would come next. What I did know was that I no longer recognized the Morgan culture I had once cherished. Furthermore, I had become restless, feeling my career had lost any purpose beyond achieving "success" as defined by Wall Street and my Morgan bosses.

The culture I so valued had been defined by J.P. Morgan, Jr. in his testimony to a Senate subcommittee following the Crash of 1929. There Morgan spoke of the banker's "code of professional ethics and customs." He concluded saying that, while the Morgan Bank had made mistakes, those mistakes had been "errors of judgment, and not of principle."

In truth, this principled approach to banking had been in decline for years, a victim of the fierce pressure of competitive capital markets in a deregulated world, where economic brawn increasingly trumped civility. The recently completed takeover of Morgan by Chase Manhattan merely put the final nail in the coffin. At the time, Chase was focused on consolidating the banking industry through acquisition, a "rollup" strategy centered on increasing scale and cutting costs. This process was often brutal, but it worked well. Now, my future would require answering to new bosses with a new culture, and my initial impressions sent up red flags.

Disillusioned about the direction Wall Street was headed and the loss of the culture I so admired, I decided to walk away without a clear plan for my future. Then, not long after resigning, I experienced 9/11 first-hand. My disillusionment merged with despair.

What followed was years of searching. I was searching for how to make sense of a world that I could no longer explain to my children. At some level, I was also searching for my own purpose in it all.

This search first opened my eyes to the profound, interlocking crises we are now facing – ecological, economic, and social – including the shocking prospect that we are destroying the planet's ability to support life as we know it. My most startling discovery, however, was that the modern scheme of economics and finance – what Wall Street "geniuses" (like me) practiced so well – formed the *root cause* of these systemic crises. This realization occurred before the 2008 financial crisis and exists independent from it. However, that egregious display of irresponsibility, greed, and fraud further confirmed the reality that Wall Street had lost its way.

My struggle to find a credible alternative framework for economics and finance sharpened my interest in the intellectual and scientific underpinnings of "systemic" or "holistic" approaches. I began by studying how we might apply the lessons of living systems to economic systems. Here my re-education became practical as well as intellectual. Through my impact investment[1] projects, ranging from values-based banking to holistic rangeland management, I experienced the economic benefits of systemic decision-making firsthand. I have since observed the practical benefits of balanced social, economic, and ecological health demonstrated in more than 25 stories illuminated in Capital Institute's *Field Guide to Investing in a Regenerative Economy.*[2]

I then discovered that scientists were turning the rules by which living systems sustain and regenerate themselves into empirical principles of systemic health and development, which applied as much to nonliving systems, *including economies,* as to ecosystems and living organisms. The resulting synthesis produced an unexpected alignment of insights from fields ranging from physics and biology to sociology and even the core spiritual beliefs common to all the world's great wisdom traditions. For me, the message became clear:

> *We can — and must — bring our economic theory and practice into alignment with our latest understanding of how the universe and our humanity actually work!*

My practical experience working with real-world regenerative projects and the solid science-based theory of regenerative economies presented here have made me confident in both the promise of Regenerative Capitalism, and the fact that it is already unfolding before our eyes. What remains is the immense challenge to spur a broad awakening to the profound *social and economic* transition it implies. Recognizing our shared purpose can help sustain the unwavering drive toward the great work that lies ahead.

This quest to understand the possibility of regenerative economics ended up answering the question of why I left JPMorgan over a decade ago with no knowledge of what my future might hold. It also gave new meaning to my 20-year experience witnessing high-finance's

1 Impact investing involves investing in projects that harmonize financial, social, and ecological returns.

2 http://fieldguide.capitalinstitute.org

spectacular rise and alarming descent. Yet my appreciation of how purpose enables us to transcend our differences and find true meaning in our lives came most directly from my father.

A few years before he passed away, I took a three-day trip with my father. The longest one-on-one experience I can recall with my dad, it was a unique opportunity for me to hear him reflect on his life. What struck me was that he kept coming back to the war. My dad had served in the Navy in World War II, took part in the Normandy invasion, and later captained a sub-chaser in the Pacific. The look in his eye as he spoke revealed that, despite the fear, pain, loss, and horror the war had brought, it had also been a deeply meaningful experience for him personally. What became clear to me listening over those three precious days was that it was *the shared, noble purpose of the war* – not the sacrifices – that had come to define his life. He was, after all, part of the Greatest Generation.

Our generation's challenges and threats are different. We too must overcome our fears. But we must also transcend our ideological divides and our false separation from one another and from our environment. Climate change, ever-rising inequality, and even the despair that fuels radical fundamentalism are all symptoms of a deeply flawed economic ideology that requires that we shift to a more effective, systemic way of thinking about our next economy. That systemic shift most certainly includes the transformation of the financial system to embrace a meaningful purpose in service of a regenerative world.

This is a monumental challenge that holds the promise of uniting our generation in a shared purpose. We now have a more rigorous understanding of what makes human networks healthy – this alone constitutes an amazing opportunity. It is time to act. Our actions, now, will most certainly define the nobility of our lives and our legacy. This *is* the Great Work of our time.

"…And miles to go before I sleep." – Robert Frost

EXECUTIVE SUMMARY

Global threats – from climate change and accelerating inequality, to the financial crisis of 2008 – have led an increasing number of thought leaders and policymakers to question the long-term viability of today's dominant form of capitalism[3]. Even the rise of terrorism is fueled, at least in part, by the repression and exploitation of the economically and politically disempowered.

At the same time, a multitude of innovators and entrepreneurs around the world are experimenting with practical ways to reimagine capitalism so that it works for all levels of society, as well as for the planet. In our terms, their common goal is to create a self-organizing, naturally self-maintaining, highly adaptive *Regenerative* form of capitalism that produces lasting social and economic vitality for global civilization as a whole.

Over the last two years, Capital Institute has been working with many of these thought leaders and entrepreneurs in a quest to understand what a theoretical framework for regenerative economies would look like, and what conditions and processes contribute to their long-term systemic health. We also explored how a Regenerative Economy would differ from today's flawed theory of capitalism, and how it would compare to other New Economy ideas such as natural capitalism, sustainable capitalism, conscious capitalism, doughnut economics, circular economies, sharing economies, steady-state economies, etc.

Where today's mainstream economic debates are usually couched in liberal versus conservative ideology, we felt a much deeper inquiry was required, one that examined the unquestioned assumptions of both the left and the right. For instance, does exponential, undifferentiated economic growth — the still largely unquestioned objective of liberal and conservative economists alike — really define the path to long-term prosperity? Is such constantly expanding growth even possible given the already massive scale of today's global economy and our planet's finite resources? And, what role does modern finance play with its single-minded pursuit of optimizing returns, in driving the systemic outcomes that are unsustainable?

3 Language issues surrounding the term "capitalism" are very complex today. What we're calling "today's dominant form of capitalism" is generally called neoliberalism and the Washington Consensus, with heavy influence from the free-market-oriented Chicago School of economics and the Hayek philosophy. Since the financial crash of 2008, a resurgence of Keynesian and particularly post-Keynesian ideas have pushed back into the mainstream debate, calling for a greater role for the State in regulating free-market capitalism.

Let me say up front very clearly: Regenerative economics is not about the well-worn debate of capitalism versus socialism. Both systems, even if flawlessly executed, are unsustainable. Nor is it a proposal for incremental change to a system that is fundamentally sound but for a few glitches.

What I am saying is that the history of economic theory is not over with Keynes and Hayek (or Minsky and Friedman), leaving their disciples to squabble on the public square indefinitely into the future. In fact, recent events including the 2008 financial collapse, the (under) statement by pre-eminent economist Sir Nicholas Stern that climate change represents the largest market failure in the history of capitalism, and the phenomenon surrounding the release of Thomas Piketty's *Wealth in the Twenty First Century*, collectively signal the end of the beginning. Regenerative Capitalism aims to contribute to the vital shift in thinking that is a precondition for us to embark on what follows the beginning.

What is Regenerative Capitalism? We began our quest for deeper explanations with biomimicry[4] in mind. That is, since living systems are both sustainable and regenerative over long periods of time, we began exploring whether following nature's rules of health and development might lead to sustainably vibrant economies as well. But, the more we explored this thesis, the bigger and more diverse the picture became. We discovered that what we call "systemic" or "holistic" approaches could be seen in work ranging from Jane Jacobs' on-the-ground urban observations in *Death and Life of the Great American Cities*, to Herman Daly's theories of steady-state economics. Indeed, close examination showed holistic concepts emerging in almost every field imaginable, from agriculture and healthcare to monetary systems, urban planning, and network-centric technology.

This broad form of holism grew out of the observation that *everything* in the universe is organized into "systems" whose interlinked parts work together in some larger process or pattern. The incredible range of holistic work we were encountering reflected a common quest to understand the reasons for such "systemic behavior," a pursuit that stretched from the sacred geometries of the ancient Greeks to the study of ecosystems and social media today.

4 "Biomimicry is an approach to innovation that seeks sustainable solutions to human challenges by emulating nature's time-tested patterns and strategies." – see the *Biomimicry Institute*, http://biomimicry.org/what-is-biomimicry

This quest's most important discovery was that *universal principles and patterns* of systemic health and development actually *do exist*, and are known to guide behavior in: living systems from bacteria to human beings; nonliving systems from hurricanes to transportation systems and the Internet; and societal systems including monetary systems[5] and yes, economies. Furthermore, though such holistic thinking is sometimes viewed as the province of mystics or hippies, we soon discovered that new fields of science were turning this core holistic discovery into rigorous explanations of how universal dynamics – such as energy and pressure – shape health and development in real-world systems of all kinds. The resulting science of "flow systems" not only provides the empirical theory and precise measures of systemic health we need to guide our steps, it also grounds long-standing observations about the importance of circulation, balance, and even of ideals such as justice and fair play.

In short, the study of systemic behavior is now producing a very practical, rigorous, and even commonsense new picture of how the world works. We believe the combination of practical experience gleaned from investing in and observing regenerative New Economy experiments rising up worldwide, anchored in today's rigorous form of holism, can show us how to turn today's lopsided (and unsustainable) form of capitalism into an integrated network of balanced, vibrant, and regenerative economies, all serving systemic health within their own unique contexts.

Our goal here is to illuminate this new synthesis and to craft a coherent narrative around it so that it may be applied to defuse today's global threats, particularly those arising from outdated and at-times-misguided beliefs in business, finance, and economics.

The implications for how we think about organizing and managing our capitalist system are profound. Some will reject this framework as idealistic; others will say it does not go far enough with reform. Our belief is that this framework can bridge between the current world and the one that is in the process of emerging in a way that is both realistic and necessarily fundamental. This paper aims to make a contribution to the learning journey that lies ahead for policymakers, as well as progressive leaders in business and finance.

5 Lietaer, B., Arnsperger, C., Goerner, S., & Brunnhuber, S. 2012. *Money and Sustainability, The Missing Link*. Devon, UK: Triarchy Press.

TOWARDS A REGENERATIVE ECONOMY

Our Regenerative story starts with a single core idea:

> *The universal patterns and principles the cosmos uses to build stable, healthy, and sustainable systems throughout the real world can and must be used as a model for economic-system design.*

We then distill our research into eight key, interconnected principles that underlie systemic health (see Chapter 3):

1. **In Right Relationship**[6] – Humanity is an integral part of an interconnected web of life in which there is no real separation between "us" and "it." The scale of the human economy matters in relation to the biosphere in which it is embedded. What is more, we are all connected to one another and to all locales of our global civilization. Damage to any part of that web ripples back to harm every other part as well.

2. **Views Wealth Holistically** – True wealth is not merely money in the bank. It must be defined and managed in terms of the well-being of the whole, achieved through the harmonization of multiple kinds of wealth or capital, including social, cultural, living, and experiential. It must also be defined by a broadly shared prosperity across all of these varied forms of capital. The whole is only as strong as the weakest link.

3. **Innovative, Adaptive, Responsive** – In a world in which change is both ever-present and accelerating, the qualities of innovation and adaptability are critical to health. It is this idea that Charles Darwin intended to convey in this often-misconstrued statement attributed to him: "In the struggle for survival, the fittest win out at the expense of their rivals." What Darwin actually meant is that: the most "fit" is the one that fits best i.e., the one that is most adaptable to a changing environment.

4. **Empowered Participation** – In an interdependent system, fitness comes from contributing in some way to the health of the whole. The quality of empowered participation means that

6 Brown, P. and Garver, G. 2008. *In Right Relationship, Building a Whole Earth Economy*. San Francisco: Berrett-Koehler Publishers.

all parts must be "in relationship" with the larger whole in ways that not only empower them to negotiate for their own needs, but also enable them to add their unique contribution towards the health and well-being of the larger wholes in which they are embedded.

5. **Honors Community and Place** – Each human community consists of a mosaic of peoples, traditions, beliefs, and institutions uniquely shaped by long-term pressures of geography, human history, culture, local environment, and changing human needs. Honoring this fact, a Regenerative Economy nurtures healthy and resilient communities and regions, each one uniquely informed by the essence of its individual history and place.

6. **Edge Effect Abundance** – Creativity and abundance flourish synergistically at the "edges" of systems, where the bonds holding the dominant pattern in place are weakest. For example, there is an abundance of interdependent life in salt marshes where a river meets the ocean. At those edges the opportunities for innovation and cross-fertilization are the greatest. Working collaboratively across edges – with ongoing learning and development sourced from the diversity that exists there – is transformative for both the communities where the exchanges are happening, and for the individuals involved.

7. **Robust Circulatory Flow** – Just as human health depends on the robust circulation of oxygen, nutrients, etc., so too does economic health depend on robust circulatory flows of money, information, resources, and goods and services to support exchange, flush toxins, and nourish every cell at every level of our human networks. The circulation of money and information and the efficient use and reuse of materials are particularly critical to individuals, businesses, and economies reaching their regenerative potential.

8. **Seeks Balance** – Being in balance is more than just a nice way to be; it is actually essential to systemic health. Like a unicycle rider, regenerative systems are always engaged in this delicate dance in search of balance. Achieving it requires that they harmonize multiple variables instead of optimizing single ones. A Regenerative Economy seeks to balance: efficiency and resilience; collaboration and competition; diversity and coherence; and small, medium, and large organizations and needs.

The resulting theory shows us how to build vibrant, long-lived, regenerative economies and societies using the same holistic principles of health found consistently across widely different types of systems throughout the cosmos. This theory grounds our understanding of why

integrity, ethics, caring, and sharing lead to socially vibrant communities and healthy economies – while at the same time making perfect practical and scientific sense.

It differs most from current approaches to sustainability in that, instead of focusing on social and environmental health using traditional reductionist logic to "solve problems," it aims directly at building healthy human networks as the objective, drawing on universal principles and patterns, with "sustainability" becoming an outcome, a natural byproduct of systemic health. It is like (holistic) healthcare in contrast to (reductionist) disease care.

Because the theory focuses on building healthy human networks, it is not actually new. Instead, it has been discovered and rediscovered time and again over the millennia, appearing from the ancient Greeks' invention of democracy, to the rules of mutually beneficial, give-and-take relationships that allow stakeholder-owned enterprises to be effective today.

Furthermore, instead of a political philosophy of the left or right, this rigorous form of holism specifically sees regenerative economies as a *new stage* of capitalism built around an integration of the best of both political leanings. Consequently, instead of jettisoning capitalism wholesale, this holism uses the universal design principles underlying all systemic health to show us how to preserve and build on the many strengths of our free enterprise system, while addressing its failings head on.

While we expect healthy debates among liberals and conservatives to continue, the scientific framework behind regeneration places them in a new context with sharp contrasts between regenerative perspectives and current assumptions. This integrated approach offers the potential for polarized perspectives to find common cause in the best of both side's original ideals. For example:

- Instead of assuming economic efficiency and undifferentiated GDP growth automatically lead to prosperity, actors in a Regenerative Economy understand that long-term economic vitality depends on creating conditions that will unlock the vast potential for true wealth creation that lies dormant in every individual, community, business network, and bioregion. Consequently, instead of viewing moral issues as irrelevant to "rational" economic decision-making, in Regenerative Capitalism, human and moral concerns become central to decision-making, and policymakers view those concerns as critical to the maintenance of a healthy whole. In this sense, Regenerative Capitalism is also a humanist capitalism.

- Instead of believing a laissez-fair market system can somehow magically solve long-term systemic challenges if only we can improve market efficiency and transparency, regenerative actors understand that markets, while central, are but one of a number of institutions involved in systemic health – others include governments, community institutions, educational institutions, commons trusts, non-profits, foundations, etc. Markets address certain problems well but not others. For example, since climate change and other threats occur over multiple scales and across the very long run, they demand governance and tools like incentives and feedback loops that act as guard rails and, where necessary, limits that coordinate across scales and focus on the long-term.

- Instead of pursuing greater government regulation as the only realistic solution to markets run amok, policymakers in a Regenerative Economy understand the importance of designing incentive-driven, *self-regulating* systems that embody the critical balance between the freedom upon which innovation thrives and the constraints necessary for effective collaborative communities to work.

- Instead of assuming that maximum health comes from maximizing shareholder profits alone, or, that it can be achieved through the imposition of a welfare state, regenerative actors realize that systemic health can only be maintained when all stakeholders who contribute to the profit of an enterprise are empowered to negotiate just compensation on their behalf. Instead of accepting the inevitability of extreme concentrations of financial wealth, or advocating for wealth to be redistributed equally, they know some inequality is natural but also that balance is essential to systemic health and that robust circulation of wealth throughout all levels of the economy is critical. Instead of believing increasing efficiency and cutting costs are always good, they understand that resilience is equally necessary, and vitality requires balancing numerous equally critical, but competing factors.

- Instead of seeing industrialism as either the ultimate form of economy or a product of misguided arrogance and greed that is destroying the planet, the regenerative actors see it as a crossroads along the evolutionary path that our self-organizing human creativity is traveling. Instead of suffocating in a flawed economic ideology, we must now trust in our creative human qualities to learn, improve, and acquire a new more exact understanding of the regenerative nature of healthy economies. We must also confront our collective misunderstandings with objectivity and integrity.

As we see it, today's greatest challenge is to address the root cause of our systemic crises – today's dominant (neoliberal) economic paradigm and the financial system that fuels it and rules it – by transitioning to a more effective form of capitalism that is regenerative and therefore sustainable over the long term. We see this as something akin to humanity's economic Copernican moment[7]. Simply stated, if we want to achieve the many outcomes we desire and generally agree on, *we must bring our economic theory and practice into alignment with our latest understanding of how the universe actually works!*

Yet we see today's task as more than just an intellectual endeavor. To bring to scale the Regenerative Economy we see emerging all around us, those pursuing a transition to a regenerative world must integrate elements of head, heart, and hands – the three key factors that move human beings. These translate into:

- A rigorous understanding of what makes human networks healthy;
- A unifying, noble purpose that inspires people to serve a cause greater than themselves; and
- The ability to turn noble ideas and purpose into effective practical action.

The purpose of this white paper is to outline and to integrate what we have so far towards these ends. It is our hope that the resulting story will help catalyze the paradigm shift away from today's flawed form of capitalism – one that is unjust and unsustainable – to a healthy, pluralistic system of *regenerative economies* aligned with the patterns of regenerative health.

THE PAPER IS STRUCTURED AS FOLLOWS:

Chapter 1: Introduction – begins with a brief summary of the systemic crises we face in this time of reckoning. It then introduces the core Regenerative hypothesis: that the universal principles that explain healthy energy flow networks in the real world can be applied to the design of human economies, and that the purpose of a Regenerative Economy is to *promote and sustain human prosperity and well-being in an economy of permanence.*

7 The Copernican Revolution challenged the belief that the sun revolved around the earth. In the process, it also challenged a pillar of the medieval belief system, which threatened the power of church and aristocratic elites who depended upon that belief system. Questioning today's reductionist models in economics threatens today's "economic priests" in much the same way.

Chapter 2: From a Mechanistic to a Holistic Worldview – discusses the need to shift from our 500-year-old mechanistic (reductionist) worldview, which focuses on breaking complex systems down into simpler parts in order to understand and manage them, to the emerging holistic worldview, which recognizes that the proper functioning of complex wholes (like an economy) cannot be understood without understanding the ongoing, dynamic relationships among parts that give rise to greater "wholes." This seismic shift in thinking provides the context for managing the complexity of our interconnected crises. We introduce the reader to both the ecological approach to holism and the broader form based on the science of "universal flow networks" mentioned above, which informs economics as well as ecology. Everything is energy.

Chapter 3: Eight Key Principles of Regenerative Health – describes the eight principles of regenerative health. This is not intended to be a comprehensive list, just one perspective on the principles and patterns that collectively describe systemic health. We explore what each principle might look like in a Regenerative Economy, and end by summarizing how this new lens helps us rethink today's form of capitalism.

Chapter 4: Regenerative Capitalism in Practice – explores what Regenerative Capitalism looks like already emerging in the real world. We draw on well-known trends and more intentional practice using examples from our investment experience and our *Field Guide to Investing in a Regenerative Economy*[8], which examines the qualities of both organically emerging regenerative projects and those that are guided by very intentional regenerative visions. We share our belief that the transition to a regenerative economic system is, in fact, already manifesting on the ground, often below the radar. This chapter concludes with a brief look at the implications for finance, for public policy, and for measuring and managing systemic health.

Chapter 5: Creating a Regenerative Civilization – The paper's conclusion picks up where the Prologue left off: with a call to action. Now grounded in solid science and emergent effective practice, our generation's shared noble purpose is to usher in the economic transition to an equitable, sustainable, and regenerative way of living together on this earth. This is the *Great Work* of our time.

8 http://fieldguide.capitalinstitute.org

Chapter 1: Introduction

"The occasion is piled high with difficulty, and we must rise with the occasion. As our case is new, so we must think anew, and act anew. We must disenthrall ourselves, and then we shall save our country."

– Abraham Lincoln

In the years since our most recent finance-induced Great Recession, a growing number of thoughtful people are concluding that the modern global economy may be incapable of providing for the well-being of the majority of humanity. At the same time, it is systemic "take, make, waste" design has left in its wake a crescendo of interconnected environmental crises that threaten to undermine the very foundation of the economic system itself. And, I will argue, it is the exponential function embedded in the DNA of finance that is at the root of this systemic crisis, setting aside the financial sector's many other shortcomings.

The indications are everywhere. There remains intractable poverty facing nearly half the world's human population, and unconscionable and still rising inequality of income and wealth in the world's leading economies. There are troubling statistics on structural unemployment in developed economies, accompanied by institutional failures of government, business, and particularly finance, but also of education and religion. Global terrorism finds sympathizers, at least in part, among those who have been brutalized by the indignities of impoverishment and hopelessness.

"The true nature of the international (economic) system under which we were living was not realized until it failed."

– Karl Polanyi

Despite its many achievements, including a dramatic rise in the material well-being of a small minority of today's rapidly growing global population, science tells us that our current economic system, fuelled by a single-minded growth imperative, is fundamentally at odds with the finite boundaries of the biosphere[9] and the laws (not theories) of physics. Similarly, climate change and, more broadly, the degradation of the life-supporting functions of a healthy ecosystem, threaten life as we know it, presenting

9 Capital Institute. 2012. "Ethics, Economics, Finance and Governance for the Anthropocene," http://capitalinstitute.org/our-projects/third-millennium

an existential threat that has no parallel in human history. We are destroying the planet[10] because there is a profit in it.

Clearly, what cannot go on forever will eventually stop. Global economic activity is already breaching four of nine critical "planetary boundaries"[11] – atmospheric carbon, nitrogen and phosphorous flows from agriculture dumped into our river systems, land use changes, and the rate of biodiversity loss. Fresh water stress in specific locations is on the rise. In the process, we are compromising the Earth's interconnected life support systems. These boundaries are depicted individually in the graphic in Figure 1 below, but it is important to realize that since everything is connected to everything else, any one breach of a critical scientific boundary is enough to shift the entire system into destabilizing collapse. In short, we are playing with fire.

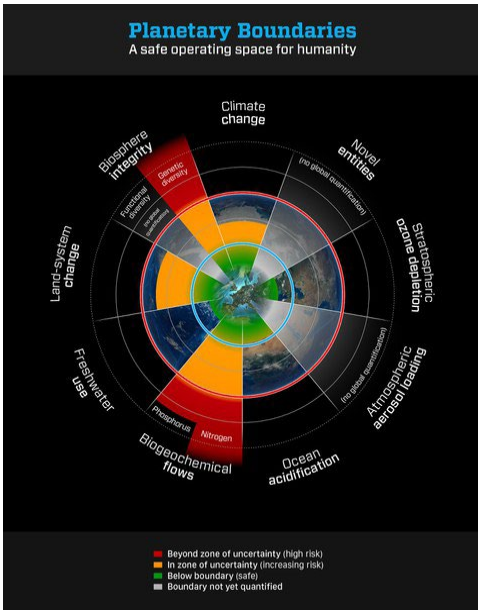

Figure 1. Source: Rockstrom, Johan et al, "Planetary Boundaries, A Safe Operating Space for Humanity," updated 2015. Stockholm Resilience Centre.

Symptoms of this truth abound, most notably the extreme weather events accompanying recent reports that we have exceeded 400 parts-per-million of atmospheric carbon, when science tells us that we must rapidly reduce that level to 350 if we are to preserve life as we know it on the planet.

We live in a time of reckoning.[12] Although perpetual expansion of material throughput in the economy – ever more resources extracted, ever more wastes dumped into the biosphere – clearly cannot go on forever, both sides of today's ideological divide continue to accept the notion that our economic system's primary purpose is to foster perpetual, exponential, and undifferentiated economic growth.

10 http://www.worldwatch.org/state-world-2015-confronting-hidden-threats-sustainability-0

11 Rockstrom, Johan, et al. 2009. "Planetary Boundaries," Ecology and Society, Vol.14 (2). http://www.ecologyandsociety.org/vol14/iss2/art32

12 This is the primary message of the "Fifth Assessment Report of the Intergovernmental Panel on Climate Change," released in March 2014. http://www.ipcc.ch/

Lulled into complacency by a misunderstanding of Darwin that leads us to hold to the belief that the "fittest"[13] are the ones that survive in a competitive marketplace, we have failed to arrest the rise of an amoral plutocracy that is taking hold of the global economy, and destroying democracy and human health, dignity, and civility – as well as the planet. Plutocratic propaganda combined with blind faith in GDP growth, the naïve belief that markets always know best, and the discounting function at the heart of finance that flat out ignores the devastating and logically expected costs associated with our single-minded pursuit of near-term profit,[14] have hijacked the human value system enshrined in our Declaration of Independence. Our government, once created to protect the "unalienable rights" to "Life, Liberty, and the Pursuit of Happiness," has been suckered, bought and sold, and is now failing in this primary duty. Unfortunately, because America is the largest economy and only superpower on earth, nations all over the world seek to emulate prosperity in the narrow way we have come to define it, counting money as the sole measure of success, regardless of how that money is made or how much harm it does to people, civilization (now and in the future), and the planet.

These mounting social, ethical, economic, financial, and environmental crises, connected in an incomprehensibly complex web, are converging into a global emergency that even the most entrenched denialists will soon be unable to ignore.[15] It is now critical that our modern economic system evolve past today's immoral "rationalism" to address both the environmental crisis and the growing list of societal challenges, most notably chronic unemployment, the grotesquely inequitable distribution of wealth, and the oppressive poverty of nearly half of the world's population.

In short, we are in trouble — systemic trouble, the kind that can only be addressed with systemic solutions, not more point-focused problem-solving.

Yet, despite a growing chorus of demands to rethink our economic assumptions – beginning

13 Herbert Spencer coined the phrase "survival of the fittest," after reading Darwin's *Origin of the species: By means of natural selection.* Darwin later used the phrase "fittest" to mean best fit, like a puzzle piece that best fits, or a species best suited to a local environment.

14 http://mudancasclimaticas.cptec.inpe.br/~rmclima/pdfs/destaques/sternreview_report_complete.pdf

15 http://www.oecd.org/futures/globalprospects/37944611.pdf

with Robert Kennedy in his famous 1968 speech[16] and most recently including leading economists Joe Stiglitz and Amartya Sen[17] – most people continue to stick their head in the sand. Many believe we will be able to innovate our way out of impending disaster at the 11th hour without challenging the core assumptions of the system. Others succumb to fatalism. If civilization is headed for collapse, as many great societies before us have done, we might as well absolve ourselves of any responsibility and dance while the music still plays.[18]

Here we offer a third alternative. Against all the odds, let us rise to the challenge, working collectively to effect systems transformation – a paradigm shift – in response to the reality we understand. Let us invoke our uniquely empowering human agency to decide upon a better future for our children, and endeavor to accomplish that dream.

"IT IS ALL A QUESTION OF STORY. WE ARE IN TROUBLE NOW BECAUSE WE DO NOT HAVE A GOOD STORY. THE OLD STORY – THE ACCOUNT OF HOW THE WORLD CAME TO BE AND HOW WE FIT INTO IT – IS NOT FUNCTIONING PROPERLY, AND WE HAVE NOT LEARNED THE NEW STORY."

—THOMAS BERRY

WHAT COMES NEXT?

The dominant economic model of the developed world is unsustainable.[19] The consequences of that unsustainability are unacceptable and raise ethical questions that society can no longer avoid. In fact, Capitalism as we know it is now in question.[20]

Extrapolation of current trends – high structural unemployment, particularly among youth, persistent poverty even in the richest countries, widening inequality within countries and

16 http://www.theguardian.com/news/datablog/2012/may/24/robert-kennedy-gdp

17 http://www.stiglitz-sen-fitoussi.fr/en/index.htm

18 http://www.opednews.com/articles/7/Will-Any-Humans-Become-Pos-by-Clinton-Callahan-Amphibians_Civilization_Climate_Climate-Change-140706-826.html

19 Wijkman, A. and Rockstrom, J. 2012. *Bankrupting nature: Denying our plenary boundaries*. New York: Routledge, Report to the Club of Rome. http://www.anthemenviroexperts.com/?p=667

20 See for example Roubini, N. "Is Capitalism Doomed," Al Jazeera, 18, Aug 2011, http://english.aljazeera.net/indepth/opinion/2011/08/201181610494541574.html; and, McKinsey & Company, http://www.mckinsey.com/Insights/Corporate_Social_Responsibility/Redefining_capitalism?cid=mckq50-eml-alt-mip-mck-oth-1410

regions, and now for the first time on a global scale (which is why this time is different) cascading environmental crises, most notably climate change – leads ultimately to system collapse with the weakest among us the first to be affected.[21]

This systemic crisis is well understood in sustainability circles, and is slowly being recognized inside mainstream institutions and among policymakers. By and large, however, it remains heresy among both liberal and conservative mainstream economists whose thinking dominates policy debates. When it comes to sustainability, our leading business schools are primarily engaged in furthering the technology-enabled resource productivity opportunity, just as they earlier focused on the labor productivity opportunity. The current business school mantra is: "Businesses can become more profitable through more intelligent operating practices that reduce costs through better resource efficiencies." Fine as far as it goes.

Individual firms are attempting to decouple their growth from material throughput through critical energy and material efficiency gains (offshoring manufacturing simply shifts the problem elsewhere). Utilizing strategies such as "Factor Five" resource productivity improvements[22] and circular economy business models,[23] the potential exists to profitably achieve up to 80 percent improvements in resource productivity, extending the runway for the transition to truly regenerative business models in the process. But, decoupling material throughput from economic growth for the entire system, indefinitely into the future – i.e., continuous economic growth while continuously reducing absolute material throughput of the economy – is quite a different matter.

As sustainability expert Hunter Lovins suggests, we must urgently focus on efficiency gains to buy time. But at the same time, we must also look ahead and envision a truly regenerative system design. That is something entirely new, requiring fresh imagination, not just incremental tweaking around the edges.

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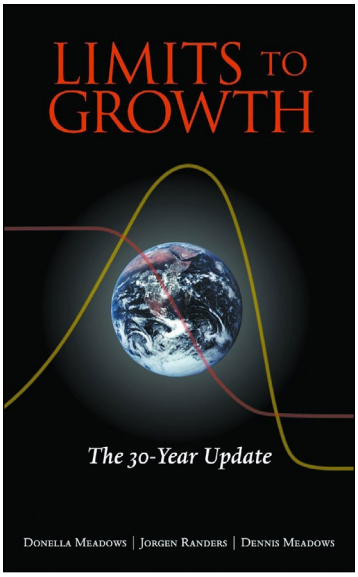
21 Constanza, R. and Kubiszewski, I. (eds). 2014. *Creating a sustainable and desirable future: Insights from 45 global thought leaders*. New York: World Scientific.

22 von Weizsacker, E.U. et al. 2009. *Factor five: Transforming the global economy through 80% improvements in resource productivity.* New York: Routledge.

23 http://www.ellenmacarthurfoundation.org/circular-economy

In simple language, we need a new story to believe in – one that rings true and captures our hopes and aspirations for a prosperous future. Applied to our economic system, this new story must credibly address the growing systemic inequality and related oppression we know will ultimately undermine civil society if left unchecked. This story must be socially and ecologically just, and credibly shift us away from systematically destroying the planet, the health of which we know is the source of our true wealth and upon which our very survival depends.



Fortunately, a growing interdisciplinary movement is beginning to understand the systemic nature of the challenges we face and that systems change is not only inevitable, it is already underway. It turns out, in fact, that the study of systems is a robust and growing field of inquiry, although largely invisible to politicians, financiers, and the corporate elite, i.e., the people who run the world.

Of particular importance to us is preeminent system scientist Jay Forrester's[24] disciple, the late Donnella Meadows, co-author of *Limits to Growth*, commissioned by The Club of Rome, and published in 1972.[25] Meadows explained that the most important leverage point to change a system is to reimagine the paradigm, or belief system, out of which the system arises.[26] The challenge is to imagine a new story with new goals, which is able to transcend the dominant story when it no longer works.

There is also now a rich literature explaining why business as usual is a sure path to collapse.[27] Pioneers such as ecological economist Herman Daly, formerly of the World Bank,

24 Much of the current thinking about systems change builds on the work of preeminent systems scientists like Karl Ludwig von Bertalanffy, one of the creators of General Systems Theory, and the work at MIT under Jay Forrester, creator of Systems Dynamics.

25 *Limits to Growth* was ahead of its time, misunderstood, and attacked when published in 1972. However, its core thesis was prescient as recent studies, such as that by Graham Turner, confirm.

26 Meadows, D. 1999. "Leverage Points: Places to Intervene in a System." Hartland, VT: The Sustainability Institute.

27 Randers, J. (2012). *2052: A global forecast for the next forty years*. White River Junction, Vermont: Chelsea Green Publishing; Gilding, P. *2011. The great disruption. New York*: Bloomsbury Press; Orr, D. 2011. *Hope is an imperative: The essential David Orr.* Washington DC: Island Press. See also Gus Speth, D.

and his many colleagues and disciples, as well as progressive academic institutions such as the Bainbridge Graduate Institute, Presidio Graduate School, and Bard's Sustainable MBA program are probing the deep and difficult conundrums of modern capitalism. Yet few in the mainstream dare question the accepted paradigm, the story that money buys happiness, that optimizing shareholder value is ordained truth and is our fiduciary duty, that fair and transparent markets will magically guide our decisions to optimal outcomes, that there are limitless physical possibilities of growth, that there are unlimited possibilities for substitution of inputs through innovation, and that undifferentiated economic growth is the answer to our problems and the source of our prosperity.

But as we have seen, that story no longer holds up to careful scrutiny, for if it did, we would not be on a collision course with systemic collapse. Increasingly, it seems, we have lost touch with what it means to be human.[28] What we need now is a story that ties all these pieces together in a way that provides a positive path to the future.

I propose that our new story will be built on an intellectual and emotional understanding of the regenerative process that enables life in the world.

I need to be very clear up front about the source of my proposal. While this paper offers a theoretical framework for regenerative economies, and has been deeply informed by my readings and the influences of many thought leaders, in particular by those listed in the Acknowledgments, my conviction arises first and foremost through experiential knowledge.

I have seen this understanding successfully applied to land management practice on large landscapes,[29] and in the built environment,[30] unlocking unimaginable potential leading to true regenerative wealth – social, ecological, and economic. I have seen it further demonstrated in the real world in each of the now 25 stories of our *Field Guide to Investing in a Regenerative*

28 Korten, D. 2015. *Change the story, Change the future*. San Francisco: Berrett-Koehler Publishers.

29 See Savory Institute and Holistic Land Management at http://www.savoryinstitute.org

30 See Regenesis Case studies at http://www.regenesisgroup.com/projects/

Economy.[31] In other words, the theory I present is firmly grounded in the concrete particular of practice in the real world.

I now believe this conceptual framework can also be used to create a model of multilevel economic health that ranges from the level of firms and place-based networks of firms in value-adding relationship with one another, to the global economy itself. In this way, the regenerative paradigm has the potential to evolve capitalism to a higher level of complexity,[32] in keeping with the evolutionary process in which the human economy takes part.

THE REGENERATIVE HYPOTHESIS

The regenerative story starts with a single core idea:

We can use the universal principles and patterns underlying stable, healthy, and sustainable living and nonliving systems throughout the real world as a model for economic-system design.

A Regenerative Economy also requires a clear statement of purpose. A regenerative system is self-organizing and self-sustaining. It does not "kick the can down the road" as our modern political economy does with respect to inequality, poverty, natural resource limits, pollution, health, deficits, pension plans, retirement, education, and regulatory reform. Instead:

The purpose of a Regenerative Economy is to promote and sustain human prosperity and well-being in an economy of permanence.[33]

To achieve sustained human well-being in an economy of permanence, we must first study the laws and patterns the cosmos uses to build healthy networks that actually exist all around us. If the global economy is to become sustainable, we must not simply measure the outputs we desire, we must

31 http://fieldguide.capitalinstitute.org/

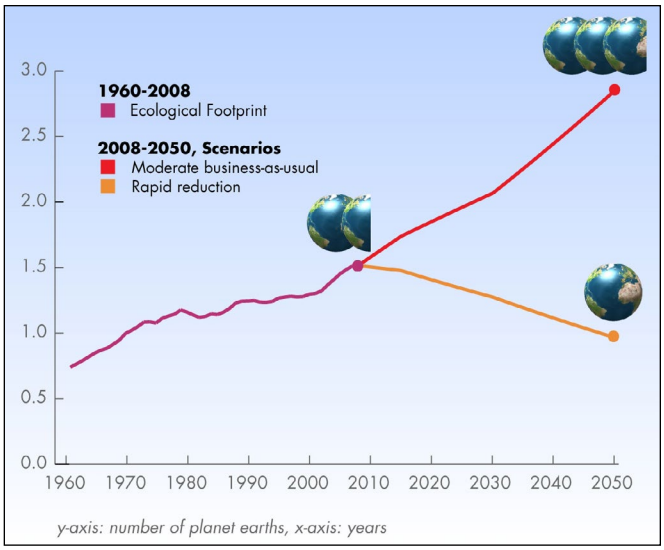
32 In this context, a "higher level of complexity" does not simply mean making something more complicated, rather it refers to a higher level of evolution. Readers interested in exploring this concept further are referred to: http://pespmc1.vub.ac.be/Papers/Review_Complexity.pdf

33 Kumarappa, J. C. 1945. *Economy of permanence, The practice and precepts of Jesus.* Rajghat, Varanasi, India: Sarva Seva Sangh Prakashan.

learn to identify the underlying factors that generate lasting systemic health. We must then design the economy – and the financial system that serves it – to embody those principles.

What qualities make an economy healthy and sustainable? Following the lead of sustainability experts, the first requirement of permanence is to maintain reliable inputs and healthy outputs. Ecologist and co-creator of the "ecological footprint" concept Bill Rees explains, "A regenerative system is one that does not deplete or pollute its host and, at best, facilitates its host's thriving. In other words, consumption by the system must not exceed production by its host; waste production by the system must not exceed the assimilative/recycling capacity of its host." Therefore:

A Regenerative Economy maintains reliable inputs and healthy outputs by not exhausting critical inputs or harming other parts of the broader societal and environmental systems upon which it depends.



World Ecological Footprint. Source: Global Footprint Network.

The next most critical characteristic of health lies in being self-nourishing and self-regulating. So, while many systems, such as tornadoes and lightning bolts, rise up only briefly to diffuse an energy buildup, the systems we care most about – living organisms, ecosystems, and societies – are designed to constantly channel energy into nourishing their internal workings. Living organisms, for example, are designed to turn the food they eat into the energy they need to maintain their own existence. If we are to build healthy human economies, this idea must be applied to human networks.

Just as living systems are sustainable because they are characterized by self-nourishing processes, so a Regenerative Economy must nourish the human networks upon which its vitality depends.

Yet, regeneration also defines the evolutionary process itself. The South African general and prime minister Jan Smuts observed that it was the regenerative nature of life itself to evolve

into higher levels of complexity, in the face of the powerful degenerating law of entropy.[34] Here the term "regeneration" implies a "continuous process of becoming" – including human and societal potential. This broad form of regeneration implies an indivisible connection among humanity's physical, psychological, and spiritual dimensions, as well as with the entirety of the energetic whole we call the universe. It is this deep interconnectedness that Smuts referred to when he described holism as the universal principle that defines matter, energy, and spirit.[35]

Can we not then view the emergent Regenerative Economy as a more highly evolved response to the extractive economy it will replace?

Regenerative economies must embrace the continuous process of "becoming" necessary to sustain life in the natural world.

"With man gone, will there be hope for gorilla?"

—Ismael, by Daniel Quinn

Critically, however, our understanding of the operating principles common to all natural systems must be informed by an appreciation of the unique qualities that collectively offer insight into what it means to be human. These qualities include higher cognitive function, analytic reasoning, the dexterity of opposable thumbs, morality, a higher potential for conscious awareness, and even the possibility of spiritual enlightenment. And critically, we must integrate the clear reality of the power of human agency itself to affect the outcome of the system. We are not simply passive passengers in the evolution of the human economy. Certainly these qualities collectively create the potential for highly intricate systems of economy characterized by higher levels of complexity and therefore more advanced function than achievable without the human species.

Some environmentalists claim that the Earth would be fine without human beings. But, we must also remember the vast regenerative potential that exists solely because of humanity's

34 The "entropy law" refers to the second law of thermodynamics. Entropy is a quantitative measure of the amount of energy no longer available to do work. For example, once a log is burned, its energy is dissipated and is no longer an available energy source. Though increasing entropy actually means increasing dissipation, it is commonly thought to indicate increasing disorder.

35 Smuts, J. 1926. *Holism and evolution* (1929). New York: MacMillan & Company Limited.

unique qualities. [36]

Can we not see that the potential for life on earth is richer because of the human species, and that it is our purpose to co-create the healthy manifestation of that potential?

Looked at in this light, the great progress that industrialism has brought to the human project is the unfinished business of self-organizing human creativity rather than misguided arrogance and greed that has led to the destruction of the natural world. Rather than leave us trapped in a flawed and outdated ideology, our very unique human qualities must enable us to learn and improve based on the new knowledge we acquire of the nature of economies as healthy human networks.

It is our task, now, to bring our economic system into alignment with the regenerative process. When we do, like turning a canoe downstream after a long struggle against the current, our journey will be lightened, our destination assured.

TODAY'S COPERNICAN SHIFT

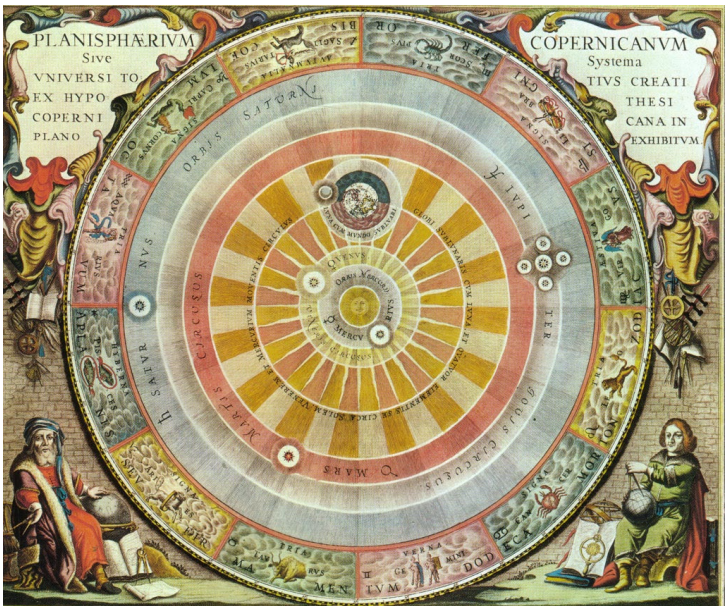
> "The first Copernicans had experienced a kind of inner conversion. Their epiphany was at once intellectual and spiritual, psychological and cosmological.... Their intuition ran ahead far in advance of all the theoretical and empirical work that had to be done."
>
> – Richard Tarnas

Changing a society's root paradigm is an enormous undertaking. Copernicus and Galileo spent uncomfortable lives trying to replace the notion that the sun revolved around the earth because the medieval church had used the indisputable perfection of the earth-centered model to buttress the idea that aristocratic rule centered around the Church was God's

36 Dagget, D. 2005. *Gardeners of Eden: Rediscovering our importance to nature.* Flagstaff, Arizona: Thatcher Charitable Trust.

immutable plan, regardless of how abusive and dysfunctional such elite rule might be. Yet, today we happily accept the idea that the earth revolves around the sun, and that democracy is a better form of government than plutocracy.

Now, we are the new Copernicans. We find ourselves in the early years of a new millennium at a critical inflexion point in the history of civilization. What are the odds that ours is really a pivotal moment in time? I would suggest that the evidence is all around us, if we only have eyes to see. The only difference is that this time the belief system we must overcome is the idea that perpetual, undifferentiated economic growth is the key to prosperity – or even physically possible.



The Copernican Heliocentric System. c.1543

Our challenge is to illuminate this integrated story, and to craft a coherent narrative around the evidence that supports it. Our goal is to use this now empirically grounded and integrated new story to catalyze the already emerging paradigm shift from today's oligarchic and increasingly parasitic brand of capitalism, to a pluralistic system of regenerative economies.

Still, we should also tread carefully, remembering as Meadows instructed, that no paradigm will ever represent ultimate "truth." Regenerative economies are about learning, adaptive change, and the continual evolution of systems. Regenerative Capitalism is a paradigm that addresses the monumental challenges we face at this moment in time as we participate in the ongoing evolution of the human project.

Having absorbed Dana Meadow's wisdom and been deeply inspired by such great storytellers as mythologist Joseph Campbell, I have come to believe that it is only with a new, shared belief system, a shared story, that we can tackle the immense political, social, and economic

challenges we face as we race against time to find our way to the Regenerative Economy. It is my hope that this preliminary narrative sketch contributes to that emerging story.

At this time, as we shift from the ten thousand year old and stable Holocene to the human-controlled and volatile Anthropocene,[37] *it is the logical evolutionary path of our economic system and the creative challenge of our age to usher in regenerative economies, bringing the human economy into holistic balance with nature and ourselves.*

A work in progress…

"IT ALWAYS SEEMS IMPOSSIBLE, UNTIL IT IS DONE."

—NELSON MANDELA

37 Wikipedia describes the Anthropocene as "an informal geologic chronological term that serves to mark the evidence and extent of human activities that have had a significant global impact on the Earth's ecosystems."

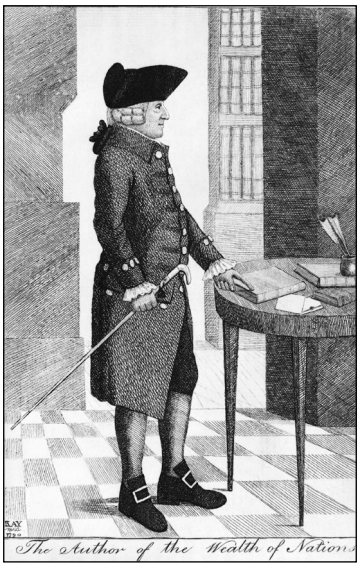
Chapter 2: From a Mechanistic to a Holistic Worldview

"We need to replace the industrial mind with the ecological mind."

– Wes Jackson

The predominant so-called "free-market" economic system today is built around a narrow interpretation of Adam Smith's metaphor of the "invisible hand" in which the acts of individuals and firms in a market economy miraculously self-direct toward an optimal allocation of resources and therefore the highest level of well-being for society.

Yet we forget that Adam Smith set the operation of the invisible hand within a moral context of "sympathy" toward one's fellow man as he described in *The Theory of Moral Sentiments* (1759). My reading suggests Smith uses the word "sympathy" the way today we would use the word "empathy," defined as "the ability to understand and share the feelings of another." This is not Gordon Gekko's invisible hand as portrayed in the 1987 film *Wall Street.*



Adam Smith.

Furthermore, no thinking person in the 21st century would credibly suggest that an "invisible hand" alone can solve the crisis of climate change, despite the important role that fair and transparent markets can play as a tool to address it. Nor is it any longer a defensible intellectual stance that the invisible hand will take care of chronic unemployment or contain exploding inequality.

At the same time, conventional thinking on the left would suggest that when markets fail to solve problems, the government must step in and act on society's behalf. Many government programs and regulations have achieved remarkable success in this regard. Yet again, no thinking person in the 21st century can deny that government solutions often come with excessive bureaucracy, waste, and too often ineffectiveness as well. This is not to suggest that more effective government involvement in the economy, addressing needs that the private sector alone is incapable of handling, should not be a priority.

We are left with the reality that within the current market system context, we are trapped in an ongoing debate – more government to constrain markets and fill the needs that are not being met, or less government with the inefficiency and unintended consequences that come with it. Is it possible that both sides have a point?

Our premise here is that the free-market versus government intervention debate is a classic divergent or wicked problem. The world is full of such problems, like freedom versus order, justice versus mercy, or discipline versus creativity. Unlike simple convergent problems such as those found in basic mathematics, the more one wrestles with complex questions, the more the answers diverge. The only solution is to transcend the problem through cognitive processes that go beyond the reductionist logic that has informed the way we have seen the world ever since the Enlightenment. This new way of reasoning requires us to step back and think in systems in order to understand what determines system health. It requires an inquiry into complexity science and holistic decision-making in order to grapple effectively with the wicked problems of the age.

SEPARATE PARTS VERSUS DYNAMIC WHOLES

We are in trouble because modern economic theory and the practice of finance especially, now the dominant global frameworks around which modern civilization is organized, remain dangerously grounded in an outdated mechanistic worldview that fails to reflect the reality of the more accurate living-systems worldview.[38]

Capitalism as practiced today is in question[39] for good reason. Neoliberal economics —the mechanistic, equilibrium-based theoretical construct for today's dominant form of capitalism — is built on several false

"TWO CONCEPTS WILL DETERMINE THE COURSE OF CIVILIZATION IN THE NEXT MILLENNIUM: RELATIVITY AND HOLISM."

- ALBERT EINSTEIN

38 Robert Nadeau in "Ethics, Economics, Finance and Governance for the Anthropocene." http://capitalinstitute.org/our-projects/third-millenium

39 "Capitalism in Question" was even the theme for the Academy of Management's 2013 annual conference.

assumptions[40] that will never be addressed by contemporary political debates about how to reign in the irresponsible financial sector or how to address inequality.

Neo-liberal economics assumes the primacy of the individual and that broad-based prosperity can be achieved through the operations of unfettered, free markets that efficiently allocate resources, presumably maximizing what economists call the "utility" of the participants in the system. Its mental model contains a number of assumptions, which are, in fact, all fatally flawed. These unquestioned beliefs include that the economy is separate from the biosphere and the environment, and that maximizing profits for shareholders, growing GDP, and optimizing consumer material utility (more stuff) all lead to prosperity. Another assumption is that when markets are fair and transparent, they will efficiently allocate scarce resources, irrespective of temporal considerations.

"THERE IS NOTHING WRONG WITH BEING REDUCTIVE, SO LONG AS WE DON'T THINK THE WORLD IS LIKE THE METHOD."

– WES JACKSON

Each of these core assumptions is grounded in an outdated mechanistic worldview that is at odds with today's scientific understanding of the world. Today, most researchers realize that, as John Muir said, "When we try to pick out anything by itself, we find it hitched to everything else in the Universe." Unfortunately, one of mechanism's core tenets is that everything in the world can be broken into separate parts with little or no reference to the patterns of relation among those parts. French philosopher Rene Descartes, for example, maintained that to understand a complex phenomenon you need to break it down to its component parts (reductionism).

Mechanism's dangerously reductionist way of viewing the world is so deeply entrenched, however, that most scientists and laypeople alike – including many politicians and economists – equate scientific thinking with analytic, reductionist methods.[41]

People who see economies as separate from other parts of society and the biosphere often

40 Daly, H. and Farley, J. 2003. *Ecological economics, principles and applications*. New York: Island Press; and, Nadeau, R. 2006. *The environmental endgame: mainstream economics, ecological disaster, and human survival*. New Brunswick, New Jersey: Rutgers University Press.

41 Nadeau, R. 2012. *Rebirth of the sacred, science, religion, and the new environmental ethos*. New York: Oxford University Press.

ignore (or address separately) the harm done to other parts of society and the biosphere. Most leading business schools, for example, still teach the mechanistic idea that optimizing near-term "shareholder value" should be a firm's primary goal. This idea poses a clear and present danger to the health of human communities and all life on Earth because it assumes the firm is separate from the greater whole of society, as well as from the biosphere upon whose life-supporting functions the firm, its employees, and its customers depend. No amount of precision in reductionist thought can ever remedy the harm done by ignoring such critical relationships. Instead, a first crucial step must be to shed light on the problem by putting honest prices (to the extent possible) on wastes that harm other parts of the system, as well as the inputs and services they provide.

Consequently, mechanism's simplistic approach inhibits our ability to grasp the meaning of the whole in all its complexity. Even more critically, human agency and creativity have no place in this framework whose metaphor is a machine, impervious to change triggered by the participants of the system's collective actions.

In contrast, the scientific worldview emerging today takes up Muir's perspective and extends it rigorously into the human world. Originally called holism and now referred to under titles ranging from Systems Theory and complexity to the ecological or living systems worldview, the fundamental tenet of this more sophisticated science is that whole systems can only be understood through the dynamic relationships among all parts. This brings us to another regenerative hypothesis:

> *The principles of holism, which underlie a systems worldview and drives the co-evolutionary process in living systems and nonliving flow networks alike, must be extended to our understanding of the human economy, replacing the flawed, reductionist, mechanistic, and destructive logic of so-called "industrial efficiency."*

Jan Smuts introduced the idea of holism in his 1926 book *Holism and Evolution.* He defined it as "the tendency in nature to form wholes that are greater than the sum of the parts through creative evolution."[42] For example, two molecules of hydrogen and one molecule of oxygen when joined chemically create water, a new "whole." Similarly, the human body, including the human mind, is far greater than the sum of its cellular and functional parts.

42 Smuts, J. 1926. *Holism and evolution*. New York: Macmillan & Company Limited.

Smuts observed that this quality is constant throughout the natural world (living and non-living), and importantly, the tendency toward the creation of wholes drives the creative evolutionary process. "Holism, as the operative factor in the evolution of wholes, is the ultimate principle of the universe."[43]

How different holism is from the reductionism that informs our current mindset and upon which our Newtonian, mechanistic worldview is based! A holistic or systems worldview challenges much conventional religious thinking by placing humans within nature,[44] not separate from or above it. We are participants in the biosphere and the evolutionary process itself. In such a worldview, the environment is not an "issue" or a "special interest." The environment is us, or more accurately, we are a part of the greater whole that is the environment and beyond, just as an organ of our body is made up of cells. We are part of One Whole, embedded in and inseparable from civilization and the environment.

The words "economy" and "ecology" both come from the Greek "oikos" meaning "household," which applies equally at all scales from individual households, all the way up to planet Earth itself, literally our home in the universe. So economy, literally the "management of the household," is inseparable from "ecology," which means "the study of the household."[45]

Critically, regenerative principles will demand we shift from a competitive, mechanistic worldview to a more collaborative, ecological worldview. It will also require we acquire a sophisticated understanding and comfort with *complexity*. This will demand that we discover our humility as a species.

To be clear, when we invoke the evolutionary model and metaphor we are not alluding to the common misinterpretation of the Darwinian notion of "survival of the fittest" (actually a term coined not by Darwin but by the English philosopher Herbert Spencer), nor his theory of evolution by natural selection. Social Darwinists have often willfully misconstrued these terms

43 Smuts, J. 1926. *Holism and evolution.* New York: Macmillan & Company Limited.

44 See Brown, P. and Garver, G. 2009. *Right relationship: Building a whole earth economy.* San Francisco: Berrett-Koehler Publishers; and Victor, P. 2008. *Managing without growth: Slower by design, not disaster.* Cheltenham, Gloucestershire, UK: Edward Elgar Publishing.

45 Daly, H. and Cobb, J. 1989. *For the common good.* Boston: Beacon Press.

to justify the most hyper-competitive and anti-social behaviors of capitalism. Darwin would not have agreed with these interpretations, which are inconsistent with modern biology's understanding of the role competition plays in nature. As we shall see, when Darwin used the phrase "fittest," he was referring to a species that "best fit" its particular environment.

Biologist and biomimicry expert Janine Benyus further emphasizes that "life is a team sport!" As she says, it is "collaboration rather than competition that is the survival mechanism in natural systems." Organisms evolve out of competition as quickly as possible because it is bad for all parties. Thus the giraffe evolved with a long neck in order to eat from the top of trees, so as not to compete with the zebra.[46] Weeds compete, grow fast, and die. Life in mature and sustainable forests is collaborative at its core.

"I'M NOT TRYING TO COPY NATURE. I'M TRYING TO FIND THE PRINCIPLES SHE'S USING."

– R. BUCKMINSTER FULLER

BEYOND MERE METAPHOR: THE EMPIRICAL SCIENCE OF FLOW

Today, the scientific study of self-organizing, flow systems is turning this general holistic worldview into precise, empirical understandings of health, growth, and development.[47] This rigorous research means that Regenerative Capitalism need not be based merely on loose ecological metaphors, but rather has empirical substance grounded in the science of energy flow networks. Appendix A, "The Science of Energy Flow Networks," authored by Dr. Sally Goerner, provides an overview of the hard science underpinning regenerative economics. I excerpt only a few key insights from the Appendix here, but strongly encourage readers to take a detour to it.

> The big discovery here is that many of the same physical laws that govern health and development in ecosystems and living systems are common to all flow networks – and therefore apply equally to human networks such as economies and societies.

46 Author's personal communication with Janine Benyus (2012).

47 Prigogine, I. *From being to becoming.* 1980. New York: W. H. Freeman and Company.

In her 2000 book *The Nature of Economies*, Jane Jacobs suggested that economies are governed by the same rules as nature itself. Her actual hypothesis, however, was that living organisms, ecosystems, and economies are all types of flow networks, and that similar principles of growth and development apply to them all.

Jane Jacobs

The study of flow simplifies the study of systemic health by providing a logical basis for systemic behavior that holds regardless of whether the network under study is a single living organism, a nonliving network such as the Internet, an ecosystem, or the entire economy itself. This simplification is a result of the fact that the basic dynamics of flow are universal.

The existence of universal patterns then provides precise targets for systemic health and development that take us far beyond metaphor. Geometrically precise patterns – that play out in every kind of system at every level of our world – have been the object of both awe and science since the ancient Greeks labeled them "sacred geometries" over 2,500 years ago. Today most researchers believe such patterns exist because they support some aspect of systemic health. The study of fractals provides a modern example of how universal patterns provide precise, measurable targets for optimal systemic health.

> This combination of universal principles and measurable targets of systemic health provides a truly powerful framework for rethinking capitalism, and the public policy agenda that will support long-term economic health. Fractals, for example, provide a measurable understanding of healthy hierarchies. The combination of universal principles and measureable targets also confirms growing suspicions that imbalances, such as the shrinking middle class and domination by "too big to fail" organizations, are dangerous to systemic health – while at the same time providing precise explanations and targets for what constitutes too big, or too few.

The next section outlines some of the implications this rigorous and scientifically grounded form of holism holds for business, finance, and economics.

CREATING REGENERATIVE ECONOMIES USING THE LAWS OF A HOLISTIC UNIVERSE

Our latest scientific understanding tells us that, notwithstanding its many achievements, today's form of capitalism rests upon outdated reductionist thinking that is fundamentally at odds with both the finite boundaries of the biosphere[48] and the laws of systemic health in an interconnected world. Despite lifetimes of admirable struggle and superficial signposts of progress, our effort to address symptoms instead of causes is a losing battle that has blinded us to the underlying decay in our economic fabric. It is now clear that those leaders of commerce and governance who seek to support the transition to a Regenerative Economy must discard the outdated intellectual maps that created today's crises, and instead help chart a new course using a new intellectual map.

> "IT'S NOT HOW BIG YOU GROW; IT'S HOW YOU GROW BIG."
>
> – JANE JACOBS

As we work to craft our new road map, our goal must be to ground Regenerative Capitalism in both the solid empirical understandings of the laws and patterns of systemic health, and in wisdom traditions that have stood the test of time and which are remarkably aligned with this new scientific understanding.[49] Instead of the self-serving, command-and-control methods we so often use today, we must seek to align our planning and policy interventions with the self-organizing, self-nourishing, self-regulating characteristics of healthy systems in nature.

We are just now beginning to realize how profound this Copernican shift will be. For instance, because the science of flow is about networks, its big realization is that the only way to build a vibrant economy is to build healthy human networks. This focus on human networks brings a new vision of the relationships and values needed to build vibrant economies. Because it is a

48 Capital Institute. 2012. "Ethics, Economics, Finance and Governance for the Anthropocene." http://www.capitalinstitute.org/sites/capitalinstitute.org/files/docs/Economics,%20Finance,%20Governance,%20and%20Ethics%20for%20the%20Anthropocene.pdf

49 Here, wisdom traditions refer to such core concepts as "oneness," which we abandoned in the name of "progress" but which underlies all major spiritual belief systems while remaining in complete alignment with our latest scientific understanding of how all living systems, energy flow networks, and indeed the entire universe actually function. See: Korten, D. 2015. *Change the story, Change the future.* San Francisco: Berrett-Koehler Publishers; and "Third Millennium Economy Report" at http://capitalinstitute.org/our-projects/third-millennium/

(relatively) exact science, it provides the solid foundation and effective measurement tools we need to build a healthy Regenerative Economy.

This Copernican shift in vision changes the context of economic discussion by showing that:

- Small, medium, and large are all necessary. The trick is to avoid excesses, to maintain a proper balance of competitors at every scale, and to keep members at all levels serving the health of the whole and not just their narrow self-interest.

- Some inequality is to be expected, but too much is deadly for economies and societies.

- Powerful elites have a special responsibility not to use their power for self-serving ends. Society must have a mechanism to ensure that this vital component of systemic health is upheld. Greek democracy to Athenian hegemony, Roman Republic to Roman Empire, American free enterprise democracy to modern corporate oligarchy – history shows again and again that we have not perfected this requirement yet.

- Robust cross-scale circulation is critical. Excessive concentrations of financial wealth and excessive draining of lower levels can destroy an economy by stifling circulation.

- Both systemic efficiency and resilience are necessary, and too much or too little of either one causes problems. These problems can be catastrophic, as we have seen from finance's relentless pursuit of "shareholder value" in the name of "capital efficiency" – when what is needed is a more integral understanding of stakeholder value.

We will expand on these ideas in Chapter 3. What is critical here is to understand that the new hard science of whole systems brings a new level of rigor to our practice of business and governance, while also providing an empirical foundation for our abiding belief in the need for justice, integrity, and ethics in business, finance, and economics at large. Where we previously had only a vague idea of how human economies should mirror nature's design for vitality, we now also know that regenerative economies should follow fractal[50] patterns that integrate the contributions from a diverse array of unique individual households, communities, and regional

50 A fractal is a natural phenomenon or a mathematical set that exhibits a repeating pattern that displays at every scale.

networks to the global-scale economy. We also now see that this unified global perspective stands atop and provides coherence for the infinite unique contexts of specific local cultures and places, at all scales.[51]

Instead of merely being connected to all things, we also now know that all things on earth and even in the cosmos at large co-evolve – a fact solidly grounded in the physical and mathematical study of flow networks and central to Smuts' theory of holism. Consequently, as pre-eminent systems scientist Stuart Kauffman explains, "We live in a universe, biosphere, and human culture (including economy) that are not only emergent, but radically creative. This is a central part of the new scientific worldview." Consequently, Kauffman continues, "like the biosphere, the global economy is a self-consistently, co-constructing, ever-evolving, emergent whole."[52]

"Speculators may do no harm as bubbles on a steady stream of enterprise. But the situation is serious when enterprise becomes the bubble on a whirlpool of speculation.

— John Maynard Keynes

The hard science of holism even helps us debunk some of the unexamined assumptions mentioned at the beginning of this chapter. We now know, for example, that:

- The economy is not separate from the biosphere or the society in which the economy is embedded. A vast literature largely ignored by mainstream economists on both the left and the right methodically critiques modern economic theory to show that the economic system is in fact embedded in the biosphere, not separate from it.[53] The failure of modern economic theory to acknowledge this reality has had profound consequences, not the least of which

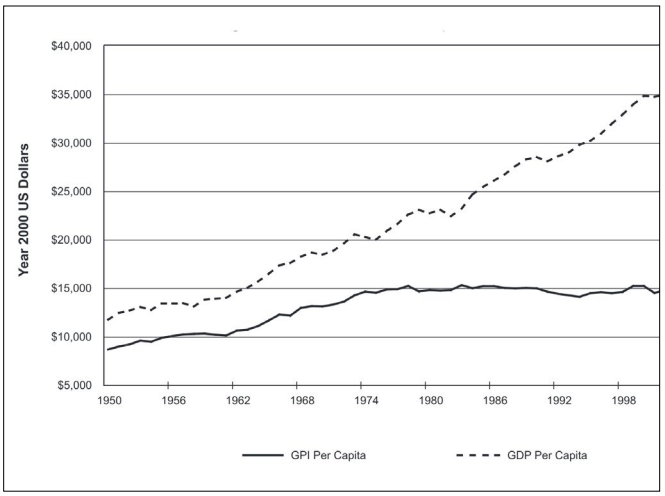
51 Fractals provide a foundation for local uniqueness because, like snowflakes, the same repeating pattern manifests in unique ways as determined by the unique context in which it emerges. So, while fractals seen in lungs, lightning bolt, and trees are universal patterns, no lungs, lightning bolts, and trees are ever exactly the same.

52 Kauffman, S. 2008. *Reinventing the sacred; A new vision of science, reason, and religion.* New York: Basic Books. p.5.

53 The brilliant thinkers contributing to this literature include Nobel Laureate Frederick Soddy, Nicholas Georgescu-Roegen, Kenneth Boulding, Herman Daly, Robert Costanza, Hazel Henderson, Tim Jackson, Peter Victor, Peter Brown, Robert Nadeau, and their many colleagues.

is global climate change, which Sir Nicholas Stern called "the greatest market failure ever."[54] I would say it is more than a market failure; it is an error in theoretical framework.

- Maximizing profits for corporate shareholders, optimizing "consumer material utility," and growing GDP do not automatically lead to prosperity – at least not stable, widely shared prosperity. For example, research using the Genuine Progress indicator suggests genuine progress decoupled from GDP growth in the U.S. around 1980.[55] Not only do human, community, and environmental well-being often go down when shareholder profits and GDP go up, but a growing mountain of evidence suggests that people care about much more than simply "maximizing material utility." Indeed, a vast cohort of researchers is now documenting the richness and depth of values that contribute to human prosperity beyond material wealth. This work generally shows that once a certain threshold of material wealth is secured, more material goods become increasingly less important to our well-being.[56] These truths, of course, underlie all the world's great religions, and are well-established in modern psychology by work such as Abraham Maslow's a "hierarchy of needs."[57]



Real GDP and Genuine Progress Indicator per capital 1950-2004. Source: Talberth, Kobb, et al. 2007.

54 Stern, N. 2006. "Stern Review on the Economics of Climate Change." HM Treasury, London. http://webarchive.nationalarchives.gov.uk/+/http:/www.hm-treasury.gov.uk/sternreview_index.htm; Can be found at the Wiley online library at: http://onlinelibrary.wiley.com/doi/10.1111/j.1728-4457.2006.00153.x/abstract

55 http://www.bu.edu/pardee/files/documents/PP-004-GDP.pdf?PDF=pardee-paper-004-beyond-gdp

56 See, for example, Schor, J. 2010. *Plentitude: The new economics of true wealth*. New York: Penguin Press; Also see the work of New Economics Foundation on well-being at http://www.neweconomics.org/issues/entry/well-being

57 Maslow, A. 1943. "A theory of human motivation." *Psychological Review*. Http://psychclassics.yorku.ca/Maslow/motivation.htm

- Laissez-faire markets (alone) cannot always be counted on to find optimal solutions to allocate scarce resources in a timely and effective manner. One of the key assumptions underlying today's dominant economic framework is the idea that the "price mechanism" can always be counted on to drive innovation and the development of new alternatives in an optimally timely and effective manner. In this view, when a resource or good becomes scarce, prices will rise, stimulating innovation and leading to the rapid and effective development of alternative resources or goods. While this mechanism works reasonably well within short time horizons and among easily substitutable goods, that does not mean the price mechanism and markets can solve all of our allocation needs. Understood holistically, we see that some inputs are not substitutes but complements, such as, most critically, natural capital and financial capital and human capital. Furthermore, not only can powerful players manipulate prices to effect local agendas (as is currently happening with central bankers on interest rates or Saudi Arabia on oil), but price cannot always drive the development of some critical resources in a timely manner. Global climate change, for example, has led to increasingly severe and extended droughts such that some major cities in both the American South and Southwest have periodically been reduced to less than a 90-day supply of water. Having already extended their water systems to drain water unsustainably from as far away as Colorado, no amount of higher prices will make a substitute for water magically appear in California. Furthermore, as critical resources become increasingly scarce, the equity issues magnify exponentially unless the system is capable of self-maintaining and self-regulating. It is one thing to be priced out of buying a Monet, it is another thing altogether to be priced out of access to clean fresh water.

Shifting from outdated mechanistic science to a science of holistic thinking will be hard because reductionist thinking serves a useful purpose. It has also been engrained in human thinking for centuries, and often goes unexamined. It will take great courage for leaders to step back, reflect, and reconnect with the essence of our humanity and the real sources of lasting economic vitality. But at least the holistic path out of our crises is now becoming clear.

With this context in mind, let us now shift to what we see as eight key principles of Regenerative Capitalism in the next chapter.

Chapter 3: Eight Key Principles of Regenerative Capitalism

"Your paradigm is so intrinsic to your mental process that you are hardly aware of its existence, until you try to communicate with someone with a different paradigm."

– Donella Meadows

Science tells us that today's dominant form of capitalism uses outdated reductionist thinking that is fundamentally at odds with both the finite boundaries of the biosphere[58] and the laws of systemic health in an interconnected world. What I am suggesting is that we are running the world on a bankrupt theoretical construct; so why are we surprised that it feels so out of control?

Let me say clearly up front, regenerative economics is NOT about capitalism versus socialism. From a regenerative perspective, neither the current form of capitalism nor socialism is a sustainable system. Regenerative economics is also not merely a mid-ground position, but an effective integration of the best of both right and left combined with a modern scientific understanding of how the universe actually works which, by the way, we did not have in the age of Adam Smith or Karl Marx! In alignment with more left-leaning political thought, regenerative economics will shed new light on the importance of fairness, and the unsustainability of high and growing inequality. But equally, in alignment with more right-leaning political thought, it will embrace the dynamism of a truly free enterprise system that taps into the unique essence of individual human creativity and drive.

Regenerative Capitalism is not about ending capitalism, but evolving it to produce the inclusive, broadly shared vitality and prosperity its founders envisioned. We believe the laws of systemic health now being uncovered can help this new breed of capitalism produce the kind of durably vibrant human networks upon which all economic vitality depends. What we are saying then, is that the phrase "the network is the system," which now defines the change that is transforming the world of technology, must also be the phrase that defines the transformation of our entire conceptual framework for human economic systems. This is not trivial.

58 Capital Institute. 2012. "Ethics, Economics, Finance and Governance for the Anthropocene," http://www.capitalinstitute.org/sites/capitalinstitute.org/files/docs/Economics,%20Finance,%20Governance,%20and%20Ethics%20for%20the%20Anthropocene.pdf

WHAT IS A REGENERATIVE ECONOMY?

A Regenerative Economy is most fundamentally defined by the following assumption:

> *Economic vigor is a product of human and societal vitality, rooted in ecological health and the inclusive development of human capabilities and potential.*

Note how different this is from conventional economic thinking, which presumes economic vigor is a function of the rate of GNP growth. Our assumption leads to the following characteristics of a Regenerative Economy:

"WITHOUT ADDING VALUE — WITH A CONSCIOUS AWARENESS OF THE ONGOING, CO-CREATIVE AND EMERGENT PROCESSES OF LIFE — LIFE SHIFTS TO A DEGENERATING STATE."

— BILL REED

- Acts in ways that support the long-term health of the whole society – a characteristic which underlies "fitness" in an interdependent world;
- Sees economic and financial health as inseparable from human, societal, and environmental health;
- Values richness and diversity, integrity, and fairness; and seeks excellence through constructive competition;
- Responds to the full gamut of human needs, continuously adapting to changing circumstances, and evolving to higher and more effective levels of organization.

Regenerative economics is a theory of political economy that transcends the contemporary debate between the neo-liberal economics preferred by conservatives on the political right and the Keynesian (or socialist) economics generally preferred by liberals on the political left. In fact, the healthy debate about the role and limitations of State intervention in the economy must continue within a Regenerative Economic system. However, we will find that the objectives of State intervention (whether incentives, regulation, or direct engagement) will be different from those currently advocated by both the left and the right.

The critical difference between regenerative economics, on the one hand, and both neoliberal and Keynesian economics lies in the stated goal of the system.

- Both neoliberal and Keynesian economics use GDP – a measure of the value of goods and services produced nationally – as their primary measure of economic health, and seek robust and stable GDP growth as the objective of economic policy. A range of New Economy efforts now call for alternatives to GDP that measure outcomes of progress and prosperity.[59] In contrast, regenerative economics seeks the development of a mosaic of healthy human networks embedded in healthy societies and the biosphere as the goal. A number of researchers are now working on effective ways to measure healthy development of human economic networks to replace GDP. Some of these efforts are described at the end of Chapter 3.

- Both neoliberal and Keynesian approaches assume prosperity arises out of healthy GDP *growth*, yet fail to acknowledge any biophysical limits to exponential growth. Regenerative economists on the other hand assume prosperity arises out of the relationships and patterns of healthy human networks, within the biophysical constraints of the planet and under its physical laws (not theories).

- Neoliberals and Keynesians argue over how best to generate GDP *growth*. Regenerative economists outline a fundamentally different path to prosperity, that is, how best to support the development of healthy human networks.

In essence, regenerative economies build lasting human, societal, and economic vitality by developing the richness, variety, responsiveness, and integrity of inclusive human networks at every level of global civilization. The task at hand for business, finance, and policymakers is to shift into alignment with the regenerative principles described below that give rise to such healthy human networks.

Regenerative design is not new in the realm of agriculture with integrated organic farms, biodynamic farming dating back to Rudolf Steiner, and holistic planned grazing developed by Allan Savory. More recently, regenerative design has emerged in the field of architecture, led by pioneers such as the Regenesis Group and by Jason McLennan, creator of the *Living Building Challenge*. Both Savory and McLennan are winners of the prestigious Buckminster Fuller Prize.

59 http://www.oecd.org/site/progresskorea/globalproject/42613423.pdf

Regenerative thinking guru Carol Sanford has extended the regenerative design principles to the level of the firm in *The Responsible Business,* and applied them to enterprise leaders in *The Responsible Entrepreneur.*[60] What is new here is explicitly extending the concept of regenerative design to the global economic system of modern capitalism, while offering a new lens to consider the profound shifts still needed in our bloated, unstable, and misguided financial system. Although even here, Regenerative Capitalism is more of a rediscovery and unique integration of existing ideas and practices into a cohesive framework and adapted to the new context of the 21st century global economy.

Natural systems thrive because they are regenerative.

Our body regenerates all of its cells every seven years on average. Sustainability is the outcome, not the design principle. If the human economy and its institutions, and human civilization itself, are to thrive in the long run, they too must operate regeneratively. Figure 2 is derived from regenerative architect Bill Reed's diagram depicting regenerative design in the built environment (buildings and people) but adapted to apply to entire economies.

From the diagram (figure 2), we can see that a multitude of efforts to move from the Mechanistic Design thinking of the "Enlightenment" on the lower left to Natural Systems Design thinking grounded in modern science on the upper right are all part of the journey to a regenerative system that aligns with how we know healthy energy flow networks behave. The low-hanging fruit of energy and material efficiency, the more challenging closed loop business model redesigns, the getting prices true and right, the transparency of integrated reporting, the concept of a triple bottom line – these are all critical parts of the journey.

But notice as well that something magical happens when we tap into the unique creative and not yet seen regenerative potential that exists "above the line." As we move above the line, invoking the power of holistic thinking that encompasses complexity, we not only build on all of the efforts below the line, but we suddenly achieve a new understanding of what is possible. For example, only years after the Internet was invented did the possibilities of search and social media manifest, unlocking unprecedented "above the line" regenerative potential (and of course new challenges as well). Understanding the conditions that enable us to unlock

60 http://carolsanford.com/

this creative regenerative potential, thereby mimicking the abundance found in the natural world, is the key challenge to transforming our economics.

We now turn to examine the principles of regenerative vitality, what the principles would imply for a Regenerative Economy, and then look at some examples of Regenerative Capitalism emerging in the real world.

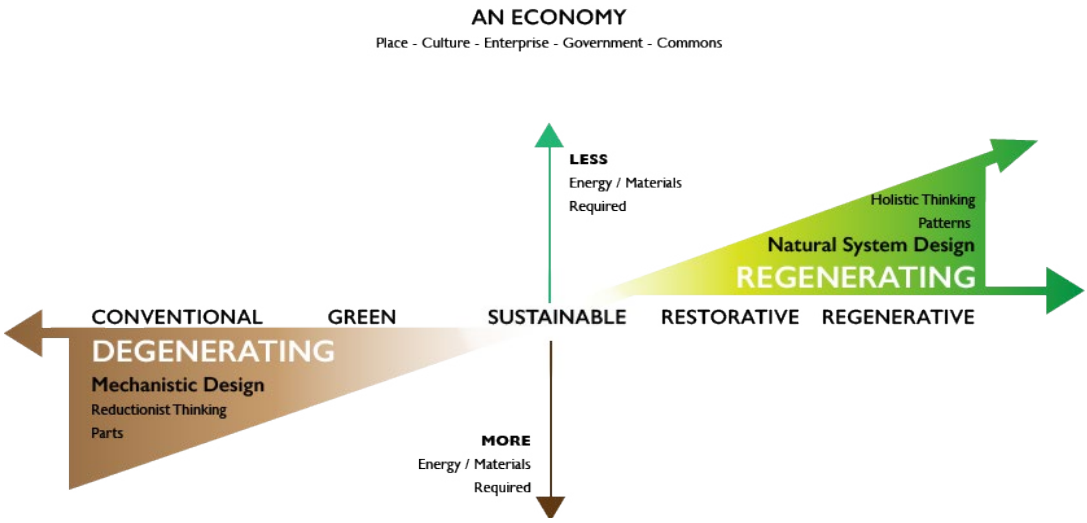


Figure 2: Source: Adapted from "Trajectory of Ecological Design" (courtesy of Bill Reed).

HOW DO YOU BUILD REGENERATIVE VITALITY? – 8 KEY PRINCIPLES

Close examination of the above characteristics of regenerative economies suggests that they are exactly what we had hoped our free enterprise economic system would be. Since today's dominant form of capitalism has not produced these outcomes, I would argue that its theorists have an erroneous view of how to make free enterprise blossom as it should.

I believe Regenerative Capitalism represents a more effective realization of free enterprise made possible by a more acute understanding of how to make free enterprise networks healthy in a complex, interdependent world. Consequently, the second step in building a Regenerative Economy is to identify the operating principles that lead to and support widespread, long-term, regenerative vitality.

My experiences with regenerative entrepreneurs, practical people realizing the potential of the upper right in the diagram in the real world, as well as my exploration of systems theory, biomimicry, ecology, and the physics of flow networks has led me to the following list of the eight key principles of regenerative vitality:

1. In Right Relationship
2. Views Wealth Holistically
3. Innovative, Adaptive, Responsive
4. Empowered Participation
5. Honors Community and Place
6. Edge Effect Abundance
7. Robust Circulatory Flow
8. Seeks Balance

"IT IS THE THEORY THAT DECIDES WHAT CAN BE OBSERVED."

– ALBERT EINSTEIN

In order to bring clarity to each concept, I describe it separately and explore its unique implications for the profound economic system transition that awaits us. But, consistent with systems thinking, which demands we think in relational patterns, for a Regenerative Economy to be healthy, all eight principles must be present, working together in an integrated whole. Consequently, these conditions are not an à la carte menu from which we can pick and choose, but an overarching pattern of qualities and principles that feed into one another – overlaps and interactions among them all are to be expected. Please also remember that this is not an exhaustive list, and it can be presented in different ways.

With these caveats in mind, let us temporarily return to a reductionist mode in order to illuminate eight key qualities required for regenerative health.

1. IN RIGHT RELATIONSHIP

As we have seen, both modern science and holistic thinking teach us that we are an integral part of an interconnected web of life in which there is no real separation between "us" and "it." [61] Theoretical and empirical work by Herman Daly and Robert Costanza, two of the

61 Capra, F. 1997. *The web of life: A new scientific understanding of living systems.* New York: Anchor Press.

founders of the field of Ecological Economics,[62] turn the idea that "it is all one system" into a rigorous explanation of why scale and limits matter, and why basic physics confirms that never ending, exponential material throughput growth on a finite planet is physically impossible. Furthermore, "one system" explains why human economies, properly understood, are so deeply embedded in both societies and the biosphere (as depicted in Figure 3) that excessive damage to any one part ripples back to harm every other part as well.

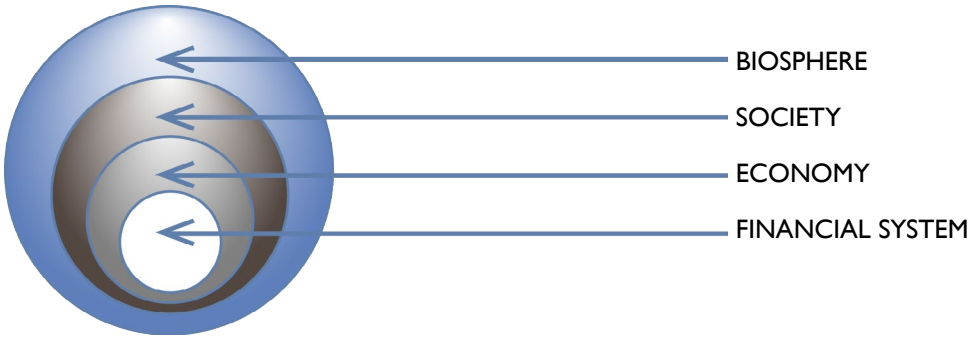


Figure 3. Finance and the economy embedded in society and the biosphere.

This and other work also teaches us that parts only become regenerative wholes when they combine in symbiotic relationship with one another, creating a unity that is far greater than the sum of its parts. Salmon, for example, play a value-adding role in regenerating life in a river system and associated forests and prairies. Even more profoundly, work by biologist Lynn Margulis shows that all complex organisms – from eukaryotic cells to mammals like us – are actually symbiotic collaborations of previously independent smaller organisms. [63]The same kind of symbiotic collaborations of independent entities also describes the interdependent system we call society.

> *The fundamental definition of fitness in such an interdependent world is to act in ways that serve the long-term health of the whole.*

62 Environmental economics is essentially the neoliberal framework with an attempt to integrate externalities into it. Such an attempt is a correct beginning, but ultimately an impossible solution to the shortcomings of the neoliberal framework.

63 Margulis, L. 1998. *Symbiotic planet: A new look at evolution.* New York: Basic Books.

In essence, this means that value-adding economic exchanges must be anchored in the context of healthy relationships. Consequently, the first and most central regenerative principle is that:

> *Our long-term economic health and even the survival of the human species requires that we be in what Peter Brown calls "right relationship"[64] with each other and the broader host systems of which we are part, and upon which we depend.*

The most important aspect of "right relationship" is synergetic collaboration. Thus, in contrast with conventional thinking, current research shows that collaboration, not competition, is the defining quality in both business and life.[65] While competition still serves an important winnowing role, collaboration is core because it increases development and reduces risk. Margulis, for example, shows that land plants emerged out of an immortal marriage between photosynthetic algae in ponds and lichens on land because the qualities of each enhanced the combination's ability to survive and expand their territory across dry land. In ecosystems, less mature species compete until environmental pressures force them to develop mutually beneficial relationships with other species, which allows them to thrive continuously in more efficient niches. Weeds compete, grow fast, and die. A rainforest is rich, highly evolved, resilient, and lasts for millennia, providing, in the process, vital services to the whole system of which it is a part.

In other words, as Janine Benyus says, "Life is a team sport."

An understanding of fractals teaches us that all levels within the system must live "in right relationship" as well. Regenerative economies are built on nested, fractal relationships across many levels, ranging from individual human beings, their families and communities to their regions, countries, global civilization, and the biosphere as a whole. While each subcomponent can be seen as a "whole," they can never be viewed as separate. Instead, since all levels are interdependent, to whittle away at the health of the small-scale economies and ecosystems is to undermine the health of the larger ones as well.

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64 Brown, P., and Garver, G. 2009. *Right relationship: Building a whole earth economy.* San Francisco: Berrett-Koehler Publishers.

65 Author's personal communication with Janine Benyus. Also see Benyus' talk on collaboration in nature at Google: https://www.youtube.com/watch?v=IzS7CRaCEtU

While competition dominates conventional economic thinking, examples of collaborative development abound in the business world already. The open-source movement in software provides a good example, as does social networking tools on the Internet. Even large-scale corporations can be seen as an example of complex specialization and supply-chain integration made possible by collaborative efforts. That said, like an adolescent boy reverting to fighting when challenged on the playground, a constant tension and reversion to aggression and competition under duress is to be expected along the evolutionary path. (One is reminded of the Goldman Sachs senior executives defending their sub-prime mortgage business practices in front of the U.S. Congress.) If the pattern of evolution continues as it has through life, then eventually businesses will evolve mutually beneficial "coopetition" arrangements with each other, the public, employees, and the planet that expand the power, intricacy, sustainability, and vitality of our societal whole.

What would an economy "in right relationship" look like?

Economies are understood to consist of many levels of nested "wholes," each of which has unique qualities and contributions defined by place and culture. When managing multi-leveled systems, the bias is always towards:

1. *Systemic health* – decisions are made and implemented with an eye to mutual benefit and health across all levels and systems. For example, educational systems are largely in the hands of local jurisdictions. However since effective citizens are crucial to the entire system, taxes are gathered across larger-scale jurisdictions and distributed equitably among richer and poorer districts, thus enabling all children to have an equal opportunity to fulfill their potential, and in doing so, contribute to the health of the whole.

2. *Subsidiarity and scale-appropriate decision-making* – decisions are made at the lowest level possible. Thus, in a Regenerative Economy, the emphasis is on city and regional planning, while national and global agendas focus primarily on issues that cannot be addressed at those levels.

In business, "in right relationship" can be seen in the Stakeholder Theory of Management. In the traditional Shareholder view, only the stockholders of a company are important, and the company has a fiduciary responsibility to put their needs first – a responsibility which has largely been interpreted to mean increasing the value of their stock. Cornell Law School

Professor Lynn Stout argues persuasively that this interpretation is flawed as a matter of law, and that the "business judgment rule" gives directors of corporations much wider latitude. [66]

In contrast, Stakeholder Theory, originally developed by R. Edward Freeman[67] and central to Carol Sanford's depiction of *The Responsible Business*,[68] redirects business focus by expanding the scope of "who or what really counts." Stakeholder Theory describes how management can give due regard to the interests of other stakeholders, including employees, customers, suppliers, communities, financiers, governmental bodies, trade associations, the environment, and even competitors. In a regenerative view, being "in right relationship" with all stakeholders is essential to long-term economic and organizational health, and is therefore the primary "fiduciary duty" of corporate directors.

"In right relationship" with the earth means the conventional economic assumption of the separation of natural resources as inexhaustible inputs and wastes as outputs deposited into the environment without cost and regardless of toxicity, is replaced with realization that there are no "externalities" to a healthy, whole system. [69]The only way for the economy to remain viable is to keep a constant eye on maintaining reliable inputs and healthy outputs in the endless flow that circulates throughout and across all levels.

But, just as the earth provides essential life-sustaining functions,[70] so too do the functions of a healthy society provide the essentials of maintaining healthy communities, economies, and civilizations. Just as we now know harming the environment is problematic, so too the

66 Stout, Lynn. 2012. *The shareholder value myth: How putting shareholders first harms investors, corporations, and the public.* San Francisco: Berrett-Koehler Publishers.

67 Freeman, R. Edward. 1984. *Strategic management: A stakeholder approach.* Boston: Pitman.

68 Sanford, C. 2001. *The responsible business, Reimagining sustainability and success.* New York: Josey Bass.

69 "Externality" is a term economists use to describe costs or benefits not captured in the prices of an economy. Just as managing material and financial scarcity defined the economic problem of the 20th century, managing the "externalities" of today's 21st-century economic system – both ecological and social, in the context of extreme inequality – must come to define today's economic problem. Redefining the problem we are trying to solve means we need a new conceptual framework adequate to this new job.

70 For a rigorous examination and attempt at quantification of the earth's life sustaining ecosystem services, see "The Economics of Ecosystems and Biodiversity," (TEEB) http://www.teebweb.org/

financial crisis of 2008 provided a harsh reminder that the financial system must be "in right relationship" with the real economy and the larger society in which both are embedded. Furthermore, the relationship works both ways. Harming the real economy through financial malfeasance is deadly to the financial system as well. In an interconnected world, all interests are aligned, whether we realize it or not.

A Regenerative Economy with these realizations makes adjustments such as:

- Enabled by smart infrastructure and technology investment, material consumption in the developed world decelerates to allow developing economies to reach a level of equitable and sustainable material prosperity.

- The global energy system transitions off fossil fuels to 100 percent renewables,[71] an acknowledgement that heat trapped in gasses threatens the health of the whole.

- The agriculture sector transitions to a holistically managed, organic system – that research now shows can be more efficient than industrial agriculture[72] – free of fossil fuel dependency and toxic chemicals.

- Naturally regenerative materials are used at a sustainable rate.

- Finite resources are governed by an ethic of thrift, exploiting "Factor Five"[73] resource efficiency potential, and reclaiming, recycling, and remanufacturing as much as possible. Industries from electronics to aerospace that are today dependent upon finite resources are reinvented to be less so.

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71 Jacobsen, M. and Delucchi, M. 2009. "A Plan to Power 100 Percent of the Planet with Renewables." *Scientific American* online: http://www.scientificamerican.com/article/a-path-to-sustainable-energy-by-2030/

72 See for example, Rodale Institute's "Farming Systems Trial" at http://rodaleinstitute.org/our-work/farming-systems-trial/; or UNCTAD's "Wake up Before it is Too Late," http://unctad.org/en/PublicationsLibrary/ditcted2012d3_en.pdf

73 von Weizsacker, E.U. et al. 2009. *Factor Five: Transforming the global economy through 80% improvements in resource productivity.* New York: Routledge.

- The planet's degraded ecosystems are restored to highest functionality. This begins with the natural carbon sinks (natural systems that absorb carbon) we know how to manage: the grasslands and forests.

- The chemical industry is transformed primarily to water-based chemistry, or approaches known not to be toxic to health, since we know that neither human nor ecosystem health is possible with destructive toxins in our environment.

- The primacy of healthy, trusting, "right relationships" over transactions in our system of commerce and particularly in finance is reasserted. For example, we learned in the 2008 financial crisis that the anticipated efficiency gains from extreme securitization in the U.S. mortgage market proved to be not only unresilient but highly destructive when the creditor/borrower relationship was not only not "right," but was completely severed.

- Population growth is controlled as we recognize that we must slow down the consumption of the natural capital that is essential to the survival of all living systems.

2. VIEWS WEALTH HOLISTICALLY

In keeping with a holistic understanding of true wealth, Regenerative Capitalism requires that we expand the meaning of "capital" to include multiple forms of capital aligned with our core human values, including the vital patterns of their interdependencies.

Nowhere will the transition to a truly Regenerative Economy be more challenging than in its value system. True wealth is not merely money in the bank or the accountant's "plant and equipment." It must be defined in terms of the well-being of the whole, achieved through the harmonization of multiple kinds of wealth or capital, and critically, a broadly shared prosperity.

Contemporary economics and finance seek to condense all value into immediate monetary terms (present value) in order to drive decision-making through quantitative analysis, predominantly at the level of the firm or individual. Qualitative factors such as balance, beauty, or stress – that do not lend themselves to monetization – fall outside the language of accounting and the scope of mainstream economics. This was done intentionally, to keep

accounting simple, perhaps without due consideration to the unintended consequences to our value system (what gets measured gets valued).

Because our decision-making is centered at the level of the firm, our economic decisions also fail to take into account the larger context[74] within which a firm operates. For example, substituting software for people may improve margins and increase the productivity of an individual firm, but it does so without reference to the social costs that ultimately impact the health of society as a whole. Those negative impacts are now manifesting in the structural unemployment and underemployment affecting most economies and societies. The current trajectory of our system and our technology choices, such as the increased use of robotics, suggests this will only get worse in the years ahead.

"A CYNIC IS SOMEONE WHO KNOWS THE PRICE OF EVERYTHING AND THE VALUE OF NOTHING."

– OSCAR WILDE

We also face the twin crises of underemployment, and wasteful, harmful, energy/material throughput that continue unchecked thanks to flawed economic thinking that fails to make a distinction between savings made by cutting labor or by cutting energy or material. While common sense says that the economy will do better with more jobs and less pollution, the stock market runs on economic thinking that sees no difference between money saved by workforce reductions and money saved by reducing fossil fuel usage.

At the same time, climate change poses risks to all life on earth, and individual enterprises and people take actions that impact our climate every day – but we have no shared understanding of how to manage these innumerable impacts on this critical commons. What share of the remaining carbon budget (how much carbon the atmosphere can absorb before tipping the planet into dangerous climate change), for example, should be allocated to General Electric versus General Mills, or General Motors versus Net Jets? Who decides? Such questions quickly bring us to an ethical dilemma, where perfect markets, perfectly transparent and integrated corporate reporting, and the most professional standards of carbon emissions management offer little help.

Conceptually these costs are "external" to the firm but, from a holistic perspective, there are no externalities. It is all one system. Consequently, when a firm makes decisions in its short-term

74 See "context-based sustainability" at: http://www.sustainableorganizations.org/index.html

interests, those decisions often have negative long-term impacts on the system of which it is a part, and therefore on its own long-term success and even survival. For example, the same firm that saves money by substituting software for people will eventually face weakened demand for its products and fiscally-strapped and deteriorating municipal services where its headquarters are located – all ripple effects of the systemic under-employment it helped create.

Governments organized around the narrow self-interest of nation-states also have a mixed record of managing global challenges – be they the collapse of global fisheries or the crises in the Middle East. How do we address the failure of both markets and governments to tackle these threats to the future of people and planet? Readers hoping for silver bullets will be disappointed. No less than a new theory of value and a shift in our collective consciousness will be required. Fortunately such a shift is underway. [75]

Holism and the physics of flow networks address such problems by suggesting that value and wealth must be defined in terms of the well-being of the whole, achieved through the harmonization of multiple kinds of wealth or capital, and critically, a broadly shared prosperity.

Liberating humanity's creative and productive powers essential to transform our economic system to one that serves the health of the whole, therefore, starts by expanding our understanding of value, wealth, and wealth creation to include all forms of capital: intellectual, experiential, social, cultural, living, even spiritual, as well as financial and material.

Concepts like social or human capital, and natural or living capital, are now commonly used in the context of sustainability.[76] The International Integrated Reporting Council (IIRC) chaired by Sir Mervin King identifies six forms of capital that business must measure and make transparent to stakeholders.[77] Figure 4 shows a particularly useful list of eight kinds of capital identified by some in the permaculture community. Undoubtedly, many would suggest even further delineations.

75 Sharmer, O. 2009. *Theory U: Leading from the future as it emerges*. San Francisco: Berrett-Koehler Publishers.

76 See for example Hawken, P., Lovins, A., & Lovins, L. H. 1999. *Natural capitalism: Creating the next industrial revolution*. US Green Building Council (http://www.usgbc.org/).

77 http://www.theiirc.org/

Figure 4. Eight Forms of Capital.

Source: Ethan Roland & Gregory Landau, Regenerative enterprise, Optimizing for multi-capital abundance (2013).

Evidence of a growing shift in values towards a more holistic, multiple-capital view of wealth can be seen in the emergence of "stakeholder capitalism,"[78] exemplified by companies such as Patagonia, the Dutch bank Triodos, and the rise of the B Corp movement where corporate directors are explicitly empowered by charter to consider all stakeholder interests. (Whether that empowerment needs to be explicitly enshrined in new legal code is a matter that some dispute.)[79]

From an integrated perspective, such multiple forms of capital teach us three clear lessons:

1. *True wealth is not measured in monetary or "financial capital" terms alone. Instead, there are multiple essential parts that make up the "whole" of our true wealth.* Unlike the conventional economic assumption that "maximizing the usefulness of stuff" is all people care about, we find that people and economies need a wide variety of services and products – from clean, reliable, energy sources to effective collective learning – to remain healthy and strong over the long run.

2. *The relationships of these forms of capital to each other and to the whole are just as critical as the type itself.* Despite conventional economics' simplifying assumptions, these relationships are not random, reducible, or freely substitutable for money.

78 http://kirstenmartin.net/wp-content/uploads/2013/11/Stakeholder-Capitalism-.pdf

79 Stout, L. 2012. *The shareholder value myth: How putting shareholders first harms investors, corporations, and the public*. San Francisco: Berrett-Koehler Publishers.

3. As David Orr points out, the fundamental difference between wealth that can be reduced to money – financial and material capital – and all the other kinds of capital is that *"the former are controlled by the laws of accumulation and (all too often) greed, while the other forms of capital– human and natural– are nurtured by affection and foresight."*

Where conventional economics concentrates exclusively on scarcity and only two kinds of capital, material and financial, a holistic approach to wealth brings a new focus on abundance. Five of the eight forms of capital – intellectual, experiential, social, cultural, and spiritual – have no limits, are immensely abundant, and developing and using them tends to increase abundance for all. Material and living capital have limits, of course, but with an old-fashioned, *conservative* ethic of care and thrift, and our innovative potential unleashed, we should be able to maintain these to meet our needs.

What would an economy that "views wealth holistically" look like?

- Once financial and material capital are sufficient to meet basic human needs, creating social capital within community and restoring natural capital in the world are valued above acquiring more financial capital. "Success" is redefined beyond material wealth, power, and fame. Individuals at a deep personal level experience a shift in mindset away from separation and scarcity to one of connectedness and abundance.

- Cultural pressures drive and reinforce this profound shift. In the business world, the consumer-driven shift to valuing wealth holistically is already manifest in the food and energy sectors, as well as in the growing role of less resource-intensive industries such as technology, media, and entertainment. Greater enjoyment of cultural and social activities replaces the endless individual accumulation of disposable "stuff." More institutions are founded whose purpose is to safeguard both vital natural capital, including the atmosphere and the oceans, and vital social capital, including local or indigenous cultures. This too is already happening as documented by Paul Hawken in *Blessed Unrest.*[80]

- The present mindset of financiers, focused on optimizing financial capital alone and primarily for large-scale investors, slowly transitions to a new consciousness in service of

80 Hawken, P. 2007. *Blessed unrest: how the largest movement in the world came into being and why no one saw it coming.* New York: Viking Penguin.

the Regenerative Economy as a whole. When it comes at the expense of systemic health, society no longer tolerates the single-minded pursuit of profit and ever-increasing scale and complexity of the financial sector, particularly the "too big to fail" banking sector. In a word, society says "no."

- The often corrupt, reckless, and self-serving culture at many of the largest banks – so clearly in conflict with the needs of a healthy real economy – is met by demand for tougher regulation and real consequences for bad behavior. This regulation focuses primarily on the largest financial institutions, including the breaking up (either by fiat or punitive risk capital surcharges for the systemic risk they create) or at the extreme, nationalizing of some for the health of the whole system. Profound policy interventions occur, including the creation of institutions whose purpose is to counterbalance the excessive power of financial capital.

- The profound shift taking place in banking is evidenced by the majority of commercial banks joining The Global Alliance for Banking on Values,[81] and the return of investment banks to their roots as private partnerships.

- Excessive speculation and leveraged financial engineering that is extractive at its core and destructive to systemic health is taxed away with "polluter pays taxes" and hard prohibitions. Finance as a share of the economy shrinks materially, and human resources are rechanneled into more productive use by natural market forces.

"It is not the strongest of the species that survives, nor the most intelligent. It is the one most adaptable to change."

– Charles Darwin

3. INNOVATIVE, ADAPTIVE, RESPONSIVE

In a rapidly changing world, the best path to "fitness" is to be innovative, adaptable, and responsive to events and conditions by continually learning. The transition to regenerative economies, therefore, will depend on our innate, entrepreneurial human capacity to innovate and to create anew across all sectors of society, including but not limited to the business sector. It also depends on our institutions' responsiveness to the needs and well-being of all segments and levels of global civilization.

81 http://www.gabv.org

In a world in which change is both ever-present and accelerating, the qualities of innovation and adaptability are also critical to health. It is this idea that Charles Darwin intended to convey in his often-misconstrued statement: "In the struggle for survival, the fittest win out at the expense of their rivals." What Darwin actually meant is that: "the most fit is the one that *fits best.*"

While there is little doubt that human innovation and adaptability must play a defining role in the transition to a Regenerative Economy, we must remember that this applies to each and every one of us in our own unique way. Not only should every individual be empowered by this realization, it also suggests that overly centralized State bureaucracies *and* oversized, corporate hierarchies – filled with narrowly prescribed specialists in an overly emphasized pursuit of efficiency and control that stymies individual creativity – are inherently degenerative and must be transformed. Many progressive businesses understand this already; most government agencies have catching up to do and need different incentive systems that will catalyze this change.

While we must unleash transformational purpose-aligned innovative technologies (and restrain the unchecked development of technologies in the name of "freedom" that are not purpose aligned), we must also seek to rediscover and conserve the centuries-long cumulative wealth of human wisdom dormant in our own civilization as well as that which resides today in indigenous cultures. Once upon a time, long before our current obsession with short-term efficiency, many in our species lived regeneratively, in harmony with nature – we must now remember how. (It is not a coincidence that Freeman's 5th principle of "Stakeholder Capitalism" referenced above, the "Principle of Continuous Creation," aligns with "Innovative, Adaptive, Responsive" as a core concept of regeneration.)

At the same time, both private and public institutions must also become more responsive to the needs and well-being of all levels and sectors of their society. Free enterprise was supposed to be responsive to human needs, and democracy was supposed to be responsive to citizens – yet this is not how things have turned out. Whether it is coolly calculating the cost-benefits of poisoning local water sources or cutting costs by creating sweatshops in Third World countries, global capitalism has become notoriously unresponsive towards the needs and well-being of the larger public including its customers and employees. Democratic governments dominated by monied interests often become similarly unresponsive to the needs and well-being of the citizens they supposedly serve – particularly when public needs

for, say, affordable health care, fair elections, or clean water, conflict with the desires of certain powerful donors. When one donor, the casino tycoon Sheldon Adelson, can influence the course of America's and Israel's foreign policy on a matter as important as Middle East peace and the nuclear agreement with Iran, we know we have a systemic breakdown, irrespective of one's views on the substance of the matter.[82]

What would an "innovative, adaptive, and responsive" economy look like?

- Huge command and control global business enterprises that pursue efficiency through economies of scale at all cost are transformed or replaced by more innovative, agile networks of interconnected business webs, creating value through enhanced relationship-centric exchange, adapting and responding to the needs of the whole system, not just single-firm shareholder interests in the short run.

- The rigid hierarchal systems that undergird today's centralized, bureaucratic States in which participants feel little agency, are replaced by decentralized innovative government centers at the regional, state, and local levels with decision-making retained as close to the communities they affect as possible, while only those decisions that cannot be managed regionally or locally (the management of certain security threats and climate change, for example) are assigned to more central authorities.

- Entrepreneurial sectors of the economy flourish and grow, both for-profit and not-for-profit, but guided by policymaking that ensures they remain aligned with the core purpose of promoting and sustaining human prosperity in an economy of permanence.

- Removal of money and propaganda from politics – using publicly-funded elections, limits on contributions, and a diverse free press – allows for the election of government officials concerned primarily with the needs and well-being of the whole society, not just the interests of powerful donors, be they corporations or individuals.

82 http://www.nytimes.com/2015/03/11/opinion/thomas-l-friedman-is-it-sheldons-world.html

4. EMPOWERED PARTICIPATION

The Merriam-Webster Dictionary defines "participation" as "the state of being related to a larger whole." The American College Dictionary defines it as both "taking part in an action" and "sharing in the benefits." Finally, theoretical ecologist Robert Ulanowicz notes that, in an interdependent system, fitness comes from contributing in some way to the health of the whole, or as he puts it, from "the ability to play a constructive role in the web of processes." For example, if the lungs do not take in enough oxygen, and the circulatory system is weak, the muscles in the legs won't function well, the person becomes sedentary, and the whole body (and mind and spirit) degenerates.

If we put participation together with empowerment in the context of the human economy, we find that:

> *The quality of "empowered participation"[83] means that all parts must be "in relationship" with the larger whole in ways that not only empower them to negotiate to meet their own needs, but also in ways that enable them to add their own unique contribution towards the health and well-being of the nested, larger wholes in which they are embedded.*

In other words, everyone matters and the health of any human economy is dependent upon everyone's unique contribution to the health of the whole.

This quality of "empowered participation" validates our deep moral yearning for an economic system that enables a life of dignity for all, and a chance to participate in the system in order to prosper and realize one's potential. It also explains why, as Martin Luther King, Jr. put it, "the ark of the moral universe is long, but it tends towards justice." That arc explains the long push from early Greek democracy and the invention of laws that apply to all men, to America's Bill of Rights, to the Civil Rights movement of the 1960s, and to the Arab Spring of 2011. Honoring the essence of individuals can be seen in all the great Human Rights reform movements: civil rights, women's rights, gay rights, and human rights. *Unleashing the unique potentials of the millions of individuals in these disempowered groups would unleash a tidal wave of*

83 I am indebted to Elisabet Sahtouris who used this phrase in a speech, "Living Systems, the Internet and the Human Future" in 2000.

vitality undreamt of in current economic theories.

As with all of the principles, "empowered participation" applies at all scales from individuals, communities, and regions, to nation-states and the global-level entities. Achieving "empowered participation" that is integrated across levels ultimately depends upon:

1. *A broadly accepted culture – particularly in business and economics – that values "empowered participation" at all levels; and*

2. *Genuine servant leadership and the wise exercise of power with an eye toward the health of the whole.*

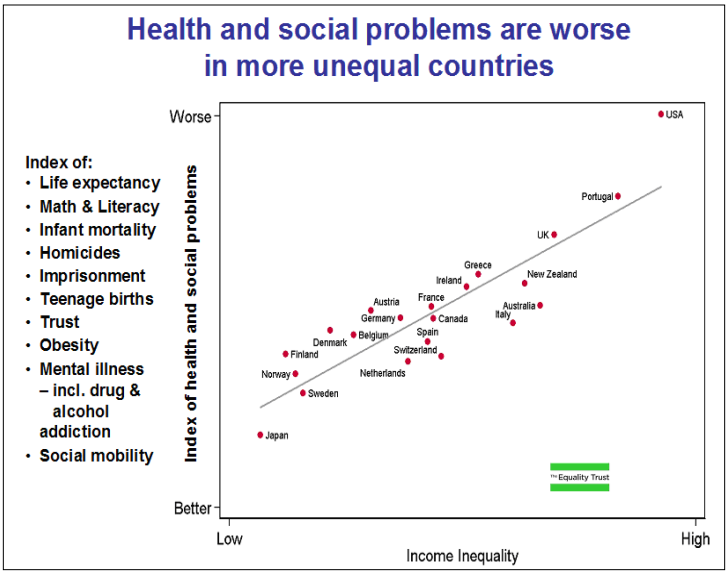


Figure 5. Source: Kate Pickett and Richard Wilkinson, The Equality Trust (UK)

If individuals are to exercise their innate talents for the good of the whole, social structures that empower active participation must be put in place. In particular, "empowered participation" demands a functioning democracy.

Research by Kate Pickett and Richard Wilkinson shows that extreme inequality, which snuffs out "empowered participation," harms overall systemic health, not just the health of the disadvantaged.[84] As J1 demonstrates, developed countries (inclusive of the well-off within them) with high degrees of inequality, like the United States and the United Kingdom, for instance, perform worse on a long list of health and social problems than more equal societies such as Norway, Sweden, and Japan.

Consequently, acknowledging "empowered participation's" critical role in systemic health

84 Pickett, K. and Wilkinson, R. 2009. *The spirit level: Why greater equality makes societies stronger.* New York: Bloomsbury Press.

requires that we then recognize universal rights to quality healthcare and public education, and access to clean water and affordable housing, not only for ethical reasons, but because they enable individuals to contribute their unique talents *for the collective benefit of the economic system as a whole*. Similarly, public investment in public goods – core infrastructure, healthy ecosystems, open access to information, etc. – must also be enhanced for economies to thrive.

At the same time, this finding redefines the debate on inequality more generally. Regardless of what one thinks about exorbitant compensation and extreme inequality as ethical matters, the study of interdependent systems tells us that extremes of wealth and power are harmful to systemic health because they undermine the "empowered participation" of all the other members of a democratic society. For example, the powerful corporations and ultra-wealthy can now create PACs to influence politics in ways that serve their own self-interest while often subverting the will and well-being of the public at large, as well as the health of the larger social and economic systems of which they too are a part. This means the extreme levels of CEO compensation now common in the United States not only waste company resources and raise very real moral questions, *they can also be directly linked scientifically to the destruction of systemic economic and social health, which harms even the beneficiaries and families of this extreme wealth.*

Still, while developing broad-based "empowered participation" and power and wealth-sharing will be challenging in a market system dominated by high levels of concentrated private-ownership of capital, a great deal of evidence suggests that new approaches to ownership and participation are already at hand. These range from widely distributed stock-options and profit-sharing in many Silicon Valley enterprises and thoughtfully conceived Employee Stock Ownership Plans (ESOPs) in large mature companies, to the age-old popularity of private partnerships in legal and other professions and the enormous resiliency of worker-owned cooperatives in Spain and Italy and elsewhere in the world. [85] Goldman Sachs was a much better private partnership, greed restrained by self-interest, than it is a public corporation – exploiting taxpayer "too big to fail" subsidies for private gain, while pursuing many activities that serve no social purpose, or worse.

Of course, power sharing must be done skillfully, with the goal of seeking a balance that is healthy for the whole within the relevant context. Since labor unions grew out of a system

85 http://ica.coop/en

in which individuals were not empowered to negotiate their needs sufficiently, many labor leaders of the past have taken an antagonistic stance. A new generation of labor leaders in the United States, for example, with a more constructive eye to the health of the whole, is pointing the way for a more constructive labor movement.

What would an economy that enables "empowered participation" look like?

- America's self-serving elites – from Washington, Wall Street, and entrenched special interests, to corporate boardrooms and big labor – have lost legitimacy in the public eye. An integrated stream of empowerment that runs from bottom to top means the jig is up for self-important elites who conflate the manipulation of the system for their own personal power and fortunes with meritocratic success.

- Human beings are treated not merely as substitutable units of labor, but are valued for the unique contributions their creativity and entrepreneurial energies make to the enterprise and to the society at large. Continuous investment in human capital to ignite this creative human potential and catalyze collaborative learning is a commonsense priority.

- Education develops empowered, critically thinking individuals capable of bringing forth their unique potential in synergy with other members of society.

- The nature of ownership of the firm and critical economic infrastructure evolves to enable economic empowerment and less concentration of wealth and power. Expanded experimentation with direct pension fund business ownership in negotiated partnerships,[86] cooperative forms of ownership, private partnerships, and broadly distributed equity ownership of business enterprise is the norm.

- Corporate governance evolves to embrace the "empowered participation" of all stakeholders. The German requirement for labor representation on boards of directors is a successful demonstration of this principle already in action.

- Ecological challenges are addressed not only through large-scale investment and roll out of emergent technologies, but through holistic solutions that enable broad, active

86 http://capitalinstitute.org/our-projects/evergreen-direct-investing/

participation and consensus-building in the evolution of the human project. The economy not only ensures secure access for all to food, water, shelter, and energy, the essentials that provide a life of dignity, it also provides opportunities for all individuals to manifest their potential and, in the process, shape the economy and society through their collaborative participation.

5. HONORS COMMUNITY AND PLACE

No two places or things in our world are ever exactly the same – even identical twins have differences. This diversity creates the richness that is essential to system vitality. It fills niches, provides choices, adds opportunities, discovers new ways, and increases excellence through constructive competition. Furthermore, just as each ecosystem comes to embody unique adaptations to a particular place, so each human community embodies a mosaic of traditions, beliefs, and potentialities, each uniquely shaped by long-term pressures of geography, history, culture, environment, and changing human needs.

Honoring the uniqueness of people and place, a Regenerative Economy builds resilient individuals, communities, and regions by developing their distinctive potentialities informed by the essence of their individual story and being.

"THERE ARE NO UNSACRED PLACES; THERE ARE ONLY SACRED PLACES AND DESECRATED PLACES."

– WENDELL BERRY

Modern capitalism's rush to a monoculture of chain stores driven by "efficient, scalable" business models has desecrated place in ways that have increasingly well understood social consequences.[87] While we discount these issues as the price for progress, it does not need to be this way. In fact the tide is already shifting back into alignment with the principle that "honoring community and place" is integral to system health.

Honoring communities of place can be seen in the re-localization movement that began with local food and community-supported agriculture – now also

87 http://journalistsresource.org/studies/government/municipal/impact-big-box-retailers-employment-wages-crime-health

extending to a global, connected mosaic of place-centered economies. The growing urge to "relocalize" is also reflected in:

- The slow movement and its various branches that advocate for a cultural shift toward slowing down life's pace and reconnecting with place — Slow Food, Slow Money, etc.;

- Surging interest in the Business Alliance for Local Living Economies (BALLE),[88] farmers markets and farm to table restaurants, and the Transition Town movement; [89]

- Local community capital initiatives seeking to redirect community savings back into community investment,[90] and even local currency initiatives.

The burgeoning craft brewery movement, for example, and other local initiatives demonstrate our desire to reconnect our businesses – and our consumer and investing dollars – with community and place. Although they are no substitute for direct interpersonal connection in the context of a culture rooted in distinct geographic place, healthy networks and virtual communities of practice on the web also support many critical functions of physically rooted places.

Unfortunately, instead of a free enterprise system that works to develop human potential, today's global corporate capitalism too often seeks to maintain its exploitative advantage by blocking the rights and stifling the potentialities and well-being of citizens, employees, and often even its customers worldwide. Corporations that do not honor the unique richness of place-based communities and human potential run roughshod over anything that stands in the way of profit. Our places and unique cultures become "desecrated" and we lose some of our humanity in the process.

Similarly, instead of a deeply felt connection to place, we now have "placeless" global corporations that move their headquarters and factories around the globe in response to tax, labor, and environmental standards, all in the name of optimizing "shareholder value" (which by

88 https://bealocalist.org/

89 https://www.transitionnetwork.org/

90 http://fieldguide.capitalinstitute.org/community-sourced-capital.html

the way remains the standard being taught at our leading business schools). The consequences of corporations that disregard people and place are often catastrophic to the communities in which such placeless corporations operate. To comprehend the horrors of business enterprise disconnected from place, one need only consider the numerous industrial tragedies in far-flung locations, ranging from factory collapses in Bangladesh, and stressed workers jumping out of buildings in China, to rivers fouled with oil in Latin America.

Global expansion is also often driven by an empire-building mentality that tends to exacerbate disconnection from place by justifying exploitation of subject regions. Such conveniently rationalized callousness explains the strong backlash seen in the 1999 Seattle World Trade Organization protests against globalization and so-called "free trade" agreements, as well as Joseph Stiglitz's recent article, "On the Wrong Side of Globalization." [91]

Indeed, the challenges of managing a healthy, global business network while *disregarding people and place* have tripped up many who have tried. Just ask Walmart about Mexico or India, or Apple, Google or JPMorgan about China. Many are forced into a retreat to their core home locale after embarrassing and expensive blunders, but some will succeed. If global civilization is to prosper, the responsibility of the successful global corporate leaders to the health of the whole will be critical.

When a business successfully extends beyond its place of origin, more often than not it continues to be what Regenesis Group calls "place-sourced," that is, it is defined by – and retains its connection to – the unique qualities and culture of its home place. For example, even in a global economy, a Dutch multinational will tend to remain distinct and true to its "essence" in a way that will be quite distinct from that of a Brazilian company.

In flow network terms, expanding from local to regional and ultimately to global contexts will require great attention to and advances in structural intricacy to support higher levels of connection. Matrix management seeking to harmonize global product strategies with regional geographic strategies are evidence of this higher level of structural intricacy, and are hard to get right. We are still growing into our globalization! The imperative must be for global business to honor place, not only by connecting, but also by prioritizing collaboration with place-based

91 http://opinionator.blogs.nytimes.com/2014/03/15/on-the-wrong-side-of-globalization/?_php=true&_type=blogs&_r=0

organizations as a precondition to global success.

Aligning today's globalization with the notion that regenerative systems must "honor the richness and diversity of place" poses a profound challenge. Today's "local vs. global," either/or thinking will not lead to effective solutions because systemic health requires integration across scales. Instead, if global enterprises want to be successful over the long run, they will need to develop more intricate connective tissue to unify their increased complexity. As global enterprises learn how to increase collaboration and to honor place, they must also be more intentional about the very real but circumscribed benefits of their global reach. Globalization is not, as current thinking would lead one to believe, inevitable for all; a healthy human economy can and must be built on the foundation of healthy local and regional economies that honor their people and place.

What would an economy that "honors community and place" look like?

- Public policy encourages and fortifies a diversity of unique, collaborative, place-based economies at multiple scales from community, to city, to regional. Each is a core node in a global interconnected economy that engages in trade from a position of place-based resilience and strength.

- Anchor institutions rooted in the community, such as hospitals and universities and even sports teams when committed to place such as the Green Bay Packers, work with local government and other community-based institutions to provide an economic foundation for place-focused economic initiatives aimed at improving the resilience, prosperity, and sustainability of their communities.

- Cooperative ownership models of place-centric economic networks thrive, building on the example of the Mondragon Cooperatives in the Basque region of Spain with €12 billion of turnover across 250 companies employing 74,000 people, all owners of their business[92] and the even larger network of employee-owned enterprises in the Emilia Romagna region of northern Italy. In the U.S., the

92 http://www.mondragon-corporation.com/eng/

Evergreen Cooperatives[93] and the Oberlin Project[94] in Cleveland, Ohio, are promising new experiments being replicated in many regions.

- Monoculture chain stores that maximize "efficiency" are replaced by clusters of local and regional unique and more complex businesses that arise out of and honor the uniqueness of culture and place, beginning with restaurant businesses and more generally growing out of local business support networks like BALLE.[95]

- Prosperous global corporations remain place-sourced in their culture, and become genuinely connected to more distant communities as supportive partners, not extractive predators. More global corporations follow the business strategies of enlightened companies like DNV GL, the global shipping-certification leader that has opened over 30 offices in China in order to operate close to its customers and to understand the local community context of their business. While DNV GL has offices that connect it to "place" all over the world, at its core it remains a Norwegian company with a Norwegian business culture ("place-sourced") no matter where in the world it is operating. Where some global banks, for instance, seek to win business by systematically hiring their clients' children, or apply even more blatant forms of corruption with local officials, DNV GL constantly talks internally about ethics, and insists that they do business the way they do it in Norway, even if it means slower expansion in China or elsewhere. It is not an accident that DNV GL has been around for 150 years.[96]

DNV GL studied how integratred design can reduce the cost of off-shore wind generation.

93 http://fieldguide.capitalinstitute.org/the-evergreen-cooperatives.html

94 http://www.oberlinproject.org

95 http://www.oberlinproject.org/

96 http://www.huffingtonpost.com/john-fullerton/the-courage-to-lead_1_b_5881424.html?1411653392

6. EDGE EFFECT ABUNDANCE

Brain research and sociology both indicate that the cross-fertilization that comes from stepping outside one's usual silos leads to tremendous bursts of creativity, synergy, and satisfaction. Consequently, a Regenerative Economy works hard to find ways to cultivate common cause synergy and cross-fertilization at the "edges."

Honoring the uniqueness of people and place is essential because diversity is critical. Yet, because collaboration is also essential, all those unique people and places must find ways to work synergistically. Unfortunately, collaborativeness is often rare today because our society is deeply fractured in competing interest groups and siloed specialists whose livelihoods often depend upon staying in sync with dominant beliefs. Step out of line in corporate-owned media, funder-conscious academia, or profit-maximizing medicine, for instance, and you will find yourself on the street.

"EDGES ARE ABOUT INCREASED POTENTIAL OF RELATIONSHIP AND EXCHANGE... [EDGES] ARE THE BRIDGE AND ARBITER OF RELATIONSHIPS – THE MORE EDGES WE HAVE, THE RICHER THE POTENTIAL TO IMPROVE THE RESILIENCE OF LIFE."

—BILL REED

How do we change this? Ecologists suggest that creative synergy emerges best at the "edges" of systems, where the bonds holding the dominant pattern in place are weakest, and the opportunities for diversity and novelty are the greatest. With this diversity comes life's abundance, but also risk. For example, the edges where rivers meet the ocean breed rich salt-marsh estuaries teeming with a diversity of life. Prior to the industrialization of agriculture, farmers who understood their amazing fertility, planted hedgerows to create artificial "edges" where pollinators would dwell and where the soil would be buffered from the wind.

In human networks, such creativity and abundance often emerges in cosmopolitan cities like New York, where diverse ideas intersect and opportunities to pursue novelty outside mainstream pressures are more open. At the same time, the regenerative projects we have studied all exhibit deepening relationships and hard work around the "edges" between different sectors of the economy – private, public, NGO, and philanthropic – and between different socio-economic groups that do not always coexist comfortably or have opportunities to connect with one another around a common purpose.

Finding common cause is also a way to nurture unlikely collaborations. Nowadays, for instance, social conservatives and liberals are increasingly finding common cause over caring for the environment. Joel Hunter, the leader of a conservative Christian Evangelical church and a member of the Board of Directors of the regenerative First Green Bank, expresses the connection this way:

> "I didn't agree to being on the Board of First Green Bank because of my banking expertise, I did it because I have been a long-time advocate nationally and internationally for what Christians call 'creation care.' For a Christian the scripture is really clear on this. It was the first order in the Garden of Eden, Genesis 2:15: 'And the Lord God took the man, and put him into the Garden of Eden to cultivate it and to keep it.' That order was never rescinded, it never expired. That wonderful gift we were given should continue to be a resource for everyone, especially the poor. So advocacy for the sustainability of this planet is really advocacy for the poor and the vulnerable. Our goal is to add to the earth's capability of production and cultivation. That coincides with the regenerative goal you are talking about." (Excerpted from Capital Institute's soon-to-be-released "Year in the Life of a Regenerative Bank" *Field Guide* project.)

Yet, nowadays, the environment is not the only source of common cause. The Chicago-based group Manufacturing Renaissance, also a *Field Guide* subject, is forging common-cause collaboration among government, the private sector, organized labor, educators, and civil society in hopes of countering the relentless stream of plant closings and off-shored jobs by creating programs to support their regional advanced manufacturing sectors.

The benefits of interactions taking place at intersections and around common cause are often both profound and subtle. Regardless of the degree of success of a particular project, we have consistently found that working collaboratively across edges – with ongoing learning and development sourced from the diversity that exists there – is transformative for both the communities where the exchanges are happening, and for the individuals involved. This vast, untapped creativity to be found "working the edges" of unique places, rooted in deeply "empowered participation" has tremendous potential for individual and group regeneration, giving rise to numerous personal "aha" moments and subtle shifts, some very small and some large and profound.

What would an economy that cultivates "edge effect abundance" look like?

- Place-based initiatives built around locally rooted anchor institutions work to create new abundance at the intersections ("edges") of various stakeholder groups ranging from local businesses and unemployed youth to state and local governments, community groups, and faith-based organizations.

- Large companies with a wide range of core competencies – operational, technological, marketing, financing, and more – become "networked platform companies" that create abundance (including value for themselves) by providing services that minimize costs and facilitate interactions between intersecting groups. As is already happening in the technology industry, such platform companies host vibrant economic exchanges, and find numerous new ways to leverage their assets in mutually beneficial innovation and infrastructure on the edges between: private sector industries; the public and private sectors; and with any of the above and NGOs. For example, prior to becoming President of the World Business Council for Sustainable Development,[97] Peter Bakker's experience in Africa led him to form a partnership between the World Food Program and TNT, the €6 billion Dutch Postal company he ran, in which TNT leveraged its logistics assets to add great efficiency in the challenge of emergency food relief. The impact on TNT employees was transformative, giving new purpose to many, improving employee retention, and saving TNT money in the process.

- Government entities work proactively across the edges, leveraging the strengths of the private sector, for example, in areas of technology research that gave rise to the Internet and to many other innovations. Government entities also work collaboratively with the NGO sector where social entrepreneurs with close community relationships are finding innovative solutions to seemingly intractable social challenges that have stymied the public sector. The Department of Education, for example, works with many successful NGOs such as Teach for America that have proven abilities to deliver solutions to critical needs.[98]

97 www.wbcsd.org

98 http://www.ed.gov/news/press-releases/education-department-awards-246-million-grants-support-teacher-and-principal-development

- Instead of working to weaken policies designed to protect social and ecological systems, competitive businesses use their power to catalyze collaboration within industry sectors and with the public sector to advance policies and practices that sustain the social systems and ecosystems in which they all operate. This is done out of informed self-interest, not merely for the public relations benefits that may accrue.

- Environmentalists and social justice advocates work together rather than at odds on strategies that restore both ecological and social health, both essential to true human prosperity and interdependence.

7. ROBUST CIRCULATORY FLOW

> *Just as human health depends on the robust circulation of oxygen, nutrients, etc., so too economic health depends on robust circulatory flows of money, information, resources, and goods and services to support exchange, flush toxins, and nourish every participant at every level of our human networks. The circulation of money and information are particularly critical to individuals, businesses, and economies reaching their regenerative potential.*

The central role circulation plays in the New Economy can be seen in work ranging from Bill McDonough's *Cradle to Cradle*,[99] to Hawkens', Lovins', and Lovins' *Natural Capitalism*.[100] Following the living systems model, which uses the waste of one process as the fuel for another, these circulation-centered business models seek to transform businesses from sellers-of-products to providers-of-services, turning the waste of one process into the resources for another (a closed-loop circle). Waste equals food.

99 McDonough, W., and Braungart, M. 2002. *Cradle to cradle: Remaking the way we make things*. New York: North Point Press.

100 Hawken, P., Lovins, A., & Lovins, L. H. 1999. *Natural capitalism: Creating the next industrial revolution.* US Green Building Council (http://www.usgbc.org/); or see Harvard Business Review http://www.natcap.org/images/other/HBR-RMINatCap.pdf

Drawing on the economic work of Kenneth Boulding,[101] and that of Walter Stahel, and Genevieve Reday on closed-loop systems,[102] those seeking to build a Circular Economy are generating interest by showing how shifting from a linear "take-make-waste" system of material flow to a circular "reclaim, recycle, remanufacture, regenerate" design can help boost business vitality, community health, and profits all at the same time. A recent report by the Ellen MacArthur Foundation and their partner McKinsey & Company makes the business case that transitioning to a Circular Economy translates into a trillion dollar business opportunity in terms of cost savings that can drop to the bottom line.[103] The Foundation is now helping leading companies from Ikea to Cisco seize this opportunity.

The role robust circulation and exchange play in enabling regenerative vitality is also obvious in the growth of today's information economy. Ignoring for the moment its invasive and exploitative potential, one need only consider the incredible economic power Google's search-engine sitting atop a highly connected Internet unleashed to comprehend the impact that highly circulating, highly accessible Big Data has for empowering decision-making and stimulating economies. Intriguingly, from a systems view, this vastly expanded potential for information exchange and social networking is but the latest expression of a much older, extremely important pattern of development in all regenerative flow networks.

The robust circulation of money, the economy's blood stream, is particularly critical to regenerative health. Like a body with poor circulation to its limbs, an economy cannot be healthy if money from profits and savings are systematically sucked from the periphery into the center – but, this is precisely what neoliberalism's hyper-efficient, globalized, financialized, and centralized version of capitalism does. Its relentless pursuit of "economies

> "The rate of circulation of money at local and regional levels may be the most critical measure of economic health. Imagine an aggregation of the monthly local and regional money-circulation metrics replacing GDP growth as our barometer of economic health!"
>
> – Sally Goerner

101 Boulding, K.E. 1966. "The Economics of the Coming Spaceship Earth". See http://dieoff.org/page160.htm

102 Stahel, W., and Reday, G. 1976. "The Potential for Substituting Manpower for Energy", A Research Report to the European Commission. Battelle, Switzerland: Geneva Research Centre.

103 http://www.ellenmacarthurfoundation.org/business/reports/

of scale" constantly drains money, people, and resources from local communities and the real economy, while shifting the burden of the real costs it creates to other parts of the system. Walmart workers on publicly funded food stamps are but one familiar example. Recent work by Belgian financier Bernard Lietaer suggests that a proper restructuring of our banking system to increase cross-scale circulation of credit would go a long way towards creating both a more sustainable financial system and widespread, long-term prosperity.[104]
In this way, the constant concentration of money and thus power within the global banking system and within large retail chains like Walmart serves to reduce the circulation of money to the middle and lower levels of the economy. Community banks, community cooperatives, loan funds like the one managed by RSF Social Finance,[105] complementary currencies, and buy-local movements are all expressions of an intuitive drive to increase the circulation of money and credit at the local and regional levels by reasserting relationship (principle one: "in right relationship") at the heart of transactions.

One particularly critical form of circulation – reinvestment in the system itself – is often overlooked in economic discussions. As we have seen, the single most fundamental factor of systemic health comes from being "self-feeding," that is, from continually channeling money and resources back into building and maintaining systems and processes the organization needs to survive. This thought applies to individuals, businesses, communities, and economies at all levels.

This, of course, is not controversial. Any wise businessperson understands the importance of investing in R&D, as well as the professional development of a firm's people. Unfortunately, in their rush to maximize short-term profits, Wall Street in general – and "financial engineers" specializing in leveraged buyouts in particular – often sacrifice this vital component of long-term health by cutting R&D and eliminating professional development to boost short-term profits. All too often, after the financial extractors have taken their money and are gone, the consequences for the business are disastrous. Norwegian DNV GL on the other hand reinvests a remarkable five percent of sales in long-term research not directly connected to specific product development. Again, this is the same DNV GL that has been in business for 150 years.

104 Lietaer, B., Ulanowicz, R.E., and Goerner, S. 2009. "Options for Managing a Systemic Bank Crisis," Sapiens, 2 (1). Available online at http://sapiens.revues.org/index747.html

105 http://rsfsocialfinance.org/

What would an economy that promotes "robust circulatory flow" look like?

- An unprecedented redesign of business models accelerates enterprises away from selling products that create waste (cars, heating oil) to providing services in closed-loop models (transportation, warmth).[106] The linear flow, extractive industrial economy is profoundly remade in the coming decades.

- As the retreat from "peak globalization"[107] accelerates, the most centralized global businesses become increasingly decentralized as they strive to reduce material and energy throughput, while more place-based businesses rooted in culture and committed to local and regional sourcing have gained competitive advantage.

- The financial services industry has restored the robust and more distributed circulation of money and credit. Financial wealth is less concentrated in the speculative centers of Wall Street and London, and becomes more broadly distributed directly into productive enterprises in the real economy at local, regional, and global scales. Economies exhibit a more diverse and more decentralized array of financial services firms, and even currency systems, improving money circulation in the process.

- Enterprises that accelerate the exchange of high-quality vital and sought-after information, and those that turn information into useful knowledge, thrive – but only if their services are aligned with all principles of a Regenerative Economy. The next generation of Googles, Facebooks, and Amazons circulate personal data in the context of a "right relationship" between the individual owners of that data and those who want to purchase access to it.

- Enterprises in the private, public, and NGO sectors make investment in their employees' continuous development and in long-term research a top priority, not a luxury when times are good.

- New metrics for economic vitality have been developed to monitor the healthy circulation

106 Womack, J., Jones, D. 2005. *Lean solutions: How companies and customers can create value and wealth together.* New York: Free Press.

107 This is a play on the title of Richard Heinberg's important book, *Peak everything: Waking up to the century of declines*. 2010. Gabriola Island: New Society Publishers.

of materials, information, and money. These new systems of measurement help redefine economic goals for policymakers, replacing misleading monetary aggregates such as GNP.

8. SEEKS BALANCE

Where a host of Eastern practices from yoga to Buddhism taught us to value balance, the hard science of holism now confirms for us that balance is more than just a nice way to be; it is actually essential to systemic health. Like a unicycle rider, regenerative systems are always engaged in a delicate dance. Achieving it requires they harmonize multiple variables instead of optimizing single ones.

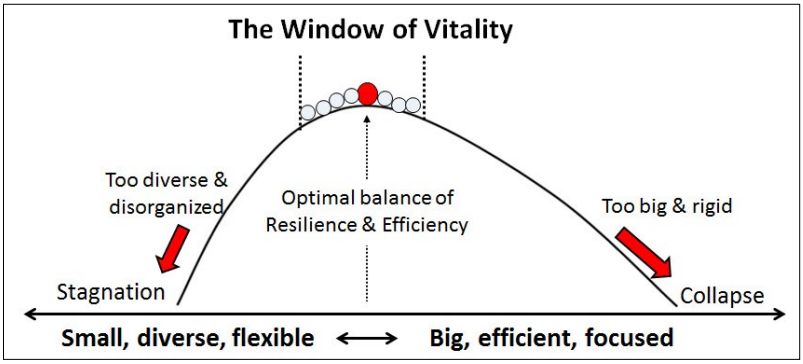


Figure 6: The Window of Vitality as a balance between efficiency and resilience Source: Dr. Robert Ulanowicz and Dr. Sally Goerner. *Healthy systems maintain a balance of resilience factors (small, diverse, flexible, and densely connected) and efficiency factors (big, streamlined, and powerful) within a Window of Vitality representing optimal network health.*

Conventional economics and finance are designed to optimize "efficient returns to financial capital" as the objective. Because it is reductionist, this practice only makes sense when one is focused on parts (in this case financial return on capital), but it falls apart when one considers the health of the whole. Just as an athlete who works out hard in the gym but eats an unhealthy diet will eventually fail, so too return on invested capital, while important, must be kept in balance with the multiple kinds of capital that all play a role in the long-term systemic health of the firm, society, and the planet.

Not only must multiple forms of capital be in balance ("holistic wealth"), but multiple critical variables must be as well. Theoretical ecologist Robert Ulanowicz and his colleagues used the balance of small, medium, and large organisms found in nature to identify the optimal balance

of system resilience and system efficiency (Figure 6).[108] In the process, showed empirically why an emphasis on increasing scale and efficiency is useful up to a point, beyond which it is destructive to the system as a whole. Ulanowicz's work actually provides a way of measuring this balance point.

"WE IDENTIFY ARROGANT IGNORANCE BY ITS WILLINGNESS TO WORK ON TOO BIG A SCALE, AND THUS TO PUT TOO MUCH AT RISK … BECAUSE THE ARROGANTLY IGNORANT ARE OFTEN BLINDED BY MONEY INVESTED; THEY CANNOT AFFORD TO FORESEE BAD CONSEQUENCES."

- WENDELL BERRY

While such balances that define healthy systems in the natural world are often easy to observe, today's dominant economic belief system's obsession with efficiency does not give up easily. In finance, for example, the collapse of 2008 was the direct result of decades of globalization and deregulation combined with the innovations of derivatives and securitization, all done in the name of efficiency, but with the unintended consequence of destroying system resilience leaving dangerous fragility. Indeed, since the global economy lacked sufficient resilience,[109] it would have collapsed were it not for unprecedented interventions by central banks to shore up the seemingly "efficient" but deeply reckless and fragile financial system. Nevertheless, we now face even bigger "too big to fail banks" in the pursuit of extreme-scale efficiency, supported by the artificial resilience of unprecedented central bank bond buying around the world and a massive investment of public effort to control these behemoths through regulation – a losing proposition – while their leaders claim that "scale has always defined the winner in banking,"[110] as if banking, the circulatory system of the global economy, can be reduced to a boxing match. Nor does their claim happen to be true, as demonstrated by research on values-based banking showing that medium- and small-sized sustainable banks

108 Ulanowicz noticed that, though resilience and efficiency are both important to systemic health, the factors that contribute to resilience such as diversity, small size and dense connectivity were in opposition to those which contribute to efficiency, such as streamlining, high capacity and large size. Ulanowicz (1996, 1997) found that actual ecosystems maintain a balance of the two. He then used information theoretic measures and data from these highly functioning ecosystems to identify the range of balance, the "Window of Vitality," within which all healthy systems fell (Ulanowicz, R., Goerner, S., Lietaer, B., and Gomez, R. 2009. "Quantifying sustainability: Resilience, efficiency and the return of information theory," Ecological Complexity, 6 (1), 27-36.

109 http://www.stockholmresilience.org/21/research/what-is-resilience.html

110 JPMorgan's CFO Marianne Lake responding to calls from Goldman Sachs' equity analyst to break up the bank in order to unlock shareholder value. http://nyti.ms/189yd8b

significantly outperform the mega banks on a sustained basis.[111]

Our banking system needs a balance of small, medium, and large, with an awareness that "too big" is particularly dangerous, and an understanding that the biggest in particular must act in a way that supports the health of the whole. The same applies to all other critical circulatory systems of the economy including energy, fresh water and waste-water, and telecommunications, all of which have evolved toward ever-greater centralization and scale driven by a flawed ideology that promotes economic efficiency at the expense of system resiliency. As a result, all economic sectors will need to shift to more decentralized models to restore the critical balance that defines healthy systems.

In sectors of the economy where there are natural benefits to society to have common platforms such as in technology infrastructure (from social networks such as Facebook to the global communications network, to stock exchanges and money systems), regulatory regimes need to evolve to respond not just to anti-competitive threats, but also to take necessary steps to ensure that system resiliency is maintained, even when it comes at the expense of some (misguided) system efficiency.

Modern capitalism's relentless drive for global efficiencies and economies of scale, combined with deficient shareholder-governance, and the short-term bias of capital markets and finance in general, has many rightly concerned about the excessive power and influence of today's largest global enterprises. We yearn for more human-scale enterprises, and we heartily endorse E. F. Schumacher's maxim that "small is beautiful." Yet few remember that Schumacher *also* once said that, if everyone were for small, he would be for big! The study of fractals affirms Schumacher's affinity for both small and big by showing empirically that both are important and an integration of the two is essential.

Of course balance applies more broadly as well. Here are just a few key issues for our consideration in the context of regenerative systems:

Wealth and Power. The Great Depression, as well as the collapse of every great civilization over the last 5,000 years, proves that extreme inequality and excessive concentration of power leading to oligarchy inevitably causes the system to collapse – with disastrous consequences for all within it. Today, the ongoing chaos in Iraq and in the Arab world is

111 http://www.gabv.org/wp-content/uploads/New-13-5923_GABV_report_Washington_07mvd1.pdf

a reminder of what happens when an extreme concentration of political power is finally released. The longer and more extreme the repression, the greater and more violent will be the "quake" and ensuing chaos.

If our aim is to avoid economic and social collapse, then just as a series of mini-quakes restores balance by releasing pressure building toward a catastrophic earthquake, so too we must find ways to periodically release pressures building from today's extreme inequalities, before our next "big one" occurs. Progressive income taxation and aggressive inheritance taxation serve this purpose, as did the ancient Judeo-Christian tradition of debt jubilees. But importantly, this is a scientific truth, not merely an ideological preference.

Competitive Individualism and Collaborative Community – The need for balance can also be seen in modern society's long-running battle between the rights of the individual and those of the community, as well as the opposing pressures to compete and to collaborate. A holistic approach teaches us that both competitive individualism and collaborative communities play important roles in systemic health. Competitive individuals advance learning by pushing envelopes, increasing quality, and challenging others to do the same. Yet even the most gifted and powerful individuals cannot compete with the power of collaborative communities based on "empowered participation." Furthermore, history shows that unchecked competitive power leads to monopoly, oligarchy, and at the extreme, war.

Consequently, individual and community needs are not only inseparable, but their unique contributions are mutually beneficial. The challenge lies in finding ways to balance *in that delicate dance,* the *flexibility* (freedom) upon which individualism thrives with the *constraints* (rules/procedures/regulations) required for community and collaboration.

Flexibility and Constraint - The need to balance flexibility and constraint suggests that, while intelligent regulation is necessary for achieving systemic health, we will not be able to regulate our way to a healthy financial or economic systems. Instead, regenerative systems are arranged to "self-regulate by design" rather than depend on ever greater externally imposed regulation (as demonstrated by our overall response to the recent financial crisis) with its inevitable unintended consequences to systemic health. For example, the well-intended new liquidity constraints imposed on global banks to reduce the funding mismatches that led to the collapse of Lehman Brothers are having the unintended consequence of discouraging banks from using their balance sheets to finance long-term and illiquid green energy infrastructure projects

when the health of the entire system depends upon it. On the other hand, the excess capital requirements for excessively large, "systemically important" (meaning "too big to fail") banks such as JPMorgan are an example of a well-designed "self-regulating" incentive. Goldman Sachs and others have called for JPMorgan to break itself up, in part as a response to these new capital requirements. (In my opinion, those requirements should be much tougher, accelerating the systemically desirable shift.) From a systems science perspective, this is a policy-imposed *self-regulating* feedback loop, much more effective than a fresh army of regulators looking over JPMorgan traders' shoulders with a fresh set of rules to monitor.

In living systems, self-regulation comes from a complex and hard-won balance of positive and negative feedback systems evolved over long periods of time. In human networks, creating naturally self-regulating economies will require similarly hard-won cultural shifts along with legal and moral constraints that allow the messiness of learning to continue.

These balances demonstrate the fact that systemic health is not a product of global versus local, big versus small, resilience versus efficiency, or any other single quality, but of the system's *overall design*. Balance is the key.

What would an economy that "seeks balance" look like?

- Managing well the endless, delicate dance of striving for balance in interdependent systems is a core function of regenerative enterprises and economic networks.

- Instead of setting rules using traditional reductionist assumptions, policymakers and regulators use the new coherent systemic architecture and objectives to design toward systemic balance.

- Governments seeking systemic health regularly intervene to reduce concentrations of economic and political power in the world's largest corporations, recognizing, as Milton Friedman's mentor H.C. Simons, the founder of the Chicago School of Economics did, that capitalism naturally tends toward "economies of scale" and bigness in the name of efficiency, resulting in extremes in the distributions of wealth and political power. (Teddy Roosevelt's passion for trust busting suggests he was an early intuitive systems thinker as well as a great Republican president.)

- Policies are crafted to foster a balanced and sustainable financial sector – with small community banks that take risks by creating and circulating credit locally, efficient regional banks, and global banks that are constrained in their scale and power to ensure they serve the public good and not merely their own short-term self-interest.

- Policymakers restore a healthy market-system balance between systemic efficiency and systemic resilience by rebuilding resilience that has been destroyed and restraining the excessive power of "economies of scale" where necessary. Examples of financial policy initiatives that are aligned with the latter goal include excess capital buffers for "too big to fail" banks as discussed above, a financial transaction tax to create a feedback loop that discourages excessive speculation, and positive incentives that encourage long-term investment in the things we need, beginning with investments that will drive the transition of our energy system away from fossil fuels.

- Given our historic bias toward efficiencies of scale, the pendulum swings back toward more diverse and distributed solutions, particularly with respect to critical infrastructures, energy, and water in particular, following the lead of distributed computing.

"Capitalism does millions of things better than the alternatives.... However, it is totally ill-equipped to deal with a small handful of issues. Unfortunately, they are the issues that are absolutely central to our long-term well-being and even survival."

—Jeremy Grantham

RETHINKING CAPITALISM

Like all vibrant, long-lived systems, a Regenerative Economy must be designed to work as an integrated whole. It must not only value all of its parts, it must nourish, develop, and empower them. It must maintain balance, circulation, innovation, and learning because these too are essential to holistic health. It honors community and place and cultivates common cause synergy at the "edges" because only in bringing forth and connecting the unique colors of each element in synergy can full vibrancy be achieved.

Since systemic health only occurs when all parts are working "in right relationship" with one another, our ability to achieve a Regenerative Economy with lasting economic and social vitality will depend

upon our ability to nourish and develop multiple kinds of capital, at all levels of today's global civilization, while learning to effectively balance and integrate the key principles of regenerative health.

We believe developing a Regenerative Economy around these principles and investing in the creation of holistic wealth represent the next stage in the evolution of capitalism. However, to understand the change in store, let us first examine what "capitalism" means.

The conventional definition of capitalism is "an economic and political system in which the country's trade and industry are controlled by private owners for profit, rather than by the state."[112] Capitalism is also characterized as a competitive market economy using the price mechanism to clear markets, where the goal is to maximize profits and accumulate wealth. While such a system may at one time have been a glimmer in Ayn Rand's eye, it does not exist in what we call the modern capitalist economy today.[113] Instead, we have a highly complex, interconnected system, dominated by multinational corporations operating under the flawed and dangerous ideology of shareholder primacy[114] that bears little resemblance to a theoretically pure "capitalist" system. While the genuinely private control of small-scale means of production that Adam Smith originally imagined is still present, today's economies are dominated by enormous private enterprise, often driven by competitive short-term dynamics, and "owned" by mostly passive, short-term shareholders who exhibit only very limited control – a different beast altogether, just as a lake is different from a puddle.

Too often, large multinational corporations, trapped in the reductionist, finance-driven ideology of modern capitalism, demonstrate predatory behavior devoid of any understanding of the critical regenerative role they must play as part of a larger system. Control is largely surrendered to corporate boards and powerful CEOs, and their short-term-shareholder-value-maximization-above-all-else paradigm grounded in a broken definition of "fiduciary duty." At the same time, real asset owners like pension funds and endowments too often cede their

112 *Oxford Dictionary*, New York: Oxford University Press.

113 Chapter 13 of Hawken, P., Lovins, A., & Lovins, L. H. 1999. *Natural capitalism: Creating the next industrial revolution*. US Green Building Council. http://www.usgbc.org

114 Stout, L. 2012. *The shareholder value myth: How putting shareholders first harms investors, corporations, and the public*. San Francisco: Berrett-Koehler Publishers.

long-term stewardship duties to short-term speculators, paying little heed to their ownership responsibilities.

In short, there is no pure "capitalism," any more than there is pure, centrally planned "communism" or "socialism." The term "capitalism," used more liberally and democratically, is still useful in referring to a market economy in which the private sector is the primary, but not the exclusive owner of the means of production.[115] It is augmented by a diversity of alternative forms of enterprise, including cooperatives and non-profit social enterprises. This more generalized vision of capitalism is subject to varying degrees of governance by the democratic process and managed for the common good.

If this more democratic vision of capitalism is to succeed, it must embrace a holistic worldview, and learn to mirror the lessons of regenerative systems. The implications of a world where: wealth is viewed holistically; empowered participation makes innovation common and adaptation easy; circulation is robust; community and place are honored and edge effect abundance at their intersections is facilitated; and everything is in balance and in right relationship with everything else – are far-reaching and profound. Yet, in some ways, this vision also brings us back to our original free enterprise roots, while clarifying where current capitalism went wrong.

This is not just theory, although a broadly shared conceptual framework such as the one we offer here. Meanwhile, triggered in part by the financial crisis, but with roots going back much further, a growing New Economy movement is emerging. Some calling it The Great Transition. It is gaining momentum and already reinventing capitalism along regenerative lines, just below the radar of the mainstream press. The next chapter seeks to shine a light on just a few dimensions of this emerging movement.

115 Modern capitalist economies also include many enterprises with cooperative forms of ownership and democratic control, as well as numerous state-owned enterprises in countries ranging from China and Brazil, to Germany and the United States. Governments in virtually all nations significantly influence – and, to varying degrees, control –commerce, trade, and finance through regulatory processes, tax policies, and subsidies, if not direct ownership.

Chapter 4: Regenerative Capitalism Emerging in the Real World

"The universal dwells in the concrete particular. Neither is real nor truly apart from the other."

– Jan Smuts

The good news is that the entrepreneurial spirit at the heart of capitalism is inherently regenerative, and new manifestations of this regenerative heart are emerging all around us. This regenerative energy is the driving force behind a great deal of new value creation and some of the most successful innovations of modern time, including the Internet and social media, both examples of powerful energy flow networks in action. The regenerative qualities emerging in these real-world examples serve as beacons of hope and inspiration, and indicators that economic transformation without collapse is not only possible, but is underway.

REGENERATIVE MOVEMENTS IN ACTION

"Social entrepreneurs identify resources where other people only see problems. They view villagers as the solution, not the passive beneficiary. They begin with the assumption of competence and unleash resources in the communities they're serving."

– David Bornstein[116]

Often viewed as disconnected "feel good" activities outside the mainstream capitalist system, we see these activities as interconnected and in alignment with the Regenerative Economy framework, i.e., in alignment with the natural order of all things in the universe. Collectively these forces provide living proof that a new Regenerative Economy is emergent, and it is the mainstream capitalist system that is under existential threat if it does not adapt. Some

116 Bornstein, D. 2007. *How to change the world: Social entrepreneurs and the power of new ideas*. New York: Oxford University Press.

of the more well-known examples of this emergence include:

Social Entrepreneurship and Purpose-Driven, For-Benefit Enterprises – Social Entrepreneurship is now a strong area of interest in leading business schools. For-benefit enterprises can be either for-profit businesses with an explicit social and or environmental objective, or, non-profit enterprises with sustainable business models.[117] A particularly interesting development involves "B Corps" (in contrast to conventional C Corps) that demonstrate "business as a force for good." B Corps sign up for a set of best practices including a corporate charter declaring that directors "*shall* give due consideration" to all stakeholders, not just shareholders. It is a direct response to the shareholder primacy presumption that corporate directors invoke as their fiduciary duty to uphold, leading to many corporate decisions with adverse societal consequences. So far 27 states have passed B Corp legislation in the U.S. and there are over 1,000 registered B Corps around the world, including many young entrepreneurial ventures as well as iconic names like Patagonia and Ben & Jerry's. In April 2015 Etsy became the first publicly traded B Corp.

Micro-Enterprises and Micro-Finance – Despite their extremely small size, "micro" enterprises add massive value to economies by providing jobs and income, and by strengthening the purchasing power of a large percentage of the population, while also lowering costs and adding business convenience.[118] Yet despite their importance, such enterprises often have little or no access to commercial banking or finance. Using the principle that "credit is a human right," Nobel Laureate Muhammad Yunus and his Grameen Bank of Bangladesh helped rectify this situation by pioneering the concept of micro-finance organizations, which focus on making small loans to micro-businesses and poor people, particularly women, to help them to achieve self-sufficiency. Grameen's extremely effective strategy of organizing groups of borrowers and teaching them both business and technical skills caused it to grow from fewer than 15,000 borrowers in 1980 to 9.4 million today – 97 percent of whom are women. Loan repayment rates are similarly impressive, often nearing 100 percent. Micro-finance is now a relatively mature global industry.

Relocalization, Slow Food, Slow Money – Relocalization organizations strive to build more resilient societies by relocalizing the provisioning of food and energy, as well as currency, governance, and culture. Their immediate goals are to: strengthen local economies; increase community

117 https://hbr.org/2011/11/the-for-benefit-enterprise

118 According to the Small Business Administration small businesses in the US provide 49.2 percent of private sector employment. https://www.sba.gov/sites/default/files/FAQ_Sept_2012.pdf

food and energy security; and dramatically improve social equity and environmental conditions. While working primarily within their communities, these groups also share knowledge, experience, and educational resources within communities of practice such as the Business Alliance for Local Living Economies. [119]

Slow Food, a variation on Relocalization, works to promote local foods and preserve centuries-old traditions of food preparation and production, while opposing fast food, industrial food production, and globalization. Slow Food's motto is: "good, clean, and fair." Started in 1986 to prevent McDonald's from setting up a franchise at the bottom of the Spanish Steps in Rome, the Slow Food movement has expanded to over 100,000 members in 150 countries.

Slow Money, inspired in part by the Slow Food movement, catalyzes investment to local food enterprises and organic farms, connecting investors to the places where they live and "bringing money back down to earth." Since its founding in 2010, $40 million has been invested in over 400 small food enterprises.

Impact Investing – Impact investment, a new label on an old idea, is now a recognized phenomenon, with increasing numbers of individuals, families, and progressive institutions seeking to better align their investment capital with their values in primarily early-stage companies and projects that harmonize financial, social, and ecological returns. Not only does impact investing help address social and/or environmental problems while turning a profit, according to The Rockefeller Foundation, it could eventually provide a way to, "unlock substantial for-profit investment capital to complement philanthropy in addressing pressing social challenges."[120] Indeed, a growing number of philanthropic foundations are increasingly using their corpus for mission-aligned, "program-related investments" and some like The F.B. Heron Foundation have declared the intent to have all of their investment portfolio invested for impact. Of course Community Development Financial Institutions have been "impact investing" in the U.S. for decades, while OPIC and the world's development banks have been investing for positive "impact" on a global scale built into their charters.

119 https://bealocalist.org/

120 http://www.rockefellerfoundation.org/our-work/current-work/impact-investing

Global Alliance for Banking on Values (GABV) – GABV is a growing independent network of global banks committed to values-based banking in service of sustainable development. Peter Blom, CEO of perennial "sustainable bank of the year" Triodos Bank, is the founding Chair of GABV, which seeks to collaborate among its members rather than compete. Less well-known than impact investment, but perhaps more vital given the importance of a healthy banking system in service of the transition to regenerative capitalism, GABV is now comprised of 25 licensed financial institutions with combined assets of $100 billion, that together touch the lives of more than 20 million people in 30 countries.[121]

Integrative Design Collaborative – A network of green building consulting, living system design, and education organizations, works to lift building and community planning into full integration and co-evolution with living systems. The work of Architect Bill Reed, a principle of this group, centers on creating the framework for and managing an integrative, whole-systems design process in order to improve the overall quality of the physical, social, and spiritual life of our living places and therefore the planet.[122] In Reed's view, truly regenerative building designs should:

- Create "net energy," including but not limited to electricity, that can be put back into the electric grid.
- Embody a "circular" approach by using natural systems to treat wastewater in ways that enhance groundwater and soils, and mitigates downstream flooding by slowing run-off.
- Regenerate depleted soils on community farms to support healthy food systems, build biodiversity and organic matter, and sequester carbon in the process.
- Build community around shared values, while educating members of the community about the regenerative principles that must be deployed in all walks of life, including creating "value-adding" relationships (social capital) extending far beyond both the buildings themselves and the immediate communities in which they are built. [123]

121 http://www.gabv.org/

122 http://living-future.org/lbc

123 The author is an investor in two such real-estate projects managed by Anthony Sblendorio, both inspired by the work of Regenesis Group and Carol Sanford.

NGOs (Non-Governmental Organizations) – Paul Hawken calls the burgeoning NGO sector "the largest movement in the world that no one saw coming."[124] Usually set up by ordinary citizens and either run by volunteers or funded by foundations, private persons, or governments, NGOs devote themselves to critical issues that require long-term attention and where neither market nor government solutions are viable on their own – such as climate change, malaria prevention, or even rethinking global capitalism! Well-run NGOs often enjoy a high degree of public trust because they often work to address the broad concerns of society. According to Wikipedia, the U.S. now has an estimated 1.5 million NGOs, Russia has 277,000, and India has approximately 2 million.

CREATIVE REGENERATIVE PROJECTS AND ENTERPRISES OF THE FIELD GUIDE

In addition to these broad regenerative movements, a vast number of unique and creative regenerative projects, enterprises, and experiments are also taking place. In order to illuminate how Regenerative Capitalism works in practice, Capital Institute's *Field Guide to Investing in a Regenerative Economy* has been exploring how the regenerative principles emerge organically. They typically arise at the small-scale, rooted in place outside the mainstream, where pressures to conform to the current paradigm – releasing ever-higher quarterly earnings, for example – are not as intense, and where hunger for innovation is strongest, often out of necessity. Yet we increasingly find organizations earnestly aspiring to be regenerative operating inside the mainstream and at the global level as well. Norway's DNV GL, the multi-billion dollar, global safety-certification company that recently celebrated its 150th anniversary is a prime example of the latter.[125]

Since we began the *Field Guide to Investing in a Regenerative Economy* project in 2010, we have had the privilege of sharing the stories of over 25 projects and enterprises that are exemplary of the emergence of regenerative principles in the real world. The discussion below is merely the tip of the iceberg.

124 Hawken, P. 2007. *Blessed unrest: How the largest movement in the world came into being, and why no one saw it coming.* New York: Viking Press.

125 http://capitalinstitute.org/blog/courage-lead/

Regenerating Cities and the Built Environment

- *Manufacturing Renaissance (Chicago, Illinois),* is forging unlikely partnerships among government, organized labor, educators, the private sector, and civil society by creating programs to support the regional advanced manufacturing sectors. One of their immediate projects has been to develop the next generation of advanced-manufacturing leaders by educating a generation of inner-city high school students at Chicago's Austin Polytechnical High School.

- *The Evergreen Cooperatives (Cleveland, Ohio)*, a partnership of the Cleveland Foundation, the Democracy Collaborative, the City of Cleveland, and several "anchor institutions" including local hospitals, is creating a grassroots solution to the crisis of poverty in inner cities by developing a network of locally anchored, worker-owned businesses to generate locally anchored jobs and greater local empowerment and wealth-building. Evergreen Cooperatives now includes Evergreen Energy Solutions, Evergreen Cooperative Laundry, and Green City Growers Cooperative.

- *Detroit Kitchen Connect (Detroit, Michigan),* another example of the "edge effect" in action, is a kitchen incubator that is finding creative and intentional ways to use underutilized resources to forge closer social relationships, bringing people together who might not otherwise connect through the shared love of food. The leaders describe their strategy as the power of the "uncomfortable." They also grapple every day with two sometimes competing realities: the need right now for food and well-being in an inner city, and the long-term need to shift to a different system to sustain the health and wellness of the planet.

Regenerating the Land and Food Systems

- *Grasslands, LLC (Bozeman, Montana)*, a "custom grazing" business now operating ranches in South Dakota, Montana, Hawaii, Florida, and New Zealand, uses holistic-management practices to regenerate overgrazed land – increasing its biodiversity, water retention, soil quality, and carbon sequestering ability. In essence, it harnesses the power of the photosynthetic process and converts it into financial, human, and ecological capital. Given that nearly one-third of the earth's land mass is grasslands, if these projects can successfully inspire imitation aided by the global training efforts of the Savory Institute and others in order to reclaim land that has been degraded by conventional livestock management and human population expansion, the implications will be game changing for the planet. Full disclosure, I am a co-founder of Grasslands, LLC and a board member of the Savory Institute.

- *Grupo Ecologico (Sierra Gordo, Mexico)*, founded by Martha "Pati" Ruiz Corzo and her husband Roberto, is a not-for-profit collaborative that not only catalyzed the creation of the only locally governed Biosphere Reserve in Mexico, but has also helped put in place a variety of innovative funding mechanisms empowering a network of highly resourceful, impoverished small farmers and ranchers to assume the roles of preservationists and regenerators of their own land in one of the most biodiverse regions of the world.

- *Accelerating Appalachia (Eastern Kentucky and Western NC)*, is a business accelerator that nurtures natural and entrepreneurial capital to help provide a foundation for a scale-appropriate, post-extractive, Regenerative Economy in coal country. Tapping into the skill base of the former manufacturing and agriculture economies – food, farming, forests, fiber, and fuels – Accelerating Appalachia connects businesses to impact investing and venture capital programs.

Regenerating Finance

- *The Bendigo Community Bank Model (Australia)*, now represented by over 300 branches throughout Australia, is a unique banking framework in which Bendigo partners with local communities, requiring them to make an initial upfront investment in a branch operation while Bendigo Bank assumes responsibility for staff training, IT, products, capital, and regulatory and compliance issues. Net income is then split between Bendigo Bank and the local community enterprise. A portion of community branch earnings are directed toward local grantmaking, with over $130 million in funds so allocated since the first community bank branch opened in the late 1990s, proving this innovative model "working at the edges" is scalable. The model has helped recirculate the flow of financial capital into local economies in meaningful, self-directed ways, and, is giving local leaders the business acumen to become active players in their communities' economic transitions.

- *First Green Bank (Central Florida)* was founded by Ken LaRoe, a third-generation Central Floridian who was inspired to start up a bank aligned with his values after selling an earlier successful mainstream banking venture and then reading Yvon Chouinard's L*et My People Go Surfing* on a cross-country trip. As a new member of GABV, LaRoe is on a quest to create a lending portfolio that supports businesses that contribute to the regeneration of a local economy dominated by strip malls, condominiums, and tourist-related development. Far from discouraged by the challenges he faces, LaRoe reports that he has reached, "something close to self-actualization: the pinnacle of Maslow's hierarchy of needs."

Studying these projects has provided a proving ground for our theoretical explorations, helping us identify regenerative principles through direct observation and engagement. Witnessing the creativity and resourcefulness of our *Field Guide* partners has also been extraordinarily inspiring for us.

In some cases – such as Grasslands LLC, the Evergreen Cooperatives, and the Lopez

Community Land Trust, for example – we have encountered projects that have been carefully and deliberately architected by seasoned holistic thinkers from the outset. In other cases – such as Detroit Kitchen and Viva Farms, for example – we have witnessed start up projects taking on a regenerative life guided by more intuitive leaders who skillfully tap into the entrepreneurial energy of their communities and the essence of their particular place.

In almost every instance we see the evidence of what we can only call the "invisible regenerative hand" at work. We see people whose everyday lives assume a new and nobler purpose as they experience:

- Truly "empowered participation" in projects on Lopez Island, Washington; in inner city Chicago, Cleveland, and Detroit; and in Mexico's Sierra Gorda;

- "Right relationship" to each other and to nature embedded in the very fabric of the Accelerating Appalachia Incubator and UK's GroCycle company;

- The desire to honor and to elevate all stakeholders a business touches, which propels the partnership between McCarty Family Farms in Kansas and the Dannon Company; the strategies of the privately held ("in right relationship with owners") global DNV GL; and the collaboration among members of the Principal 6 Cooperative Trade Movement;

- The restless ambition to create a values-driven financial system, while struggling against the constraints of the old, flawed system, a drive which energizes Bendigo's over 300 Community Bank Branches scattered across Australia, Community Sourced Capital's expanding U.S. network, Central Florida's First Green Bank and all the member banks of GABV.

There is an identifiable spirit that energizes the regenerative projects our *Field Guide* stories describe, and it sets them apart from many other worthy endeavors to address societal and environmental ills. That spirit was perhaps best expressed by Yorman Nunez of the Bronx Cooperative Development Initiative, who, though unaware of our regenerative thesis, articulated the critical distinction between resiliency and regenerativeness:

"Resiliency speaks to what we are doing in response to outside forces that are beating us down. That may be necessary, but maybe building protections is not the best possible use

of our energy. Regeneration makes you think about the activities that get you through a real healing process to a place of wellness. Because of the realities we live with, that is a much harder proposition and process to go through… but necessary if we really want to get to a point of true sustainability."

IMPLICATIONS FOR POLITICS AND PUBLIC POLICY

The need for regenerative reforms is particularly critical in politics and public policy. The long-term cost of economic crises is measured not only in financial losses, but in ruined lives, foreclosed homes, devastated communities, slashed public services, and a generation of youth suffering from alarming levels of hopelessness and anxiety that will inevitably manifest in deep societal ills or worse. The time lost trying to redress and reform Wall Street's most egregious excesses only exacerbates these already high costs.

Firefighting the financial system has also distracted the public and private sectors from the need to prepare for the economic transition that will inevitably be forced upon us by Mother Nature if we do not initiate systemic change on our own. Yet a multitude of additional crises, ranging from increasing water stress to pandemics, to terrorism, also appear to be spiraling out of control and to be interconnected, if we understand their root causes holistically. Our global leaders' ability to respond is constrained by the sheer quantity and complexity of the challenges. This, as Dana Meadows observed in 1992, reflects a system operating beyond its limits. [126] Worse yet, we must plan on an acceleration of such crises in the years and decades to come as social and ecological stresses mount. Welcome to the Anthropocene, the new geological era of our own making.

Questions and issues of extreme complexity and consequence now abound. Consider our response to climate change alone and the need to transition our energy system off fossil fuels:

- How can we mobilize the staggering $44 trillion of new investment in energy infrastructure and energy efficiency that the International Energy Agency estimates will

126 Meadows, D. et al. 1992. *Beyond the limits: Confronting global collapse, envisioning a sustainable future*. White River Junction, Vermont: Chelsea Green Publishers.

be necessary by 2050 to replace the current energy system?[127] (To put that number in context, the market value of all global public companies combined is $60 trillion.)

- How can we eliminate the burning of fossil fuels by mid-century?

- What about our ability to absorb the economic write-off of $20 trillion in stranded assets[128] representing the majority of proved fossil fuel reserves that must be left in the ground or not burned, and which if extracted would blow us through the 2 degree Celsius warming threshold that scientists agree is the likely tipping point to truly permanent catastrophic consequences?

- What about the fact that three quarters of those fossil fuel reserves are owned not by public companies, but by nation states like Saudi Arabia, Iraq, Iran, Venezuela, and Russia, whose economies, public budgets, and social cohesion are currently highly dependent upon the continued extraction and sale of fossil fuels?

- How are we going to negotiate a deal with OPEC countries (or Putin) that restricts their ability to sell their oil? Same question for Exxon and Shell. And who could enforce such an agreement?

If we do not address these issues, we destroy life on the planet as we know it. Yet, if we do not address them properly, we could easily collapse the economy upon which we also depend. This is the "Big Choice," challenge, and dilemma facing our generation.[129] Consequently, it would be foolhardy to suggest that the choices we must make and the solutions we undertake will be anything but immensely difficult.

- Technological solutions not yet imagined will certainly play a role, but counting on unknowns is not prudent.

127 See J. Fullerton's speech to the Club of Rome (2014): http://capitalinstitute.org/wp-content/uploads/2014/10/Financing-the-Energy-Transition_COR_w-endnotes.pdf

128 http://www.carbontracker.org/report/wasted-capital-and-stranded-assets/

129 http://capitalinstitute.org/blog/big-choice-0/

- Various studies point to the job creation and investment potential of the energy transition, but the scale and complexity of the required shift, both economically and politically, is unprecedented.

- As of this writing, there is still not even an open and honest discussion about the unprecedented geopolitical challenge stranded assets represents as detailed above, coming at a time of rising barbarism in the Middle East and the seeming breakdown of the post-Cold War world order.

While a comprehensive policy formulation for transforming our energy system away from fossil fuels and for the much broader and unprecedented transition to Regenerative Capitalism is beyond the scope of this paper, we can say that the emergence of a Regenerative Economy will be accelerated by polices that include:

- Leveling the playing field by removing subsidies for activities that hinder the emergence of regenerative economies. Top priority should be the elimination of subsidies to the fossil fuel industry and to fossil-fuel- and chemical-intensive industrial agriculture. Developing aggressive new subsidies to catalyze the shift we desire, just as subsidizes have been used to subsidize most systemic changes in our economy. Tax credits and feed-in tariffs, for example, could help catalyze the $44 trillion of investment capital flow required for the transition to the post-carbon economy.

- Restructuring the tax code to help business incorporate social and environmental costs and benefits into their decision-making. This can be most directly achieved by relieving the tax burden from "goods" like empowering productive work, while increasing taxes on "bads," such as market activity that is generating negative "externalities" (costs like pollution that are passed on to somebody other than the business that created them). Such reforms would include income tax relief for the working class, transaction taxes on excessive financial speculation, and a steep and rising carbon tax and other Pigovian taxes.[130] Such tax reform can be designed as a tax shift, not a tax hike, and can be revenue neutral, thus transcending the political bickering of left versus right.

- Proactively using the power of the public purse to catalyze the shift in demand to

130 http://www.nytimes.com/2013/01/06/business/pigovian-taxes-may-offer-economic-hope.html?_r=0

renewable energy. The U.S. government is the largest single energy consumer in the world. Its energy demand must lead the transition.

- Creating institutions to manage the natural and cultural commons for our mutual and perpetual benefit as Peter Barnes explains inspired by Thomas Paine in *With Dividends and Liberty for All*. These institutions will complement markets and governments as the principle guiding influences in Regenerative Capitalism, with revenue generating potential from use fees that can offset other taxes.[131] Such institutions must be insulated from short-term public political pressures. Following the principle of subsidiarity, most will be managed more regionally and locally — arrangements that will find favor with ecologists and decentralist conservatives alike. At the same time, as subsidiarity also suggests, this institutional design will recognize that certain key issues demand a more centralized approach, such as the management of atmospheric carbon.

  As Peter Barnes explains, the institutions managing the commons described above can also play an important role in moderating excessive income inequality by enabling all citizens to share in the abundance of our common resources. Such guaranteed income from shared wealth is currently demonstrated by the payments every Alaskan citizen receives from the Alaska Permanent Fund.

  In a world of accelerating technology advances, such as robotics threatening more and more jobs and undermining our expectations of work in the economic system, we will need an expanded understanding of shared commons beyond the natural commons (the Internet for example, and even our collective and cumulative advances in all technology perhaps) in order to structure a truly fair sharing of the common abundance we are all born into.

- Creating other mechanisms and incentives to accelerate the circulation of excessive financial wealth back into targeted social and natural capital assets in accordance with our understanding of holistic wealth and the need for balance. The tax deductibility of charitable giving is aligned with this need, although it will require some refinements in order to be sure that it incentivizes our highest priorities. The tax code incentives for bigger houses and greater debt on corporate balance sheets make no sense when looked

131 Barnes, P. 2014. *With Dividends and Liberty for All: How to Save Our Middle Class When Jobs Don't Day Enough*. San Francisco: Berrett-Koehler Publishers.

at through a regenerative lens. Progressive income taxes and in particular inheritance taxes will need to be reassessed in light of our scientific understanding of the costs to systemic health of extreme inequality.

- Constructing a host of incentives and restraints to create feedback loops that discourage wasteful consumption, particularly in the developed economies. These will include rethinking our views on legitimate constraints on "free speech" when it comes to advertising, which sustainability expert Pavan Sukhdev rightly suggests needs to be more accountable to the public good.[132]

- Taking a fresh approach to the North/South dialogue with an appreciation that all of human civilization literally will sink or swim together. If China, India, and Africa follow the hypercompetitive, extractive, financialized, fossil-fuel-intensive development path of the North, and, the North fails to transform itself — in other words we simply keep doing what we are doing now — then our collective future prospects will be grim.

- Developing a new metrics of systemic health for economies and enterprise networks. A number of systems scientists are busy developing just such tools, measuring regenerative qualities of healthy flow networks such as system intricacy, balance, and circulation. [133]

IMPLICATIONS FOR FINANCE

The challenge of reforming our finance theory and practice, and our banking system will be particularly critical and exceptionally difficult. The dual difficulty will be to rein in the anti-social excesses of the financial sector, while redirecting the vital flow of investment capital to support the transition to a Regenerative Economy. Our circulatory system is failing, literally bleeding us slowly to death. We must first apply a tourniquet to the wound, pulling it tight with bold conviction grounded in our new scientific understanding of the principles of regenerative

132 Sukhdev, P. *Corporation.* 2012. *2020: Transforming Business for Tomorrow's World.*

133 Goerner, S., Lietaer, B., and Ulanowicz, R. (2009). "Quantifying economic sustainability: Implications for free enterprise, theory, policy and practice." *Ecological Economics*, 69 (1), 76-81. See also: http://people.biology.ufl.edu/ulan/pubs/Goerner.pdf

health. At the same time we must rehabilitate the healthy channels of circulation that have atrophied as a consequence of our flawed thinking and neglect.

"I HAVE THE SOUTH IN FRONT OF ME AND THE BANKERS BEHIND ME – AND FOR MY COUNTRY I FEAR THE BANKERS MORE."

– ABRAHAM LINCOLN

This redirection will be particularly challenging not only because it runs counter to the darker culture of banking that has cycled in and out for centuries, *but also because it runs counter to the misconstrued "purpose" of banking and finance* to which even the many honest and decent financiers subscribe.

Aristotle wrote that chrematistics – roughly translated, "the use of money to make money" – is *unnatural*.[134] If he is right, then we have a long way to go to create a financial system that serves the needs of the real economy because today's system – led by dominant institutions including "too big to fail" banks, and the powerful hedge funds and private equity funds – is based on one common belief: the purpose of banking and finance is to make money using money, particularly, *other people's money*. We accept that it is the duty of our bankers, almost a moral duty, to do so as productively as possible, by which we mean in our outdated reductionist thinking, in such a way as to generate the highest return on financial capital invested, provided that it is legal. If that means channeling savings to finance the production of dirty Tar Sands oil, or excessive speculation by giant hedge funds or by the banks themselves, or the short-term extraction of holistic health out of companies and communities by leveraged financial engineering, then so be it.

Many now call today's dominant form of capitalism "finance capitalism" – an unflattering reference to the short-term, extractive approach to capitalism currently led by Wall Street. Ironically, while most people loathe the inequality this system fuels, and condemn financiers who break the law or act irresponsibly, they generally do not question that the purpose of banking and finance is to make money by using other people's money, preferably at the fastest rate possible, which usually means fueling those rabid extractive processes that are shattering the long-term holistic health of people and planet.

134 Daly, H., and Cobb, J. 1984. *For the common good: Redirecting the economy toward community, the environment, and a sustainable future.* Boston: Beacon Press.

Transitioning to a Regenerative Economy will require a profound rethinking of finance and a profound redesign of the global financial system because this extractive approach often conflicts with building long-term resilient enterprises within a Regenerative Economy. In particular, instead of striving to be master of the world, finance must become a subsystem of the economy that *operates in service of the real, Regenerative Economy.*[135]

In other words, the purpose of regenerative finance, banking, and investment must be to serve the health of the whole system. While this purpose is served by investing in regenerative enterprises, it also includes making a sustainable profit for the constructive risks a financial institution takes – like transforming short-term savings into long-term productive loans – and for the services it provides in the process. New approaches to investing (and the rediscovery of time-tested approaches) such as Evergreen Direct Investing[136] will arise to complement our short-term-obsessed public capital markets, enabling long-term decision-making while reasserting the responsibility that goes with real ownership. As always, the fractal nature of healthy systems means the principles of regenerative health must be applied to all scales of finance, from local to global.

A growing list of financial institutions and financiers who believe it is their responsibility to serve the real economy, rather than extract from it, suggests that the emergence of regenerative finance is accelerating, in part as a response to the failures of mainstream finance, if we have eyes to see it. We see evidence of it in some of the post 2008 financial crisis reform efforts that are pointing us in the right direction, and in challenges to our current beliefs about the superiority of a purely private banking system. Here is just a brief preview of what financial system transformation entails and where it is already happening:

- Led by the example of the Dutch bank Triodos, a growing network of banks, called the Global Alliance for Banking on Values, is committed to serving the real economy.

- In the U.S., RSF Social Finance, which extends productive loans to regenerative enterprises following the philosophy of Rudolph Steiner, just celebrated its 30th anniversary.[137] Many

135 This will be the topic of a more detailed followup report.

136 http://capitalinstitute.org/our-projects/evergreen-direct-investing/

137 http://rsfsocialfinance.org/

other mission-driven loan funds and community capital vehicles exist and are sprouting up in response to the recognized failures of our banking system.

- Numerous public/private financial institutions, such as development banks, already exist. Imperfect as they are, they prove that there is and always has been a well-recognized public/private nature of banking, and a credit allocation process to serve a healthy economic system. There are even examples of healthy, disciplined public banks, such as the Bank of North Dakota in the U.S., that provide a stabilizing complement to the private banking system. And in places ranging from Germany to China, the role of the public sector in banking is much more accepted. We should expect renewed debate around the role of the public sector in banking and even the money creation process, either directly or in creative hybrid public/private partnerships, as we tackle the multi-trillion dollar financing challenge of the transition to, and maintenance of, a truly regenerative economy.[138]

- Impact investing – where investors seek to align their investments with social and environmental purpose – is burgeoning, particularly among certain wealthy families in the U.S., as discussed earlier.

- Financial reform policies have struggled to take hold due to the excessive power our financiers now have over our political system and our ideological beliefs. Nevertheless, even here there has been important progress. The excess capital requirements for "systemically important" (i.e., "too big to fail") institutions is directionally correct even if insufficient as we have discussed, and an example of the kind of self-regulating feedback loop we need. While it is being resisted strongly in the U.S. and U.K., a Financial Transaction Tax targeting the excessive short-term speculation that plagues our capital markets is broadly supported in Europe and elsewhere and continues to be debated globally behind the scenes.

- We will also need to rethink all the subsidies that corrupt and hamper the development of the financial system we need, beginning with the cost of capital subsidy to our largest banks that comes with the implicit government recognition that it cannot and will not let

138 http://capitalinstitute.org/wp-content/uploads/2014/10/Financing-the-Energy-Transition_COR_w-endnotes.pdf

> the largest institutions fail if doing so risks taking down the real economy. Bank deposit insurance and access to the central bank for funding each serve a useful purpose, but today's bloated financial conglomerates have exploited these privileges in ways that serve only their own interests, while putting the real economy at risk. "Too big to fail" and "too complex to manage" banks like today's JPMorgan and Goldman Sachs require a profoundly different incentive-driven regulatory regime that in all likelihood will drive them to break themselves up into manageable enterprises that do not threaten the health of the real economy. The "too big to fail" banks that remain will act in ways that, while profitable with reasonable banker compensation aligned with other professions, truly serve the health of the whole.

It is an absolute requirement that we get our financial system house in order if we are to transition to a Regenerative Economy, and we are starting from a troubled place. The transformation of our energy, water, and transportation systems underway represents *the largest investment opportunity in the history of capitalism*. We need a capitalism that works and a financial system in service of its needs.

MEASURING AND MANAGING SYSTEMIC HEALTH IN COMPLEX WEBS

Managing a complex economic web of "capitals" and multiple, competing factors is not going to be easy – particularly because it is new to us. Instead of optimizing one variable, such as "shareholder value" or economic efficiency, as is conventionally done, managing a complex whole requires a harmonizing process that must integrate multiple variables in proper alignment and proportion. Furthermore, since the universal principles are both qualitative and quantitative, creating regenerative health in today's complex human networks will require a harmonization process that is both:

- Subjective: seeing patterns, making judgments based on values and principles;
- Analytic: measuring what matters.

Many of the subjective aspects of management are being addressed in approaches such as Peter Senge's *Fifth Discipline* and Otto Sharmer's *U Theory,* that use systems thinking to create

more effective learning organizations.

Nobel Laureate Elinor Ostrom's study of how certain groups developed effective economic governance of the Commons will become particularly helpful to us as we struggle to learn how to holistically manage multilevel political economies on a greater scale in the future.[139] It will take creative extrapolation to move from the locally managed natural commons that Ostrom was studying — a river system for example — to local and regional economies, and all the way to the shared common resources of the planet, such as the atmosphere. Emphasizing the multifaceted nature of human-ecosystem interaction and arguing against any singular "panacea" for all social-ecological system problems, Ostrom nevertheless identified eight design directives found across a wide range of communities that manage Common Pool Resources (CPR) effectively:

"THE JOB OF MANAGEMENT IS TO MAINTAIN AN EQUITABLE AND WORKING BALANCE AMONG THE CLAIMS OF STOCKHOLDERS, EMPLOYEES, CUSTOMERS, AND THE PUBLIC AT LARGE."

– FRANK ABRAMS, CHAIRMAN OF STANDARD OIL (1951)

- Define clear group boundaries with effective exclusion of external unentitled parties.
- Match rules governing use of common goods to local needs and conditions.
- Ensure that those affected by the rules can participate in modifying them.
- Develop a system for monitoring members' behavior and maintaining accountability that is carried out by community members themselves.
- Use graduated sanctions for those who violate community rules.
- Provide accessible, low-cost means for dispute resolution.
- Make sure outside authorities respect the rule-making rights of community members.
- Use subsidiarity (i.e., decisions made at the lowest level possible) to build responsibility

139 Ostrom, E. 1990. *Governing the commons: The evolution of institutions for collective action.* London: Cambridge University Press.

for governing the Commons in nested levels from the immediate local up to the entire, interconnected system.

Other approaches to holistic management add a more ecological spin. For instance, Allan Savory's work in holistic-range management won the 2010 Buckminster Fuller Challenge for initiatives that take "a comprehensive, anticipatory, design approach to radically advance human well-being and the health of our planet's ecosystems." Savory's work started with the observation that healthy natural systems function as *holistic* communities with *mutualistic* (symbiotic) relationships among all parts. Consequently, instead of single-mindedly obsessing on maximizing short-term financial value, Savory's approach to managing whole systems emphasizes: 1) the importance of managing the relationships among parts; 2) being aware of excesses and limits; and 3) addressing issues of "weakest links." Some of his principles that are easily extrapolated to human systems, include:

- Understand the unique context and define what you are managing in its *entirety*, what Savory calls "the whole under management," including all the potential products, not just the most obvious, and design your system to take advantage of what exists in terms of all available resources. (As an interesting aside, Savory once said to me that one cannot manage an economy absent the unique cultural and ecological context in which it exists, a direct challenge to the modern discipline of economics, which often takes the view that such issues are outside its domain.) Define what you want now and far into the future. Develop goals and strategies to achieve the quality of life you desire, and learn how to build a system-nurturing environment to sustain it. Be aware that different elements play different roles and that all are necessary. Support the health of each element, and make sure that circulation is robust and balance is maintained.

  For instance, while the Kenyan Greenbelt Movement founded by Nobel Peace Prize winner Wangari Maathai was ostensibly about planting trees, it actually improved women's rights, local income, local education, local nutrition and environmental conservation simultaneously. These simultaneous outcomes emerged from careful consideration of: the resources available in the current context; what outcomes were desired; and what strategies would be effective for connecting the two.

> "PUBLICITY IS JUSTLY COMMENDED AS A REMEDY FOR SOCIAL AND INDUSTRIAL DISEASES. SUNLIGHT IS SAID TO BE THE BEST OF DISINFECTANTS; ELECTRIC LIGHT THE MOST EFFICIENT POLICEMAN."
>
> – LOUIS BRANDEIS

- Watch for the earliest indicators of systemic health or lack thereof. An indicator of improved economic functioning would include: the widespread sprouting of new regenerative enterprises; improvements in educational systems and physical infrastructure; and increased access to seed capital and finance at the lower levels of economic systems. Indicators of ill health would include: rising inequality; shrinking opportunities; growing individual debt; crumbling infrastructure; and poor circulation of credit at lower levels of the economy.

- Be adaptive and manage your system *proactively*, before imbalances become critical. Assume you are wrong not right, and test your decisions, with an eye to whether they are socially, environmentally, and financially sound for both the short- and long-term. Use a "canary in a coal mine" approach, that is, build in feedback loops for monitoring, re-adjusting, and re-planning as necessary.

- Be aware of timing. Be sensitive to pressures and long-term changes taking place in the environment. Realize that individual businesses and whole economies go through cycles, and that activities that are needed and possible at one stage of the cycle may be impossible and counterproductive at another. An understanding of where you are in a cycle improves the effectiveness of your strategies.

In addition to the subjective elements, our ability to achieve vitality will be greatly aided by analytic tools designed to help us assess the health of each type of capital, as well as the systemic health of "wholes" at all levels of the system. These new tools will include the comprehensive – i.e., holistic – valuation of business enterprise activities. The International Integrated Reporting Council (IIRC)[140] and the Sustainability Accounting Standards Board (SASB)[141] have initiatives underway to promote greater transparency through "integrated reporting" – that is, by measuring, reporting, and managing multiple forms of capital and stakeholder interests in an integrated fashion – for public companies using industry-relevant standards.

To be effective, however, holistic measurement and management of complex systems must go

140 http://www.theiirc.org/

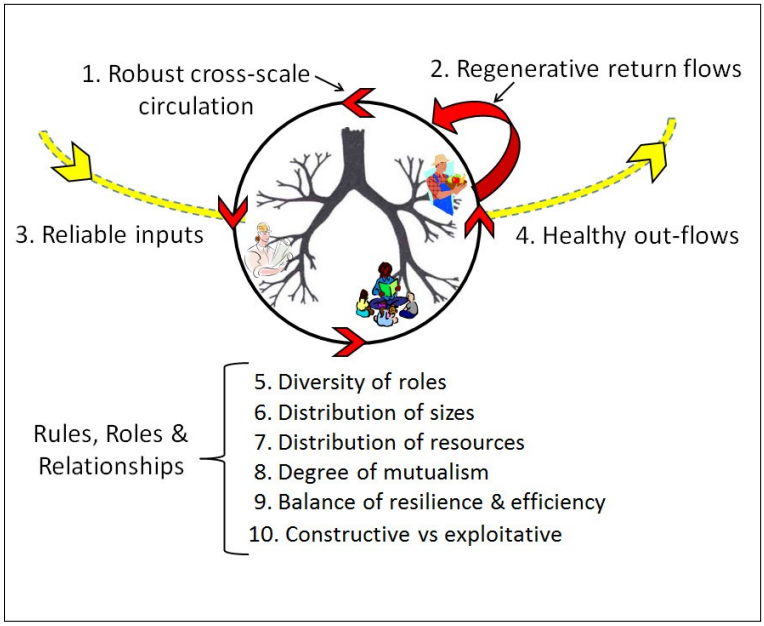
141 http://www.sasb.org/

further than integrated reporting by individual enterprises, as important as that is. We believe the rigorous form of holism being developed by the Energy Network Sciences (ENS, see Appendix A) can provide the measurement tools we need to turn our newly understood and intuitively pleasing sense of how economies must change into the scientifically sound policies we need to transform our current economic system into a vibrant, Regenerative Economy and then to manage it as such indefinitely into the future.

ENS research is particularly intriguing because it offers ways of measuring both subjective principles such as certain aspects of "in right relationship," and technical ones such as "circulation" and" balance." For instance, as Figure 7 shows, the "Top 10" measures of systemic health suggested by a team of researchers from FHI 360, Towson University, and Capital Institute, includes measures of traditionally subjective and traditionally analytic elements. All of these measures have been validated on real-world systems, though primarily ecosystems and living systems, not economies. The first four are measures of Structure and Flow. The final six are measures of Rules, Roles, and Relationships. While some of the descriptions get quite technical, you can see the parallels to the principles of Regenerative Capitalism laid out in this paper.

The exciting and somewhat startling thing is that we discovered this convergence after we had deduced the eight elements from our study of real-world initiatives and more qualitative academic research. This discovery strongly reinforces our confidence in the conceptual framework we are proposing. Adapting these measures to local and regional scale economies, and ultimately using them to help manage the global economy (to the extent it is even possible), and then constructing supportive public policy prescriptions is the exciting work still ahead.

Figure 7. Our "Top 10" measures of systemic economic health.
Source: Dr. S. J. Goerner



Measures of Structure and Flow:

1. *Regenerative return flows:* Assesses how much money and other resources the system recycles into building and maintaining its internal capacities, including human capital as well as physical infrastructure. The Finn cycling index, for instance, measures how much of the flow is cycled flow.

2. *Robust cross-scale circulation*: Assesses how rapidly and well resources reach all levels. Such aggradation can be measured by Flux Density, multiplier effects, or Total System Throughput (which is the flow network equivalent of GDP).

3. *Reliable Inputs:* Assesses how much risk and uncertainty there is for the critical resource, information, and monetary flows upon which the system depends. This can be measured as a ratio of renewable inputs to total inputs, or using an "Emergy" analysis.

4. *Healthy outflows:* Assesses how much damage the system's outflows do externally.

Measures of Rules, Roles, and Relationships:

5. *Diversity of roles:* Assesses both the diversity and the number of players in different activities critical to system functioning, for instance, the number of grocery stores, banks, hospitals, or schools in a given area with a particular population.

6. *Distribution of sizes or resources:* Assesses where money and resources go. Can be plotted using weighted distribution of stocks or flows.

7. *Degree of mutualism*: Assesses ratio of win-win versus win-lose relationships within the network. Is currently measured as weighted relationships.

8. *Adaptability/place on the adaptive cycle*: Assesses the system's readiness for change and its place in a classical S-curve cycle of development. Is currently measured using Fath's adaptive cycle measures.

9. *Balance of efficiency and resilience:* Assesses the balance between levels of diversity and flexibility (resilience) and streamlining and throughput (efficiency). Is currently measured

using Ulanowicz's "Window of Vitality" or robustness metrics.

10. *Constructive versus exploitative:* Assesses the level of value-added and capacity-building activities versus organizational draining or gradient-degrading (exploitative) ones.

Chapter 5: Creating a Regenerative Civilization

"There is nothing more difficult to plan, nor more dangerous to manage, than the creation of a new system. For the creator has the enmity of all who would profit by the preservation of the old system and merely lukewarm defenders in those who would gain by the new one."

— Niccolo Machiavelli

We believe regenerative economies are the natural next step in economic evolution, bringing economics into alignment with our latest scientific understanding of how the universe actually works. We already see expressions of regenerative efforts emerging all around us, although they are often invisible to those observers still trapped in the outdated reductionist paradigm. Until now, this transition has been hampered by the lack of an *effective story.*

We believe Regenerative Capitalism – informed by practical experience, built around principles of systemic health, anchored in scientific rigor, and grounded in universal wisdom traditions and a commonsense moral framework – can provide the foundation for the narrative we need at this critical juncture. Of course more context-relevant language and nuance will need to be developed for a diversity of audiences that must hear this new story.

The centerpiece of this story is that systems that last in the real world are systems that are *healthy, regenerative energy flow networks.* They follow a consistent pattern, one in alignment with the eight principles described herein.

Sustainability, in other words, is an outcome or a byproduct of regenerative system design that follows this universal pattern.

Therefore, since human economies are also energy flow networks, we suggest that the best and likely only way to achieve lasting prosperity and well-being is to build *healthy human networks following these same universal patterns,* ones capable of generating widespread social and economic vitality across all levels of society. Today's science of regenerative systems shows us how to achieve such widespread well-being by both identifying the universal principles that support durably vibrant systems, and giving us precise measures and targets to guide our steps.

The contrast between this story of how to build a healthy economy and today's dominant neoliberal theories is striking. While democratic, free enterprise systems theoretically promote widespread empowerment and well-being, today's laissez-faire version of capitalism is failing because it promotes largely erroneous beliefs about how to create a healthy economy. Comparing this failing theory with the regenerative vision is instructive:

REGENERATIVE (SYSTEMIC) THEORY	CONVENTIONAL (REDUCTIONIST) THEORY
Focuses on how the system grows as the key to long-run prosperity, not the growth of the system per se.	Focuses on the growth of the system measured by GDP as the path to prosperity.
Acts in ways that supports the long-term health of the whole society and planet, with feedback loops designed into the system to ensure systemic health rather than treating the symptoms of ill health after the fact.	Acts in ways that tend to benefit the wealthy and powerful, often at the expense of harm done to other parts of the system, subject only to after-the- fact mitigation by government policy.
Maximizes long-term health by ensuring equitable benefits to all stakeholders.	Maximizes profits to owners by minimizing benefits to other stakeholders and then relying on government programs to fill the gaps (or not).
Values the long-term vitality of human beings and essential ecosystem function.	Values money and short-term profit ahead of human beings and the environment.
Circulates money/wealth/information robustly.	Concentrates money/wealth/information increasingly, subject only to regulation/ redistribution debates after the fact.
Balances the freedom upon which innovation thrives, and the constraints necessary for collaborative community by building self-regulating mechanisms into the design of the system that are aligned with the principles of systemic health.	Polarized debate over the value of individual freedom (laissez-faire) versus the need for government regulation in response to market deficiencies. Added regulation comes after the damage is done with all the unintended consequences such a reactive approach entails.
Maintains long-term health by balancing a variety of critical but competing factors.	Increases owner and superstar profits by maximizing size and efficiency enabled by technology.
Centers on reciprocity, mutual benefit, and common cause.	Stresses selfishness and effective exploitation of land and labor for the benefit of capital.
Invests long term in people and common-cause infrastructure.	Long-term investment displaced by short-term extractive speculation and manipulation of the system benefitting a small elite.
Argues that addressing social, economic, and environmental crises provides an excellent way to increase both profits and economic health.	Ignores looming social, economic, and environmental crises, arguing that profits and growth must come first because they are the key to economic strength.

The broad shift in vision accompanying Regenerative Capitalism will be just as profound as the one Copernicus precipitated when the revelation that the earth traveled around the sun undermined the infallibility of medieval authorities and changed our view of how the world worked. Our transition will be filled with profound and frightening challenges. To meet these challenges, we have offered a new story, a synthesis of many thinkers' insights with the actions of entrepreneurs manifesting this change on the ground into a coherent and scientifically rigorous conceptual framework. It provides a hopeful and credible alternative to the pessimism our current and looming global threats can instill, the uncritical techno-optimism we are genetically wired to believe in no matter how irrational, and the naïve head-in-the-sand denial that is all too prevalent today.

- *This rigorous and heartfelt theory of whole systems* will enable us to see the vast unseen potential for cross-scale vitality lying dormant in human systems. When individuals tap into this latent potential, we say they have activated their innate genius. We are suggesting that a similar genius lies dormant in entire human networks, waiting to be activated at systemic scale. This is the great hope of the emergence of Regenerative Capitalism.

- A new awareness of regenerative design principles and patterns coupled with accelerating pressure for change due to accelerating crises will make reforms that seem impossible today become inevitable.

- When properly articulated, the new narrative will break down seemingly intractable barriers. This, in turn, can help us transcend some of our false ideological divides, and make breakthroughs in our broken politics more feasible. For example, the new framework can help both left and right see that the ideological battle between "free markets with little government" and "big government with regulated markets" is largely a false choice. The real choice is between effective and ineffective tools, and effective and ineffective system design.

- This new Regenerative Capitalism framework will change the debate and forge profound public policy changes in the U.S. and around the world. For example, where conservatives and liberals, Wall Street chieftains and central bankers, mayors and labor union leaders currently argue over how best to foster ever-increasing, yet undifferentiated economic growth, in the future economic debates will center on how best to foster regenerative development that is aligned with how economic flow networks actually work.

In short, this new narrative illuminates a *pathway* to transcend our broken national and global politics and get to the urgent work at hand. It is now our choice whether to embark down this path. Our long-run prosperity and our very survival both depend on nothing less than a once-in-the-history-of-civilization transformation to a regenerative civilization based on a holistic worldview.

This is the Great Work awaiting us in the 21st century.

CHANGING THE DREAM

> "Your people dreamed of huge factories, tall buildings, as many cars as there are raindrops in this river. … Now you begin to see that your dream is a nightmare." [Interviewer:] How might we make things better? "That's simple. All you have to do is change the dream. …You need only plant a different seed, teach your children to dream new dreams."
>
> — Elder of Ecuador's Shuar tribe, 1991[142]

Working with enlightened entrepreneurs on real-world projects and discovering a solid empirical foundation for a new theory of regenerative economics has made me confident in the dream of a regenerative civilization. While the path is now clear, the work is just beginning.

But it is more than a dream. Indeed I see it already unfolding all around us. What an amazing time to be alive!

142 J. 2007. p 160. *The Secret History of the American Empire.*

Appendix: The Science of Energy Flow Networks

By Dr. Sally Goerner, Science Advisor to Capital Institute and author of *The Science of Sustainability*

Over the last 60 years, researchers in a wide variety of fields have created a sophisticated, empirical understanding of a cosmos based not on separate, randomly colliding bits, but on interconnected networks of *flow*. The study of "flow networks" – meaning systems whose existence arises from and depends on circulating matter, energy, resources, or information throughout the entirety of their being – makes sense as a basis for understanding "whole systems" because the basic setup is universal and explains why pieces fit together. Ecosystems, for instance, are invisibly connected webs of plants and animals that add to and draw from flows of oxygen, carbon, etc. Your body is an integrated network of cells kept healthy by the circulation of nutrients and information. Economies are networks of interlinked people, communities, businesses, and governments that contribute to and draw sustenance from the circulation of goods, services, resources, information, and money. Even the evening weather report is a description of flows of wind and rain driven by temperature and pressure. (Figure 1A)

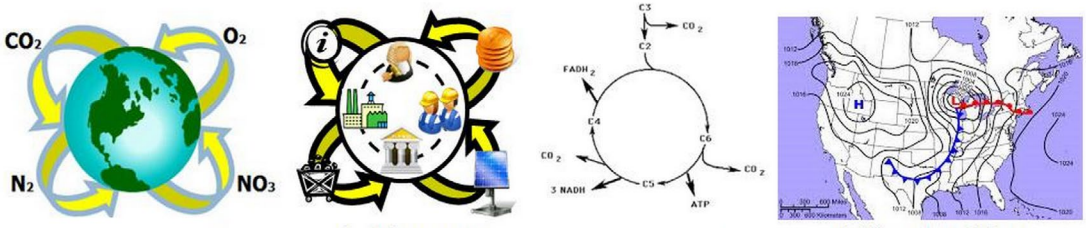


Figure 1A. The biosphere, an economy, metabolism and weather as flow networks

Where classical economics focused on equilibrium theory, today's expanded thermodynamic research studies the behavior of flow networks, systems built around circulating matter, energy, and information throughout their entire being.

The big discovery here is that many of the same physical laws that govern health and development in ecosystems and living systems are common to all flow networks – *and therefore apply equally to human networks such as economies and societies.*

Note: Since a number of disciplines are involved, we will refer to them using an umbrella term, the "Energy Network Sciences" (ENS). Furthermore, though they are often called energy-flow networks, here "energy flow" actually refers to any kind of flow that matters to the particular system under study. Economists, for example, study the flow of money and resources in

economies, while ecologists study the flow of carbon and oxygen in the biosphere.

So, where ecologists taught us to see the biosphere as a web of circuits through whose veins resources like oxygen traverse the globe, the broader science of energy networks explains why similar images apply to living, nonliving, and societal networks such as economies as well. In fact, though ecologists are the most famous for using flow-network methods, researchers have been applying similar methods to economies for at least 60 years. For example, in her 2000 book *The Nature of Economies*, Jane Jacobs suggested that economies are governed by the same rules as nature itself. Her actual hypothesis, however, was that living organisms, ecosystems, and economies are all types of flow networks, and that similar principles of growth and development apply to them all.

The study of flow simplifies the study of systemic health by providing a logical basis for systemic behavior that holds regardless of whether the network under study is a single living organism, a nonliving network such as the Internet, an ecosystem, or the entire economy itself. This simplification is a result of the fact that the basic dynamics of flow are *universal*. Energy, for instance, is known to fuel organization; drive development; and create pressure for change.

Rigorous theory and precise measures of health and development also become possible because universal patterns and principles such as pressure and flow can be observed and measured. Indeed, measuring critical characteristics of network health and development is often relatively straightforward because most can be assessed by mapping the layout and magnitudes of flows, and counting the number, size, diversity, and connectivity of nodes and connecting channels.

In other words, we can do rigorous research that supports effective practical action because the behavior of flow networks is both logical and measurable.

> *The surprising result is measurable laws of health and development that apply directly to economies.*

Existence of clear, common sense, universal principles allows us to apply metaphors while keeping our science intact. Thus, universal principles explain why similar laws and patterns of health and development had been observed in systems as diverse as living organisms, ecosystems, and economies – and this, in turn, explains why metaphors are applicable. Yet,

the fact that these principles are measurable explains why rigorous findings in one field might apply across a wide range as well.

This combination of hard science and applicable metaphor is extremely powerful. For instance, while the eight principles of systemic health described in chapter 3 are based on rigorous research, the (flow network) metaphor of metabolism makes the reasons for them extremely easy to see. In this view, economic flow networks form a society's metabolic network: an interconnected web of individuals and businesses that turn resources and information into the energy and products a society needs to thrive, while constantly distributing these products via a mutually-nourishing, circulatory flow. In such an economic metabolism:

- *The health of the whole is inseparable from the health of its parts, and the health of every part is inseparable from the health of the whole.* The health of parts and wholes are inseparable because all those parts play critical roles. Just as there is no human health without a healthy heart, mind, circulatory system, etc., so the health of an economy that sustains rich and poor alike depends entirely on the inseparable fabric of human networks and their component businesses and individuals. So, while we can debate how much happiness money can buy, we now know that basic well-being, security, and community relationships are as essential to systemic economic health as they are to individual and community health.

- *Money is like blood*, a vehicle for catalyzing processes, exchanging resources, and nourishing economic muscle. It is a means not an end, in contrast to how it is understood in conventional economic thinking.

- *Robust cross-scale circulation is critical:* The fact that robust, cross-scale circulation is essential to systemic health explains why poor monetary circulation to lower levels of an economy – insufficient wage levels, few small-scale commercial loans, etc. – results in economic necrosis, the dying off of large swaths of economic tissue. As with living organisms, if such necrosis goes on too long, the entire economy may collapse along with the undernourished parts. Quantitative measures of internal circulation (such as multiplier effects) help assess systemic health and give teeth to the truism: "beggar-thy-neighbor policies come back to haunt." Said differently, it shifts the debate over poverty and inequality from the purely moral sphere to the realm of fundamental, system-wide health (including the health of the well-off).

Conversely, the better the internal circulation, the more likely the economic tissue so nourished is to thrive. In economic terms, this means: better access to small commercial loans; greater investment in real-economy activities (as opposed to financial speculation); and livable wages with better benefits all improve monetary circulation and the health of the economic whole.

- *Long-term survival depends on "self-feeding" return loops:* While many flow systems, such as tornadoes, rise up only briefly to diffuse an energy buildup, the networks we care most about – living organisms, ecosystems, and societies – owe their relative permanence (their "sustainability") to the fact that they are designed to nourish all their critical systems. So, just as your body channels the food you eat into the nourishment you need to survive and the health of your immune system, so the single most important factor in economic health and longevity lies in being self-feeding, that is, in channeling energy and resources into building and maintaining the internal processes the system needs to thrive. In economies this includes everything from roads, schools, and communication infrastructure to business incubators and effective governance systems.

The existence of universal *patterns* then provides precise targets for systemic health and development that take us far beyond metaphor. Geometrically precise patterns – that play out in every kind of system at every level of our world – have been the object of both awe and science since the ancient Greeks labeled them "sacred geometries" over 2500 years ago. Today most researchers believe such patterns exist because they support some aspect of systemic health. The study of fractals provides a modern example of how universal patterns provide precise, measurable *targets* for optimal systemic health. Technical analysis of stock market patterns uses a similar approach to detect the health of the stock market.

As Figure 2A shows, the structures and organizations found in the real world are often fractal in nature, meaning *similar patterns repeat at all scales* – small, medium, and large. Most researchers believe fractal patterns are common because they support some aspect of systemic health. Lungs, for instance, have a branching structure – with a few, highly efficient, big conduits on top and successively more numerous, less efficient, smaller conduits on the bottom – because this particular structure optimizes the diffusion of oxygen into the bloodstream.

Figure 2A. Some fractal patterns found in the natural world.

Fractal arrangements are found in everything from root systems and river deltas to ecosystems because they help optimize the many aspects of function and flow. For example, healthy ecosystems maintain a particular balance of small, medium, and large predator/prey species because species at each level play important roles, and too many or too few of any of them is likely to cause the system to collapse. Consequently, thanks to thousands of years of selection, lions spend much of their time lazing around in the sun because, if they hunted as much and as effectively as they could, they would kill off too much prey and then starve to death themselves. There is a lesson in this for our economic "masters of the universe" and implications for public policy to ensure our "lions" behave like lions.

To sum up, fractals and other universal patterns represent optimal arrangements for systemic health that have been selected over millions of years because they help optimize various elements of systemic health. Because these universal designs are measurable, we can use them to create *precise targets* for various aspects of health. So, though ENS cannot predict each step of the system, it can predict systemic health by measuring how closely a network approximates the optimal structures seen in the real world.

This combination of universal principles and measurable targets of systemic health provides a truly powerful framework for rethinking capitalism, and the public policy agenda that will support long-term economic health. Fractals, for example, provide a measurable understanding of *healthy hierarchies*. Here, the role a proper balance of small, medium, and large elements plays in systemic health provides an empirical explanation for why long-observed factors such as balance, circulation, and integration across scales apply to the web of enterprise networks that ultimately comprise the entire global economy. It also confirms growing suspicions that imbalances, such as the shrinking middle class and domination by "too big to fail" organizations,

are dangerous to systemic health – while at the same time providing precise explanations and targets for what constitutes too big, or too few.

We experience outsourced jobs and decrepit schools as local events, but underneath we know they are symptoms of global economic dysfunction. ENS can help us correct the underlying causes of this dysfunction by:

- Providing rigorous measures of systemic health that support practical applications;
- Identifying the optimal network structures and peak patterns of development needed to build healthy, self-sustaining, regenerative systems;
- Showing the logical connection between whole-system dynamics and the boom-bust cycles seen in human systems, thus providing effective diagnoses of their causes and cures; and
- Validating the dream of free enterprise democracy and showing us how to achieve it.

ABOUT CAPITAL INSTITUTE

Founded in 2010 by John Fullerton, a former JPMorgan managing director with two decades of financial system expertise, Capital Institute is a collaborative space exploring the economic transition to a more just, regenerative, and thus sustainable way of living on this Earth.

It is our view that the exponential growth of compound investment returns demanded by the financial system is in irreconcilable conflict with the finite boundaries of the biosphere. We believe this relentless and narrow pursuit of exponential growth of returns on financial capital, without reference to either the laws of science or to universally acknowledged moral and ethical values, is contributing to an ever-widening and destabilizing wealth gap, and security crises around the globe.

Our mission is to provide a new theory grounded in real-world practice and accompanying narrative of the supportive, non-coercive role finance must play in the transition to a Regenerative Economy, an economy that harmonizes the multiple kinds of capital essential to human and planetary well-being.

ABOUT THE AUTHOR

John Fullerton is the founder and president of Capital Institute, and a recognized New Economy thought leader and public speaker. He is also an active impact investor through his Level 3 Capital Advisors.

Previously, he was a Managing Director of JPMorgan where he managed multiple capital markets and derivatives businesses around the globe and then ran the venture investment activity of LabMorgan as Chief Investment Officer through the merger with Chase Manhattan Bank in 2001. John served as JPMorgan's representative on the Long Term Capital Management Oversight Committee in 1997-98. He is a co-founder and director of holistic ranch management company Grasslands, LLC, a director of New Day Farms, Savory Institute, and the New Economy Coalition, a trustee of the V. Kann Rasmussen Foundation, and an advisor to Armonia, LLC, the UNEP Finance Inquiry, and Richard Branson's Business Leader's initiative ("B Team"). In 2014, John was honored to receive a nomination to the Club of Rome; he is now a full member.

John is the creator of the "Future of Finance" blog at CapitalInstitute.org, which is also syndicated with *The Guardian, Huffington Post, CSRWire*, the *EcoWatch* blog, and the New York Society of Security Analysts *Financial Professionals' Post*. He has appeared on *Frontline*, and been interviewed by the *New York Times, Bloomberg, Wall Street Journal, Barrons, WOR* radio, *Real News Network, INET, Think Progress, The Laura Flanders Show on GRITtv*, Thom Hartmann's *The Big Picture,* and Terrence McNally's *The Free Forum Show.*

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www.CapitalInstitute.org/Regenerative-Capitalism

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