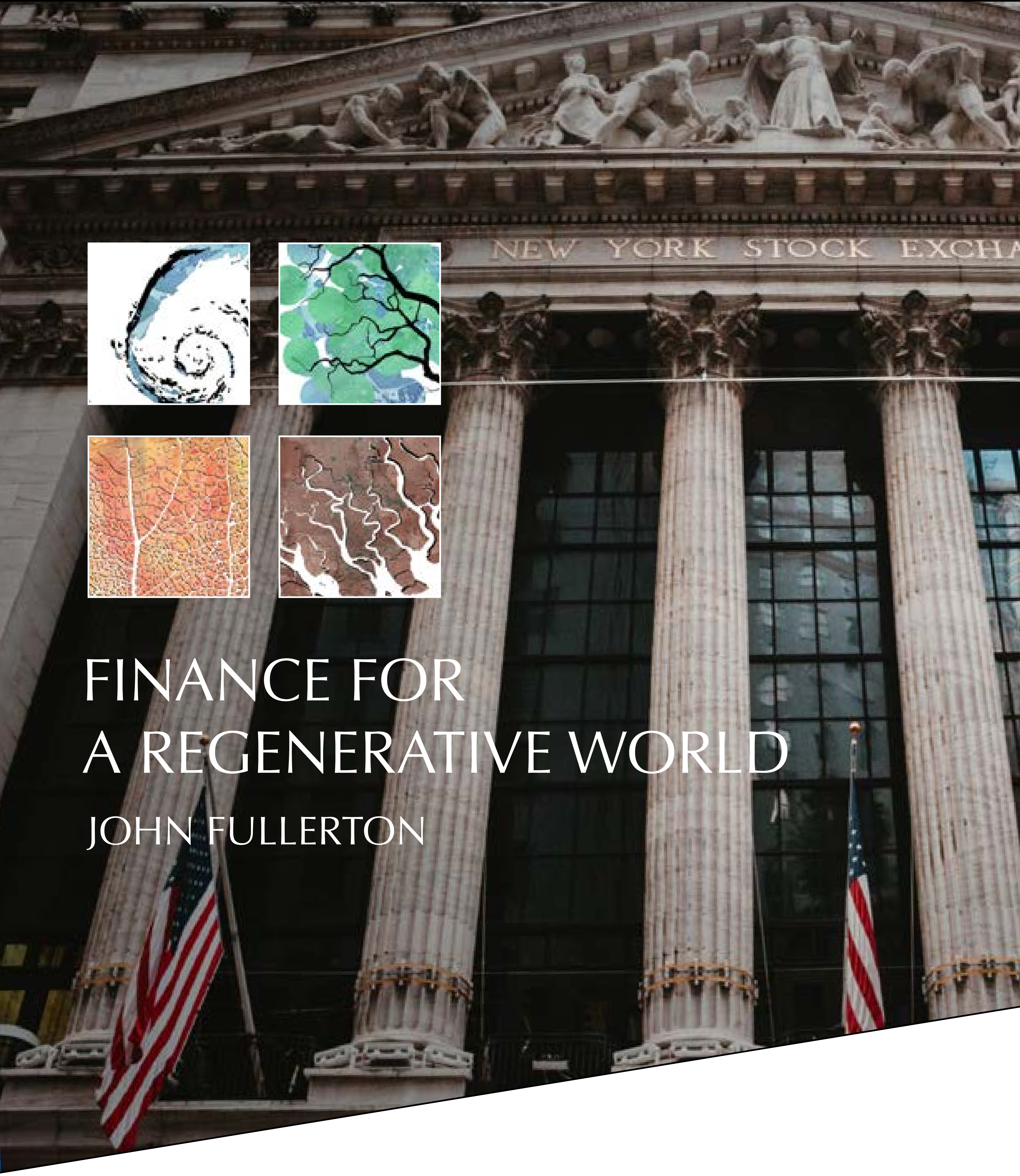
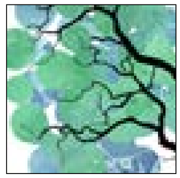
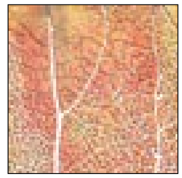
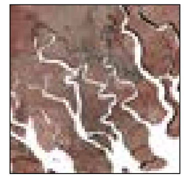


FINANCE FOR A REGENERATIVE WORLD

JOHN FULLERTON

CAPITAL INSTITUTE

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FINANCE FOR A REGENERATIVE WORLD

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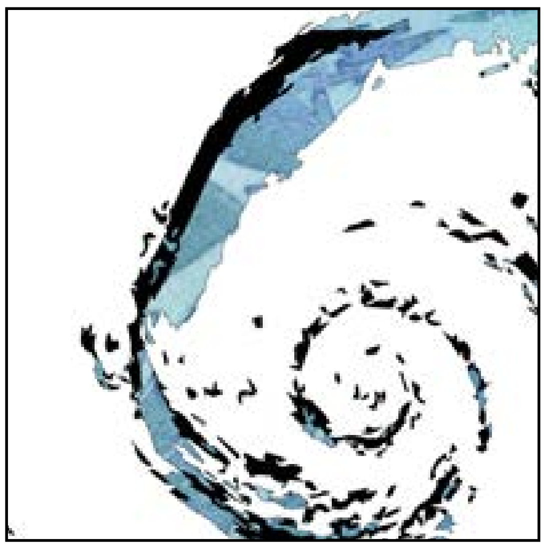


Act 1: Context

Capital Institute

INTRODUCTION

I WOULD REMIND YOU...THAT SOCRATES WAS EXECUTED NOT FOR HIS MEGALOMANIA OR GRANDIOSE PROPOSITIONS OR CERTITUDES, BUT FOR STUBBORNLY DOUBTING THE ABSOLUTE TRUTHS OF OTHERS.

— *John Raulston Saul*

The Death of Socrates, Pierre Peyron

While central banks pulled out all the stops to protect the banking system, society's tepid response to the 2008 financial crisis—both during and after—was a missed opportunity of massive proportions. We can now say, without being accused of hyperbole, that the power of finance ideology comes close to controlling human destiny and the planet's. Fully aware as we are of Raulston Saul's cautionary words to those who dare doubt "absolute truths", this paper calls into fundamental question the finance ideology that now dominates our lives, and advances in its stead a radical alternative that addresses our mounting and multiple 21st Century crises.

I started my career in finance in 1982 and spent the next 18 years at what I like to call "The Old JPMorgan." I can attest from my experience on Wall Street that bankers and investors come in all stripes and ethics. Individually, they are for the most part good people, in contrast with what has become the popular view, especially post the financial crisis. Rather, it is first and foremost the ideology of finance that is the seeming immutable force driving the slow but steady destruction of much that we hold dear, from local communities to the planet itself. Shockingly at this moment in time, we see finance playing a central role in the interconnected social, political, economic, and ecological crises now cascading out of our control. The *ideology of finance* is a threat to civilization itself. Therefore, *the questions of finance – what is it, what must it be, what beliefs and presumed "truths" underlie its hold on us – are the most urgent and essential questions of our time.*

By finance ideology, I mean more than a belief in the central tenants of neoliberalism that is closely associated with it: small government, deregulation, globalization, privatization, free trade, and an unfailing belief in market solutions (even in the face of a pattern of highly consequential market failures).

What I mean by finance ideology is the social construct we created and have perhaps been unconsciously seared into our collective consciousness during just the last quarter century, a mere nanosecond in time really. We have been accepting, without questioning, a series of connected, seeming "absolute truths" of the kind Raulston Saul was no doubt referring to:

- money equals wealth
- success means maximizing money and power as the just reward of a competitive "Darwinian" struggle
- undifferentiated economic growth is the path to prosperity
- the finance sector, as a share of the economy, will inevitably grow and that growth is natural and positive, arising from a process economists call "market completion", in which an ever greater share of our capital assets (and derivatives thereof) become traded commodities subject to the market's (short-term) value system
- the belief that the economy as a whole becomes more "efficient" as a result of this "market completion" process and therefore grows faster creating more prosperity
- business decision making, including how emerging technologies are put to use in society, must be made in such a way as to "maximize shareholder value"
- capital investment that "optimizes risk-adjusted return" with no qualitative considerations of values other than money is essential or the economy will decline if not collapse (materially and morally)
- business leaders and the economy in general are best served by the light "regulation" of (smarter and more powerful) financiers, who can be entrusted to make the right capital allocation decisions
- government regulation, even if well-meaning, is too often a cure that is worse than the disease
- liquid capital markets are one of America's greatest strengths according to one leading bank CEO
- and the reason financiers are wealthier than the majority of society is because they are smarter, compete harder, take greater risks, are "winners," add more value, and are therefore more deserving

Recognizing the Socratic risks John Raulston Saul warns of above, this paper will attempt to "stubbornly doubt" these and other "absolute truths," many that arise in the form of unquestioned assumptions.

Let's jump to the conclusion first:

No, it is not inevitable, track record notwithstanding, that finance and its all too frequent association with booms and busts, reckless greed, fraud, and deceit, must wreak havoc on society. But fixing finance requires a new kind of thinking – holistic thinking - in the search for genuine root causes.

We will suggest that our best chance at creating the finance that we need is to suspend all of our perceived "absolute truths" about finance, and simply but forcefully align it, through carrots and, where necessary, sticks, with the patterns and principles that govern all other living systems in the real world, systems that not only sustain themselves but thrive over time.

Fixing finance begins by first getting clear on means and ends. Such an approach is in stark contrast to what we generally do inside the trap of finance ideology. It is only human to react to events after they have unfolded, and seek to ensure "they never happen again." Such a reactive approach too often limits us to addressing symptoms, rather than engaging in the harder work of determining and then dealing head on with root causes, no matter how unpopular.

The Worship of Mammon, Louis Le Breton

The root cause of the failure, and of our multiple crises is a *flawed system design,* grounded in the seeming absolute truths embedded in our finance ideology. It is an ideology that puts blind faith in the so-called "efficient" capital markets and in a banking system dominated by a relative few extremely large private banks that create credit and control the money supply. It is a belief system that trusts these entities to guide our economic life by engaging in activities dominated by asset speculation according to their individual self-interests.

The "market," "capital," and, more broadly, finance are in reality mere means, yet we treat them as ultimate ends. If we are honest with ourselves, we must admit that as a society, we really do worship at the altar of Mammon.

This reality is not a mere reflection of societal greed as in the Biblical warning:, "You cannot serve both God and Mammon." To no small degree, the modern day metaphorical worship of Mammon is a consequence of the ever more monetized system we have designed, a system that creates increasing reliance on money over other forms of nonmaterial "wealth" (family, community care, and culture that values beauty and self-reliance over purchased material goods, for example) in order to meet our daily needs (and wants). Thus, our free enterprise system, despite its many powerful attributes as the very engine of "progress," would appear to have designed into its DNA the seeds of our demise as a result of imbalances we will discuss, in addition to the age-old temptations of greed. At its core, the flawed design of finance rests on the presumption that we can separate finance from the real economy, and reduce the complexity of our interconnected global economy into simplistic financial optimization calculations. But a better way to design and govern the free enterprise system is not only possible, it is already here if we only have the eyes to see it.

The destructive consequences of the finance-induced 2008 Great Recession are still fresh in our memories. While much progress has since been made to address some of the most obvious problems that led to the crises – irresponsible risk-taking and inadequate capital buffers within the banking system—we are nonetheless left with a quagmire of complicated and politically corrupted regulations that only partially address the problems. Lacking a clear understanding of root causes, our "solutions" have created many unintended consequences, and we are likely to pay the price sooner than later for our failure to address to address root causes of the collapse.

In this paper, I will not attempt an exhaustive historical review of finance and its booms and busts, nor a detailed explanation of its many dimensions and technical complexity. Instead, my goal is to raise awareness of the most crucial and often unquestioned issues that I will argue are the root causes of many if not most of the great social/political/economic/ecological problems of the day. These include the indignity and suffering caused by persistent grinding poverty affecting nearly half of humanity's seven billion people, the hopelessness and injustice of growing inequality in the developed economies, manifesting in cascading social and political crises, the rise of authoritarian populism, as well as health crises like the obesity and opioid epidemics, the mental health crisis, and even the cancer of terrorism; and, the interconnected and accelerating ecological crises manifesting most notably in the unsustainable destruction of our soils, growing fresh water scarcities, rising species extinction rates, and of course the accelerating and life threatening impacts of climate change that we are already experiencing.

Finance cannot be understood in a vacuum. Properly and holistically understood, finance is embedded in the economy, which in turn must be understood as embedded in and inseparable from society and culture, and ultimately now given the scale of the human project, embedded in the biosphere that is our home. To this end, this paper is a complement to my holistically rooted "Regenerative Capitalism: How Universal Principles Will Shape Our New Economy" paper launched in 2015. It represents a search for a path to the transformation of finance necessary to bring forth and serve the emergence of an immense diversity of networked regenerative economies throughout the world, economies that follow the universal patterns and principles of all self-sustaining natural systems.

This paper is structured into four sections following the Introduction:

Act I - A contextual review of alternative conventional narratives relating to the financial crisis, an examination of the core functions of finance and its unique characteristics within an economic system, and a brief discussion of the principles of regenerative systems and their application to finance;

Act II - An examination of the failures of modern finance and its related creation of violence on all we hold dear, and why it inhibits the emergence of a healthy and even regenerative economic system;

Act III - An exploration of the green shoots of Regenerative Finance already taking hold, and even a sketch of a new investment theory; and

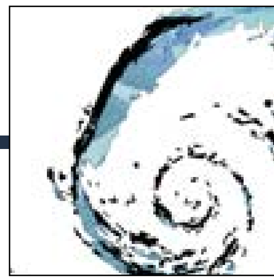
Act IV - An agenda for the real financial reform necessary to usher in a financial system in service of a regenerative economy.

This paper by no means represents the final word on "regenerative finance." It is much more a beginning of perhaps the most important inquiry facing humanity and its long-term prospects at the beginning of the 21st century, with as many unanswered questions offered up as solutions. It is my assertion that there can be no regenerative economy, and therefore no path to the illusive "sustainability," nor a path to achieve the UN's Sustainable Development Goals in 2030 or ever, without a transformation of finance reflective of the ideas presented in this paper. While it is not my intention to dismiss the value of the many financial crisis post-mortems authored by thoughtful and well-intentioned people, I submit that this paper raises questions about the role of finance that go beyond this mainstream discourse.

When founded in 2010, the mission of the Capital Institute was to "explore and effect economic transition through the transformation of finance." Our journey has taken us on to an inquiry into the latest scientific understanding of how systems in the universe actually work, the realization of how aligned this integral science is with the world's wisdom traditions – Eastern, Western, and Indigenous - and how misaligned our current economic and financial systems are with this understanding.

We have seen and illuminated multiple examples of the emergent regenerative economy typically taking root from the ground up as systems science would predict in our Field Guide to a Regenerative Economy project. What I intuited from experience when I founded Capital Institute in 2010 is now crystal clear:

Our quest to reimagine finance, both ideologically and in practice, is the great and critical work we must now undertake if we are to transform our economic system to serve society's real needs and deliver genuine, sustainable prosperity.



Act I: Context

Act I: Context

I. A Fresh Look at Finance

Libraries are filled with books about how to fix finance, with numerous new volumes finding their way on the shelves after each financial crisis. Many are excellent. Two of my favorites written as 2008 financial crisis post mortems are Adair Turner's *Between Debt and the Devil: Money Credit,* and Fixing Global Finance, and Michael Hudson's *Killing the Host: How Financial Parasites and Debt Destroy the Global Economy*.

The articulate Turner became chairman of Britain's Financial Services authority on the eve of the 2008 crash, and had an inside seat at the table through the crisis management period and the global regulatory response that ensued. We should be grateful for his principled, thoughtful, and tireless service throughout this difficult period. His book is an insightful challenge to the mainstream narrative that reckless bankers and Too Big to Fail Banks were the cause of the crisis. While he does not mince words when it comes to critiquing the irresponsible and at times fraudulent behavior of bankers, and believes large systemically important banks require extra capital buffers to shelter them from the inevitable storms, he calls attention to more fundamental flaws in our economic belief system. Most important, he also challenges the notion that credit growth is necessary for economic growth, and shines a light on unrestrained real estate debt in particular as the culprit for the boom and bust nature of finance and its spillover to the real economy.

"We seem to need credit to grow faster than GDP to keep economies growing at a reasonable rate, but that leads inevitably to crisis, debt overhang, and post-crisis recession. We seem condemned to instability in an economy incapable of balanced growth with stable leverage."[1] Turner goes on to declare that the Emperor of Economic Othodoxy has no clothes. That orthodoxy is grounded, he maintains, in two bankrupt and dangerous theories that proved catastrophic in the 2008 crisis: the Efficient Market Hypothesis and the Rational Expectations Hypothesis. He draws on esteemed economist Willem Buiter (now Chief Economist at Citigroup) who said,

"standard macroeconomic theory did not help foresee the crisis, nor has it helped understand it or craft solutions…"

Turner concludes, "We need a new approach to economics and to public policy." He calls on public authorities to recognize that if their response to continually evolving market conditions, especially credit market conditions, are to be effective, much more discretionary decisions will be required of them. In other words, debt is both

1 Turner, A. Between Debt and the Devil pp 7

a blessing and a curse, and we need public officials to exercise stronger and more courageous constraints around it, particularly when its growth is largely in the hands of private bankers.

Turner presumes that smarter bureaucrats with a stronger mandate can best manage the system. He does not, however, call for a fundamental rethinking of the design of our financial system in accordance with the laws of nature, living systems principles, or any other alternative complex system design. He falls short of questioning whether a system as complex as finance can even be managed at all. (We know that complexity in fact cannot be managed. Instead, we need to learn to work with it.)

Michael Hudson is an economist (and progressive leaning financial historian) at the University of Missouri-Kansas City where the Modern Monetary Theorists largely reside. *Killing the Host* is a real challenge to any Wall Street financier, but one that all self-respecting financiers must subject themselves to if they wish to restore integrity to their craft. I found reading it chilling, the unvarnished truth we financiers simply fail to see because it is more comfortable to promote a more noble (and self-serving) narrative.

His chapter, "Finance as Warfare" (the title of a previous book) pretty much sums up his perspective. It begins: "The financial sector has the same objective as military conquest: to gain control of land and basic infrastructure, and collect tribute." He then updates von Clausewitz's famous aphorism: "War is the continuation of politics by other means," asserting that "finance has become war by other means."

Although his language is more colorful than the technocratic Turner, Hudson zeros in on the same issue: debt. Hudson views the growth of compounding interest associated with growing debt burdens as the modern variation of Feudalism's rentier legacy. Classical economists such as Adam Smith were focused on freeing society and economies from the "unearned" and therefore unfair charges imposed by the landed aristocracy, bankers, and monopolists of his time, often while shifting the tax burden to the working class doing the work we call "earned income." Hudson reminds us that Smith's and his followers' original fight for "free markets" meant "freeing them (markets) from exploitation by rent extractors: owners of land, natural resources, monopoly rights and money fortunes that provided income without corresponding work…"

Today, neoliberalism's call for "free markets" ironically is a call for no government interference in the modern rentier's "right" to extract the same kind of "unearned" income with tax benefits, such as lower capital gains rates and the notorious carried interest loophole[2] that Warren Buffett rightly argues against. In fact, in modern economic dialogue, we have completely lost sight of the notion that some income is either "unearned" or unproductive, or both. We have lost the distain for the "rent-seekers" that was part of the culture at the beginning of the highly productive industrial revolution.

I would go further to say that today we define "success" as working long enough in order to become a rent seeker, utilizing one's financial assets to generate our income for us, rather than be forced into the marketplace to "earn" wages. Indeed, the business model of our retirement system is premised on maximizing such rent seeking on our behalf to be drawn down in our golden years. So we are all complicit in this flawed system design, with no easy or way out. Yet as we've said, the system has baked into it the seeds of our long term demise.

Furthermore, the modern private foundation, from Gates and Rockefeller on down, with all its good philanthropic intent and work, is built on precisely this unearned rent extraction model! And full disclosure, a similar "business model" enabled me to found Capital Institute while living primarily off investment income on surplus capital generated while working on Wall Street. We will return to the critical place productive investment holds in a healthy economy in the section on Green Shoots in Regenerative Finance.

Hudson forces the well-meaning financiers among us to pause and think about what has become "normal" and even admired in our system. He certainly provides the fuel for those ready to pick up a pitchfork as well, even while the hardened and narrow-minded Wall Street crowd will likely scoff in distain. And he makes a compelling case that throughout the ages, and through the cycles, it has pretty much always been this way with finance. A sobering read.

Both books are filled with insight and both encourage fresh reflection. Both focus on the dangers of debt, although Hudson is far more critical of the financiers' motives than Turner. Turner demands a fresh boldness and courageous oversight of credit by technocrats willing to make hard judgments balancing very real risk tradeoffs, while Hudson turns to Biblical wisdom for solutions (debt jubilee). Both solutions have real merit and should change the debate. But both are written from the perspective of "problem-seeking solution" as most post-mortems are. *This is where our perspective will be fresh.*

Problem solving is important work. Most of humanity, regardless of occupation, is

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2 The carried interest loophole is a tax break for private equity firms that effectively allows them to turn their (often excessive and extractive) earned income into capital gains and thereby benefit from the lower capital gains tax rates in comparison to higher marginal income tax rates.

involved in problem solving on a daily basis, and thank goodness for that. Problem solving is incremental. It is how we make progress. It is productive and feels safe. Therefore, it is respected in our culture and in politics.

But, and this is critical, it is not radical. The Latin word "radix" means "root" – as in getting to the root of the matter. Radix is also the root of the word "radical." So being truly "radical" means simply to focus on root causes rather than symptoms. Most problem solving focuses on symptoms, but doesn't address the underlying system out of which the problem arises. Understood systemically, financial collapse, as well as poverty and inequality in all its forms, and even climate-change-induced ecological collapse are symptomatic of a flawed system design .

Real transformation can only happen by addressing root causes. And what may feel safe and productive at one level – incremental progress - may very well perpetuate the underlying disease. Like treating a cancer with a scalpel rather than adjusting one's lifestyle to mitigate the likelihood of the disease recurring. Our preoccupation with addressing symptoms yields only incremental progress, and, more critically, wastes valuable time when time is running short. Put off the "radical" change, and you may die treating symptoms. What's more, a focus on symptoms in a complex, interdependent system can have unintended consequences when change is accelerating as it is in the 21st century. The cascading crises will simply overwhelm us.

II. The Six Functions of Finance

Before diving into root cause failures and our search for systemic solutions, let us briefly state what finance is for. While financial activity often crosses the artificial lines between each of these six functions, it will prove to be essential that we keep the purpose firmly in mind as we try to assess and differentiate the essential, from the merely useful, and the neutral from the harmful.

It goes without saying that each of these essential functions can be corrupted. This can occur through willful anti-social and extractive behavoir, or merely by the scale of an activity becoming inconsistent with its purpose. If we have learned nothing else from the multiple financial crises of the past beyond affirming our human frailties, we should have learned that *scale matters in finance*.

A fundamental grounding in the true purpose of finance is essential to clearly see its shortcomings, while at the same time reaffirming the vital role it must play in the transition to a more regenerative economic system.

I suggest there are six fundamental functions of finance:

1. **The transformation of savings into real investment**
   The conversion of savings, from households, firms, and governments into real investment is a central function of finance (credit creation being the other central function, discussed below). It is critical to distinguish between real investment and speculation. Here we use the economic term for investment. Building a house is a real economic investment. It changes the number of houses in the world. This distinction is critical because a new house has a direct impact on the real economy, using labor and materials, while at the same time creating both social and environmental consequences. Buying an existing house is not a new investment in an economic sense, although it is in a financial sense. No new employment or materials used (other than renovations which are real investments). It should now be clear that there is a fine line between a financial investment in an existing house (or a stock or bond for that matter) and speculation. More on this under "financial investment/speculation" below.

   Real investment can be made directly, or via intermediaries, and can be debt or equity. Direct investments include an individual building a home or investing in a start-up company, a company building a factory, or drilling for oil, or a government building a bridge. Real investments via an intermediary would include a pension plan investing in a fund that develops either real estate projects, or solar and wind power projects. Both direct and indirect approaches have advantages and limitations, both practical and in their systemic implications as we shall see when we look at them through a regenerative systems lens. The key distinction here is that this capital actually causes the real economy to change as a result. In contrast, an investor buying shares of an existing company on the stock market, directly or indirectly, does not change anything in the real economy on its own as a primary effect. It does however influence the cost of capital of such a project which is an important nuance, and such financial investment can be both responsible or extractive as we'll discuss below. This distinction between direct investment and secondary investment/speculation is largely lost in our current conversation about investment, and it is *the critical distinction* when it comes to understanding finance's direct connection to the qualitative issues we care about, from the quality of employment to the quality of the environment, and much more.

2. **Financial Investment/Speculation**

The discussion above makes a clear distinction between "real investment" that makes a direct impact on the real economy, and financial investment in existing assets, whether they are stocks and bonds, or buildings and even entire companies. From a financial risk and return perspective, there is often no distinction between real and financial investments. Each can be converted into a "return on investment" calculation, a simple number like 15%, demonstrating the reductionist nature of finance that we in finance are simply unaware of. *As a society, direct investment decisions – particularly the large ones initiated by the large actors such as governments and large multinational corporations - are of a much higher level of importance, yet our entire conversation around "sustainable investment" largely ignores this distinction.*

For example, once an oil company drills for oil or builds a refinery (both real investments), it has a financial imperative (and resources at its disposal from marketing muscle to political influence) to make sure that oil gets to market or that refinery gets fully utilized. Oil comes to market and is burned, carbon is released into the atmosphere, greenhouse gas effect is increased at the margin. Impact. Yet a financial investor like a pension fund who invests in an oil company stock on the stock market can buy or sell its shares in an instant with no impact on the real economy. Depending on intention and holding period, we might classify such an investment as either a "financial investment" or "speculation," the latter often having a somewhat derogatory connotation. Here, I am making no value judgments. I am simply seeking to clarify the distinctions that cross grey areas in this legitimate function of finance.

Moving ahead, another important distinction we must make is between what I will call "responsible financial ownership investment" and financial speculation. The distinction is not black and white, and largely rests on context and intention. Clearly a day trader, whether sitting on her computer in her bedroom trading her IRA account based on looking at technical charts, or a floor trader shouting orders into a pit in Chicago while trading his own capital, are both "speculators." Similarly, a multi-billion-dollar hedge fund using sources legal or illegal to seek out an information advantage – an "edge" - about an individual company's upcoming quarterly earnings in order to place a bet in anticipation of the market's reaction is a speculator. So too a "high frequency trader" (sometimes called "quant traders") using mathematical algorithms and super-fast access to market data to scalp pennies within the daily trading volume on millions of trades per day is a "speculator" not an "investor."

Now some amount of speculation does have a productive purpose in any market. It helps create the "price discovery" mechanism as the market continuously adjusts for new information, and, speculators add liquidity to markets enabling markets to serve their critical clearinghouse function.

As I will discuss in detail later, just because some speculation is good, does not imply that a lot of speculation is better or even acceptable in a healthy system. But let's hold this thought aside for now.

Instead, let us draw the critical distinction between speculation and "responsible financial investment," a topic that will be controversial, and likely attract scorn. Within the establishment "sustainable investment" universe, the term "responsible investment" is typically used to signify an investor who selects an investment portfolio inclusive of an analysis of the environmental, social, and governance ("ESG") qualities of the companies in the portfolio.

My criteria for "responsible investment" goes further: *it requires a willingness to assume the responsibility that comes with genuine ownership.* Voting proxies is but a small part of genuine responsibility in my view. We will discuss the implications of this distinction below.

3. **The credit creation function**
   The credit creation function also plays a critical role, along with the transformation of savings into investment, in how capital is allocated into the economy. In Western developed economies, this credit creation function is generally carried out by the private banking sector. Subject to various regulation and limitations, banks are able to create credit "out of thin air" when they deem the purpose worthy and "bankable". Central banks govern the rate of money creation by controlling short-term (and at times even long- term) interest rates. In other words, they influence the growth of money through the pricing mechanism. Conventional wisdom holds that banks simply lend out their deposits, but that is an inaccurate understanding of the money creation process. Most people are in fact surprised to learn that private banks are responsible for creating some 97 percent of the money supply.[3] This money creation happens whenever a bank makes a new loan (whether to finance a new factory, or to allow a hedge fund to speculate in the commodities markets).
   Other systems are possible, most notably, a system where the government creates the money supply. Many precedents exist, from the U.S. Greenbacks issued by the U.S. Government under President Lincoln to finance the Civil War, to the "quantitative easing" (printing money to buy securities, typically bonds, in the capital markets in order to manipulate (support) their prices for multiple reasons) that many central banks embarked upon in response to the 2008 financial crisis, totaling some $12 trillion cumulatively. In addition, hundreds of "alternative currency" systems exist throughout the global economy, from the well-established business-to-business credit system in Switzerland called "WIR," to various "time dollar" systems and local currencies such as BerkShares. And now we have the entire cryptocurrency phenomenon to wrestle with as potential new credit systems, although still in their infancy. Even frequent flyer miles can be considered "credit" systems.

4. **Real resource allocation via inance analytics**
   Finance analytics and its underlying theories have a profound impact on the real economy, since they drive financial decision making. Financial decision making in turn drives choices and resource allocation. Beginning with basic accounting standards, and inclusive of calculations such as net present value, internal rate of return,

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3 http://positivemoney.org/how-money-works/how-banks-create-money/, and http://www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2014/qb14q102.pdf

shareholder value added, the entire value-at-risk-framework for risk management, the modern portfolio theory framework for financial investment management, and more, such analytical frameworks, often simply social constructs grounded in flawed assumptions and statistical short cuts, nevertheless guide our behavior and therefore real economy outcomes more than we realize.

5. **Financial risk management**
   The management of financial risk, from the multitude of long-standing insurance needs to the more esoteric financial risk management that occurs through options and other derivative contracts, collectively represents a large and vital function of finance in service to the real economy. Of course, financial risk management can easily morph into destructive speculation as best demonstrated by JPMorgan's infamous "London whale" trade that cost the bank some $6 billion and its reputation. But this should not diminish the valuable role financial risk management can play by enhancing the economic resilience of businesses, governments, and households in the real economy.

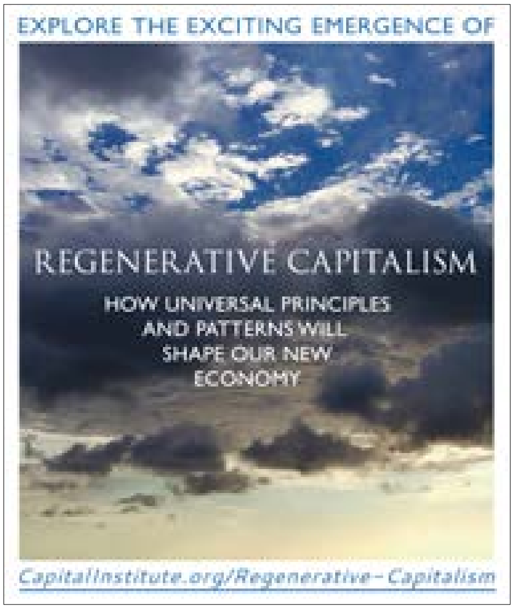
6. **Infrastructure**
   An enormous national, regional, and global infrastructure provides the foundation plumbing of the modern financial system. Most critically, infrastructure includes secure payment systems, but also the multitude of trading marketplaces (physical and virtual), as well as settlement and safekeeping services for financial transactions and instruments. Rapidly evolving technology influences these infrastructures, creating interesting questions about where the boundaries between the private and public sectors lie, and how to best govern and regulate them in an increasingly globalized world. While we may think of marketplaces like the New York Stock Exchange as emblematic of modern finance, they are in reality merely pieces of the plumbing. That we have elevated them to iconic status illustrates how the power of the finance ideology has distracted us from a focus on what are the crucial, core elements of a healthy economic system.

How each of these six functions operate independently and collectively determines to a large degree the health of the overall system and its impact on the economy. History has indeed taught us how much damage finance can cause the real economy, real people, and real governments when it becomes reckless and unprincipled. Yet civil society and government has, over the past decades, been engaged in a seemingly perpetual game of defense with finance, focused on the legal and ethical transgressions of a handful of the largest Wall Street firms, a minority of lesser "bad actors" most notoriously Bernie Madoff, and the related and essential safety and soundness of the financial system as a whole. This has created both an unnecessary burden on society and a dangerous distraction from the more important policy issues of the day that could usher in a more productive financial system that meets the current needs of the critical economic transition awaiting us.

In this paper, we will deal head on with this unnecessary distraction. We will focus primarily on the relevance of each function of finance to the real economy and invite a more expansive view of how we can return them to their core purpose. In this way, we will avoid getting bogged down in reactivity (i.e., in discussions of how to defend ourselves from the scoundrels and how to craft (often complex) technical responses to these bad actors). Instead, we will remain focused on the important issues that relate to the essential regenerative health of the real economy.

Critically, the interplay of each of the six functions of finance determines the degree to which a regenerative economy can take hold in a given context and a specific place. A properly understood, designed and regulated financial system—aligned with living systems principles—is an enabling condition for a regenerative economy. Enabling such a regenerative economy must be the top priority of government's and civil society's agenda to "fix finance", rather than the current objective of simply protecting society from finance via half measures that will never support the more fundamental transformation we need.

III. The Regenerative Paradigm



We first introduced a framework for Regenerative Economics ("RE") in 2015 with the release of "Regenerative Capitalism: How Universal Principles and Patterns Will Shape the New Economy".[4]

Under different names and with varying degrees of similarity, related ideas of applying a living systems framework to economic system design have been discussed for decades by various thought leaders.[5] "Regenerative Capitalism" was really a synthesis of existing ideas, and a natural extension of an ongoing search for *first principles* of what a regenerative economic system design might actually look like. The paper represents our willingness and eagerness to explore the possibility of using these principles to question all we believe we know and hold dear about economics.

In other words, we use the eight principles of regenerative economics to challenge the "absolute truths" of modern economics and now finance.

The profound shift embodied in the Regenerative Paradigm is a shift from reductionist thinking to holistic thinking. These somewhat obtuse words have important meaning. Reductionist thinking dates back to the scientific revolution, and is responsible for many of humanity's greatest advances. Reductionism breaks down what's complicated into understandable component parts for careful analysis. In finance, we break down risks into their component factors and manage them separately, often in different departments (foreign exchange and interest rate risk, for example). But reductionism used alone has a fatal flaw. The world is interconnected and interdependent. A quantum understanding of reality has no place for the word "separate," since everything is literally connected to everything.

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4 http://capitalinstitute.org/wp-content/uploads/2015/04/2015-Regenerative-Capitalism-4-20-15-final.pdf

5 Buckminster Fuller, E.F. Schumacher, Jane Jacobs, Stuart Kauffman, Fritjof Capra, Paul Hawken, Peter Brown, Tim Jackson, Peter Victor, Amory Lovins, Hunter Lovins, Hazel Henderson, David Orr, Herman Daly, Robert Costanza, Sally Goerner, Bill McKibben, Janine Benyus, among many others.

It's a networked world, not a machine world constructed of parts. Simple rules of cause and effect explain very little of our complex world filled with intertwined causes and predictable and repeated patterns. An analysis of the parts, or management of parts, is in conflict with how the world actually operates. So we must use the reductionist method for analysis, while not losing our grip on the more important understanding of the whole, or we get into trouble. And we do get into trouble!

The key idea of holism is that the world is constructed out of wholes (a cell, an organ, a body, a family, a community, etc). All wholes are embedded in greater wholes, like Russian dolls. For example, cells group together to make up organs, and organs group together to make up sub-systems like our circulatory system, and together all these systems are embedded in our bodies. All interconnected and indivisible in reality. Similarly, I would suggest that finance, holistically understood, is a subsystem of the real economy, which in turn is embedded in a highly diverse human culture. Humanity itself in turn is embedded in, and a part of, not apart from, the biosphere as one species among many interdependent living beings. Many of the world's most vexing current challenges, from social injustice to climate change, can be understood as a failure to understand and honor the interconnectedness and embeddedness of the whole. How else could we have decided to burn all of earth's fossil fuel deposits when an unintended (but directly connected) consequence is climate change that undermines our survival as a species over the long run?

But to think holistically, in a way that includes yet transcends reductionist thinking—especially after four hundred years of reductionist thinking etched into our DNA since the beginning of the Scientific Revolution—is a hard shift to make. It has become almost unnatural to us, even though nothing could be more natural in reality. And often, it's the most "educated" of us that have the hardest time with this shift to thinking in systems rather than parts. So called "primitive" indigenous cultures have always thought this way, and provide critical wisdom for we "moderns" at this moment in history. So too does Eastern thinking, particularly the harmonious and integrated (holistic) thinking of neo-Confucius culture, whose influence has largely been lost in our Western-dominated world culture.

In my post Wall Street re-education, I discovered to my delight that scientists were turning the rules by which living systems (from the human body to entire ecosystems like the rainforest) sustain and regenerate themselves into tested and proven principles of systemic health and development that could also be applied to nonliving systems like economies. The resulting synthesis produced an unexpected alignment of insights from fields ranging from physics and biology to sociology and even the world's many diverse wisdom traditions that could be applied universally to healthcare and agriculture, and yes to economics and finance.

When we take a close look at the world around us that modern science reveals, we come to understand that everything in the universe is organized into systems whose interlinked parts work together in some larger process or pattern. These patterns and principles 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 and economies. When applied to economics and finance, what we learn from universal patterns of system behavior provides the theory and precise measures of systemic health we need to guide our way forward, supporting long-standing observations about the importance of circulation, balance, and even ideals such as justice and fair play. In short, what we learn from studying systems in the real world is to see the world in a new way, a practical, rigorous, and even commonsense new picture of how the world actually works.

The result is the idea that the universal patterns and principles nature uses to build stable, healthy, and sustainable systems throughout the real world can and must be used as a model for economic-system design, and for a financial system in service to such a real economy.

I have attempted to distill this core idea into eight key, interconnected principles that must define our economics system design if it is to operate in alignment with nature's laws and patterns that govern how systems that sustain themselves for long periods of time actually work. Finance, as a subsystem of the economic system, must mirror these same patterns since the patterns repeat at all scales (consider the pattern of your fingerprints mimicking the patterns of your veins or the branches of a tree, for example). Figure 1 shows a diagram of the interconnected eight principles, followed by their descriptions that must guide regenerative economies as they appeared in my 2015 paper, "Regenerative Capitalism":

Figure 1.
8 Principles of
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 key interconnected principles that underlie systemic health and collectively represent the eight principles of a Regenerative Economy:

1. **In Right Relationship:** 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 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 a vibrant, long-lived, regenerative economy and society 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.

We advance these eight principles based on considerable study of the science of healthy human, non-human, and even non-living systems, combined with concerted effort observing[6] and participating in real world models emerging on the ground in response to the pressures of our time. The science tells us that systems adapt only when under pressure, so these emergent models by definition offer clues to how regenerative systems behave in accordance with their design principles. Failure to evolve implies that they were not regenerative enough, so studying the ones that continue to evolve despite immense pressures is profoundly important. Many of these models are documented in Capital Institute's "Field Guide to Investing in a Regenerative Economy," while others represent experiential learning from the author's own direct "impact investment" practice.

People will quibble with the eight principles, for there is no "right" number or description of principles of a complex system that is in reality irreducible to linear language. Imagine trying to describe a loved one – another example of a complex living system - in eight principles! Nevertheless, we must try – using the reductionist method, while remembering it is insufficient - as a means of communication. The positive feedback we have received suggests these eight are at least a good approximation for the design principles of a truly regenerative economic system.

Simple Hypothesis:

Our hypothesis is simple. Systems that sustain themselves in the natural world tend to follow a set of living systems design principles. We assert that human economies are examples of such living systems, since humans are part of the natural world. So either our economic systems, and by extension the financial sub-system come into alignment with these living systems principles, or, someone needs to make the case why human economies (and finance) are the one exception to the rule that systems that sustain themselves over long periods of time by continuously regenerating themselves, follow these design principles.

Equally important, and the true foundation for hope in the face of our many challenges: *immense and magical potential will manifest once we shift our economic system into better alignment with these eight regenerative principles.* This unseen potential is very real, like the potential of every human being when he or she finds their true purpose.

6 http://fieldguide.capitalinstitute.org/

I have experienced the realization of this potential in my regenerative investments, both in the management of grasslands, and in several regenerative real estate projects. Success is never assured, but the manifestation of previously unseen potential can happen and can create real value. The eight principles listed above are present in varying forms when that potential becomes real. Indeed, regenerative thinker Carol Sanford lists "potential" as a fundamental principle of regeneration when a person or firm acts in alignment with their essence.

Examples abound in the real world where potential is unlocked once the system aligns with even some of the eight principles. For example, the potential for search engines and social media (notwithstanding the negative aspects) existed once the internet was invented enabling the "robust circulation" (one of the eight principles) of information, although it took decades to manifest in Google and Facebook.[7] At the molecular level, once two molecules of hydrogen came into "right relationship" (another of our eight principles) with one molecule of oxygen, water enabled the potential of all life to be possible. And at a cosmic scale, the "right relationship" between Earth and a single star we call the sun, and the "edge effect abundance" (another principle) made possible by the soil at the "edge" between planet and the atmosphere, and the water and carbon cycles being "in balance" (another principle) together enable the photosynthetic process to unlock the potential for all life. No matter how one describes it, and across all scales, the unseen potential of regenerative systems should be the source of enormous comfort that if and when we transform our political/economic system, unimagined flourishing for humanity and all life awaits us. Of course this aligns beautifully with a worldview grounded in abundance rather than scarcity. But that's a story for another day.

Next, we will use our holistic systems lens, and our 8 principles of regenerative economics to make a fresh assessment of what the practice of finance and the financial system itself has become. Common sense tells us something is profoundly amiss in the world of finance. And again, I'm not just talking about the bad behavior (which exists in all sectors of societies from business government to religious institutions). I'm mostly interested in the flawed, fundamental system design of finance. It seems at times only the most elite financiers fail to grasp this (although my experience is that increasingly many do privately). What is interesting, and important, is that using the regenerative lens helps us to explain why finance is amiss without resorting to political or emotional arguments, and, regardless of the level of ethics being practiced in finance. In other words, even if Wall Street was occupied by nothing other than

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7 I am not suggesting that Google and Facebook are regenerative companies when looked at as a whole. But they each manifested potential that existed long before they came along that emerged out of a leap in communications technology that was aligned with the principle of "robust circula-tion" in this case of information rather than materials.

Boy and Girl Scouts, it is finance ideology, the system design, the unquestioned assumptions and practices, and the seeming “absolute truths” that help define the system, that are the root cause of the problem.

In sum, I will argue that it is abundantly clear that modern finance is a system that is in conflict with the rules and patterns of how systems that sustain themselves in the real world actually work. *In other words, finance today is degenerative, not regenerative.* The consequences are what we should expect from a degenerative design.

Let’s have a look.