

WEALTH BEYOND NATIONS

*Artificial Intelligence
End of Labor
& the Evolution of Humanity*

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& the Evolution of Humanity*

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NOTES ON THIS 2018 EDITION

SINCE THE INITIAL PUBLICATION of *Wealth Beyond Nations* in 2015, the exponential advancements in artificial intelligence have provided us with a much clearer picture of how mass human labor is impacted by automated modes of economic production. Our original thesis attempted to frame automation essentially as a mechanical replacement for human labor. But artificial intelligence [AI] is profoundly different. AI is programmed to utilize a completely divergent form of cognition. Humans have been trained to utilize *deductive* reasoning to problem-solve—using a limited number of data points so as to act in a precise manner. But AI operates via the process of *inductive* reasoning—seeing patterns throughout diverse types of data points. It is this very divergence in problem-solving skills that poses the greatest threat to the mass labor force.

AI is not some apocalyptic force; some malevolent destroyer of humanity. But it is a potent evolutionary force. Indeed, if humanity were to explore these deeper evolutions now transpiring, a reflective pattern would begin to emerge. An intricately woven pattern that ultimately will reveal to us the least and best of our human selves. A pattern that is both provoking and inspiring. This treatise will endeavor to explore this reflective pattern, and reveal its evolutionary meaning.

Wealth Beyond Nations innovatively synthesizes economic theory with moral philosophy and psychology so as to more clearly discern diverse evolutionary patterns that are now unfolding upon each other. Even with this trans-disciplinary approach, however, we have attempted to keep this treatise as concise and accessible as possible. It is not meant to provide a comprehensive review of either economic or philosophical principles, to which conventionality might abide. Rather, this treatise is meant to discern and illuminate patterns—synoptic glimpses of conjoined concepts that hitherto have gone essentially unexplored by orthodoxy. Patterns of human evolution as AI might perceive them.

In addition to the exponential growth and impact of AI, two other potent forces are colliding to challenge the human endeavor and its systems of orthodoxy. What may, at first, appear to be only an abstract technicality, the role of *currency creation* is actually one of the most profound—and least understood—aspects of Classical Economics and liberal democracy. Although this treatise dedicates substantial attention to the precariousness surrounding modern modes of currency creation—particularly its relationships to human behavior, real estate, and debt—so much more about this vital instrument requires examination and debate. To enter into a fully sufficient exploration within this treatise of the macro- and micro-economic ramifications of currency creation would be a diversion from our primary objective to discern the overall pattern of the multifarious evolutions now unfolding.

Similarly, Part Two of this treatise exposes compound forces relating to the existential foundations and evolutions of *liberty and identity* which are vital for humanity to confront in the context of AI and mass human labor. Indeed, these existential touchstones have been the subject of deep investigations as far back as the Stoic philosophers of ancient times, to Kant, Hegel, and Nietzsche, and to Isaiah Berlin in the 1950s. Herein, we can only too briefly address these colossal and complex issues. Again, our principle objective is to discern pattern. It is our intention to more fully explore these compound forces of liberty and identity—in context with our 21st century technological and socioeconomic evolutions—in a separate writing.

For now, however, in this new edition of *Wealth Beyond Nations*, patterns of evolution and revolution have their resolute stories to tell.



PROLOGUE: (R)EVOLUTION HAS BEGUN

The world around us is evolving. The human species and its systems, however, are not.
Revolution is coming.

Evolution is a process of constant branching and expansion.

Stephen Jay Gould

The world we live in, our view of it and the values we attach to it, is shaped by what we know. And when what we know changes, the world changes and with it, everything.

James Burke, *The Day the Universe Changed*

HISTORY HAS COME TO REVERE one of the great immovable pillars of modern civilization to be the magnum opus of the Scottish philosopher and political economist, Adam Smith. But in 1776 and the immediate years that followed, few in agrarian-rooted Britain actually read *An Inquiry into the Nature and Causes of the Wealth of Nations*. Issued in two volumes, and amassing about 1,100 pages, it was judged too complex and seemed to abstrusely present sometimes conflicting hypotheses and biases regarding the ‘behind the scenes’ mechanics of states and their national economies. Translations of the book actually fared better in Continental Europe, particularly with German speaking peoples. Over time, however, as the Industrial Revolution gained momentum and breadth throughout society, the revolutionary insights that Smith had contributed began to be both empowering and relevant to the socioeconomic mainstream leaving behind agrarian lands for the new opportunities of industrial cities. Ultimately, Smith would be regarded as the intellectual founding father of *Classical Economics*, the bedrock of our present system of local and global economies.

Right from the very first page of Book 1 of *The Wealth of Nations*, Smith presents a profound observation using a simple pin factory as his backdrop. He describes a single laborer constantly shifting from one task to another in the production process, resulting in the laborer to lose time in constantly adjusting to a new task and its requisite tools/machinery. Smith provides a radical innovation: multiple laborers cooperating with each other, with each specialized for and focused on performing one particular task, could actually produce substantially more of the finished goods in less time—and consequently, earn more profits for the company. This revolutionary concept of *the division of labor* was to set in motion an explosion of growth for gen-

erations to come. This was just one example of the needlessly restrained potential of economic markets if governments would just get out of the way and allow the ‘free market’ to operate. The government’s control of state-appointed monopolies of that time (a system referred to as *mercantilism*) would soon be replaced by what Smith referred to as a mass *commercial society* unleashed via free markets.

It is important to place Smith’s revolutionary vision of a mass commercial society into context of the sociopolitical orthodoxy of the 18th century. According to Plato, Thomas Hobbes, and Smith’s contemporary, Edmund Burke, a democracy which included the common masses as governors could only lead to chaos. As a consequence of Smith’s *The Wealth of Nations*, however, a certain amount of *self-governance* could indeed be entrusted to the common masses—but only if they possessed the rights and capacities to participate in and benefit from their labors within the marketplace of economies.

But now in this 21st century, a new *third machine age*—computerized automation and artificial intelligence [AI]—is increasingly and systematically replacing the demand for mass human labor. Already, it is estimated that 87 percent of all present jobs being lost are as a direct consequence of automation. Multiple projections reveal that throughout Western markets an estimated 50 percent of the present labor force is in jeopardy of being replaced by automation and AI within the next 10 years. Throughout Africa and Asia, as high as 85 percent of the labor force is at risk. ¹ [see endnotes] What impact will this third machine age have on the social order and our institutions going forward?

We can already glimpse this impact. As individual governments grow increasingly incapable in resolving any one of a series and interdependent socioeconomic crises, a palpable weakening of social order is now metastasizing. Aggressive forms of individualism and single-issue identity politics are increasingly polarizing social discourse. Tribalism (even micro-tribalism) and protectionist-styled populism are rapidly replacing the multiculturalism and pluralism which once defined post-World War relationships. The very ambitions and constructs of liberal democracy are increasingly being challenged throughout many

regions of the world. The tools and ideologies of autocracy, as a seemingly last ditch effort to protect job security and social order, are rising in both influence and public acceptance.

This treatise, *Wealth Beyond Nations*, endeavors to address the evolutions and revolutions now occurring throughout 21st century economic markets and social communities. Similar to Adam Smith's original opus, this new treatise will focus on the behind the scenes mechanics of modern markets, and importantly, on the various (r)evolutions that have shaped and reshaped markets and societies since 1776. There is much that Adam Smith would no longer recognize in our modern iteration of socioeconomic behavior. And perhaps most unsettling to the modern reader, great swaths of Smith's *Wealth of Nations* wanders through dense text on the methodical balancing of currency to a nation's gold reserves, and the technical processes necessary to more effectively manage this 18th century innovation of the free market. Central to Smith's argument against the long-entrenched mercantilist ideology to manage a nation's money supply almost exclusively by increasing exports in return for gold, Smith proffered that the money supply could more effectively expand and circulate as a consequence of internal private consumption. Then, in the 18th century, private consumption was driven by allocating monies originating from savings. Since the 20th century, this is no longer the case. As this treatise will highlight later, private consumption is now predominately financed by debt.

John Maynard Keynes and Friedrich Hayek, in the early to mid 20th century, fiercely debated and refined the techniques of managing the money supply. But since the 1970s, the world no longer operates on the gold standard of currency management—making a substantial portion of Smith's opus (as well as the contributions of Keynes and Hayek) essentially obsolete and irrelevant. As we shall discover, it is precisely the construct of how *currency is created* in our 21st century, and its nexus to the automation of mass labor, that begins to foreshadow to the human species its most profound existential challenge since the birth pangs of the Enlightenment and its myriad ideological revolutions.

Wealth Beyond Nations also presents its own radical innovations to counter outdated orthodoxy. Until now, market exchanges have been in material or tangible goods and services. But future markets could very well be based on the *mass exchanges of intangibles*—assets of an individual’s human knowledge, experience, curiosity, and creativity that, to date, have been largely avoided by commercial markets. This treatise projects that 50 percent of the world’s labor force can evolve into this intangibles-based economy by 2040—and generate new global wealth value estimated at a staggering us\$ 1,281 trillion, compared to our present output of us\$ 79.3 trillion. But to achieve this, the masses, not institutions, will be required to undertake the responsibility of governance—on a moment-to-moment as well as local-to-global basis. Until now, this shouldering of responsibility by the masses has been technically and practically inconceivable. However, with the emergent technologies of automation and processes of new forms of dialogue and global communications, the potential of the interdependence of true global citizens is not only achievable, but in fact, may now be an imperative.

To many, however, characterizations of ‘crisis’ or even system-wide modernization of Smith’s Classical Economics pantheon is viewed as being unnecessary or even inappropriate. As we look upon ourselves, enjoying the fruits of free markets—in our fashionably decorated homes, the videos streaming on our smartphones, the plentiful food and drink shared amongst friends and family in restaurants around the world—it is quite forgivable that we have become intoxicated by the success of Classical Economics. But scratch under the surface, and we begin to see something more troubling: the massively increasing household and sovereign debt necessary to sustain the image of success. Across the US, Japan, Australia and western Europe, the proportion of firms that are labeled as ‘zombie companies’ (firms that don’t make enough money to service their debts) has risen fivefold since 1987, from 2 to 10 percent.²

The OECD and others have projected that an astounding two-thirds of all laborers will be operating in the *shadow economy* (where taxes and social protections are purposefully circum-

vented) in just two years by 2020.³ And perhaps most palpably, the income and wealth inequality gap between the masses and the elites continues to widen—to the extreme that entire political systems are now being polarized and paralysed by an endless cycle of venomous winner-take-all electoral contests.

These are merely the economic symptoms. Add into these symptoms the human health impact of increasing levels of micro-plastics in our own food supplies of fish and fowl, and more generally, the persistent degradation of our earth's ecosystems. And if we thought that mass migrations due to armed conflict and political upheaval were already a crisis, it is projected that by 2050, a staggering 143 million humans will be forced to mass migrate as a consequence of increasing environmental catastrophes.⁴ Our health care, education, and infrastructure systems are rapidly deteriorating. The list of deep social challenges keeps on growing. Can we continue on our present trajectory, merely tweaking minor elements of the system along the way? Or, has the Titanic of Classical Economics already collided with the iceberg of evolution?

In order to answer this question, and perhaps even to explore a possible future that better facilitates human progress, we must first examine the aging foundations of Adam Smith's Classical Economics. And once we begin down this path, we must also examine the philosophical and psychological soil into which Smith's now aging foundations were originally planted. As we cultivate this old soil, we discover that a legion of radical shifts to human activity, philosophy, and psychology have ebbed and flowed throughout the civilizations of the 18th, 19th, 20th, and early 21st centuries—in very diverse and mosaic ways. Much has evolved since the birth of Classical Economics. Yet, as we shall see, Classical Economics has stoically refused to evolve.

This treatise shall endeavor to shine a 'pattern-seeking' light upon the underlying causes of the socioeconomic disparities and dysfunctions now being experienced throughout the world's liberal democracies. At the core of the patterns to be revealed in this treatise is that societies throughout history have thus far experienced only three basic stages or paradigms of

economic-labor relationships: agriculture and mining, mass production, and servicesⁱ (72 percent of the global labor force is now crowded into the services sector). In the past, as technological advancements reduced the demand for mass human labor in one stage, that mass labor subsequently moved onto the next stage. The socioeconomic disparities and dysfunctions we are now experiencing is caused specifically because *mass human labor is no longer needed* in these three exhausted stages of production.

In short, the human endeavor is facing its own evolution. It is now inescapable that humanity will have to take responsibility and collaboratively evolve into and develop some new fourth paradigm of human activity. *Wealth Beyond Nations* is an accounting—and harbinger—of this evolution.



ⁱ The **services sector** generally includes: government, telecommunication, information technology, pharmaceuticals, healthcare/hospitals, education, banking/financial services, insurance, legal services, consulting, news medias, casinos, tourism, and retail sales, etc.

**PART ONE:
BEHOLD THE SPARK OF EVOLUTION**

Three causal forces are now converging to
bring humanity to the edge of evolution.

*The greatest obstacle to discovery is not ignorance—
it is the illusion of knowledge.*

Daniel J. Boorstin

THE SIGN OF THREE

THE HUMAN ENDEAVOR is now witnessing its own evolution. Three primary ‘causal forces’ have been relentlessly progressing through the ether of time and space. These three causal forces, each in their distinct manner and circumstance, have undergone generations of life, death, and rebirth. All have shaped and been shaped by human curiosity, ingenuity, and even greed. Now, in this single and inevitable moment, these three forces have finally collided, subverting both the day-to-day operations as well as the underpinning logic of global human relationships... and Adam Smith’s ideal commercial society.

AUTOMATION & ARTIFICIAL INTELLIGENCE

The breathtaking technologies of computerized automation and artificial intelligence will continue at exponential speed and efficiency to replace the need for mass human labor throughout virtually every sector of the global economy. These disruptions not simply impact the processes of production and consumption, but also what society particularly chooses to produce and consume. However, before we assess the specifics of how 21st century iterations of automation and AI impacts labor and capital relationships operating throughout an economy, it is important to briefly review in broad historical and sociological terms, the underpinnings of our present systems. We will then be better prepared to assess how automation and AI is challenging long-standing conventions of economic theory.

Change vs. order. As Smith's ideal of a commercial society anticipated, mass human labor has been the cardinal ingredient necessary to establish and sustain fundamental social order for these past two and a half centuries. Anyone can climb the free market ladder to success and prosperity. Everyone plays by the rules of the marketplace, because they inevitably benefit by all people exercising (and occasionally adjusting) their individual self-interest. Otherwise, some form of state induced coercion or force would be required to secure social order. This means that it is the particular nature of the marketplace that determines the rules and operations of governance and social order, not some *a priori* form of governance which determines the marketplace. Thus, if the dominant mode of production that underpins a society is changed, the sociopolitical structure should naturally change as a consequence. According to Smith and his concept of *mode of subsistence*, he first delineates four stages of human development—age of hunter/gatherers; age of shepherds; age of farming; and age of commerce. Each of these four stages, then, influence the form and function of governance. According to Karl Marx, the very foundations of social order and the causes of social change are inherent in the specific mode of production that a society develops and operates.

And if Adam Smith is regarded as the *father of Classical Economics*, then 'Abd al-Rahman Ibn Muhammad Ibn Khaldun al-Hadrami of Tunis (1332-1406), commonly known as Ibn Khaldun, history has come to regard as the *father of economics writ large*. In his monumental *Prolegomena (The Muqaddimah)*, 1377, Ibn Khaldun laid down in dialectic fashion the interdependent foundations of knowledge, in particular what he referred to as the *science of civilization (al-'umran)*.

Know, then that the difference between people arises principally from the difference in their occupations; for their very union springs out of the need for co-operation in the securing of a livelihood.

From Ibn Khaldun, to Smith, to Marx, the nature of how humans secured their livelihood is what specifically determines how the institutions and policies of governance operates. The

problem that now exists in our modern automated and AI-driven mode of production is that our socioeconomic and sociopolitical structures have yet to evolve because these new modes of production have yet to be properly understood.

But there is something deeper that emerges from these relationships between production and governance. The dialectic wisdom displayed by the above observation of Ibn Khaldun in 1377 is contrasted by contemporary institutions which more narrowly focus their observations on and the management of the technical mechanics of economics. As the following advice proclaimed by the Swiss-based *Center for Banking Studies* demonstrates, the focus becomes so profoundly narrowed toward mechanics, our human behavior is essentially excluded from any consideration. Problems—and their solutions—thus become subjects of technocratic, rather than human intervention and consequence. Our capacity for wisdom begins to atrophy.

*Unemployment. What are the causes of involuntary unemployment? Contrary to what is often believed, it can be shown that pathological unemployment is due not to the behaviour of economic agents, but to a monetary anomaly affecting the process of capital accumulation. At the core of the anomaly is the fact that profits give rise to a bank deposit that never dries up, thus generating repeated financial lendings of the same sum. Once the process of capital accumulation has reached a level that no longer allows for a positive difference between natural and monetary rates of interest, new investments are necessarily reduced and employment shrinks. [This] analysis [...] leads to a proposal for a monetary reform allowing capital to accumulate consistently with the very nature of bank money and with the logical and factual distinction between money, income and capital.*⁵

This conflict between human behavior manifesting itself via modes of production and orthodox macro-economic theory of managing modes of production is a vital component of this treatise and its critique of the present state of socioeconomic

affairs. This conflict will be addressed in more detail throughout the following sections. The affects of automation on labor demand have been persistently observed throughout history. Johannes Gutenberg and his printing press (1439) provided humanity the tool to mass distribute knowledge and research to anyone, anywhere. As a consequence, the power of knowledge could no longer be controlled exclusively by the elites. It was to be this innovation touchstone of the printing press which would give birth to the Scientific Revolution and the Age of Enlightenment. What is often forgotten in time, however, is that innovation and progress can also be a destructive process. In its unique way, the printing press has all but destroyed our human capacity for memory. In his dialogue, *De Oratore* (55 BCE), Cicero tells an important and vivid story about the art of memory.

The poet Simonides of Ceos was dining at the house of a wealthy nobleman named Scopas at Cnemon in Thessaly, and chanted a lyric poem which he had composed in honour of his host. Later, a message was brought to Simonides to go outside. He left to meet the visitors but could find no one. Then, while he was outside the banquet hall, it collapsed, crushing everyone within. The bodies were so disfigured that they could not be identified for proper burial. But, Simonides was able to remember where each of the guests had been sitting at the table, and so was able to identify them for burial. This circumstance suggested to him the discovery of the truth that the best aid to clearness of memory consists in orderly arrangement.

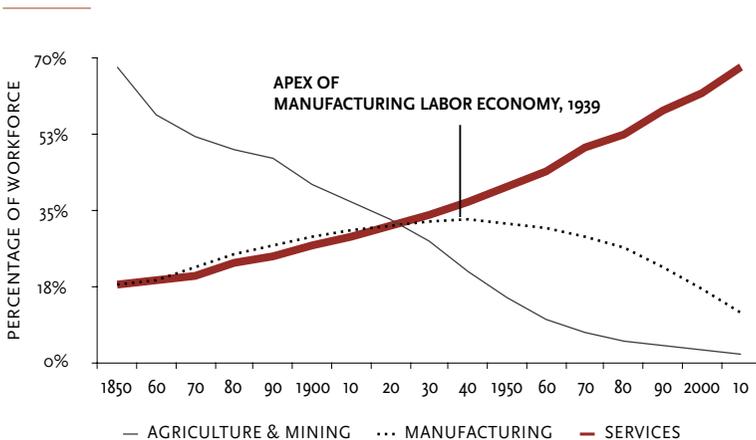
Our modern version of the printing press, the Internet, not only distributes the power of knowledge even more widely, it does so almost instantaneously. But in its instantaneity, this miracle technology of the Internet has also weakened our bonds of human civility and discernment of the vast concomitant nature of knowledge and existence. A fundamental flaw of our formal education systems and sociopolitical discourse is that we have yet to implement a dialectic process which conjoins innovation and progress with memory. In political affairs,

progress and memory are seen entirely as binary concepts—a choice between one or the other. Inexplicably, though, in the affairs of macro-economic theory, it has been memory imprisoned into dogma that has come to prevail over evolution.

The big bang. The trans-disciplinary sociological and economic research of Colin Clark and Jean Fourastié⁶ in the 1940s and 1950s crystallizes our 21st century predicament. The human endeavor has thus far expressed itself in only three broad stages, or paradigms, of socioeconomic activity: *extraction of raw materials including agriculture, manufacturing, and services*. Clark and Fourastié observed that when technology advances in one stage of economic activity to the degree that the technology replaces the need for mass human labor, that labor force evolves into a new stage of economic activity. In these moments of technological evolution and its force of *creative destruction*, human labor is forced to react in myopic binary fashion rather than with deliberative insight and strategy.

As **Figure 1** illustrates, the apex of labor integrated within the manufacturing sector already peaked in 1939; since then, the labor force migrated into the services sector. Today, about 72 percent of the global labor force is operating within the services sector. Now, however, automation is rapidly replacing even these services sector jobs.

Fig 1 - Clark & Fourastié's Sector Model [updated, Byrnes, 2008]



An example of service sector jobs at risk: a *Deloitte Insight* report (2016): “*profound reforms will occur in the legal sector over the next decade, and an estimated 40 percent of jobs in the legal sector could be automated*”. From the legal sector to medical diagnosis, and everything in between, almost no human activity will be spared by automation. The masses do not require academic or think tank studies to tell them that automation and AI are replacing their jobs. Virtually each and every day, local news reports announce thousands of jobs being lost throughout some company or even an entire production sector. Since there exists no fourth paradigm beyond the services sector, mass labor has no other paradigm of human activity to which to migrate. If confined within only the three present paradigms of market activity, mass labor will be increasingly forced to compete in increasingly coercive or even violent ways. Anyone not of the majority tribe will be seen as a competitive threat. Obviously, these forces cause a weakening in the social fabric by reinforcing protectionist and tribalist behavior.

Labor & order. Prior to, and in the early years of the Industrial Revolution, human labor was generally coerced—either via feudalism or outright slavery. But as a consequence of multiple events, including the reoccurring pandemics of disease that devastated the populations of Europe and the Middle East, human labor was in short supply and high demand, and thus, coercion was less effective than fundamental economic incentives in directing human labor to achieve specific tasks on behalf of a local community, kingdom, or nation-state. We often forget that it is the essence and function of *community-supportive* tasks that a society deems as valuable which provides the foundations of economics. In the generations leading up to Adam Smith, societal tasks were somewhat limited in their focus: primarily the essentials of survival—food, clothing, shelter, and security from external forces of ideology or empiricism. Consequently, our individual and collective economic behavior should be viewed in a wider perspective relative to the stage of evolutionary development of society as a whole. The concept of *value* itself evolves from one generation to the next and from one distinct society to another. In the European experience leading up to 1776, the

flies in the ointment, so to speak, to efficiently ordering that mutually-beneficial paradigm of economic activity throughout the masses for their basic survival needs were the too-often competing forces of monarchism and religious allegiance. It was difficult, to say the least, to establish some form of socioeconomic stability when some power-seeking empire or religious institution was sweeping throughout the countryside, burning and/or stealing everything in sight, or cleansing non-conforming citizens from a community altogether.

Enter Adam Smith and his magnum opus. In its day, *The Wealth of Nations* almost singularly codified both the practical as well as moral principles for how society could be largely self-ordering—via a process of mutually-beneficial socioeconomic activity. This prudent yet revolutionary paradigm of a self-ordering commercial society not only mitigated the persistent upheavals of monarchism and religiosity that had afflicted much of the world, it provided a stable environment for any and all citizens (the masses) to participate in and benefit from the opportunities of personal industry and prosperity—within and between markets on a global scale. Thus, the labor force was simply another link in a seemingly endless chain of value and revenue generation—all working for both the collective well-being of society as well as the self-interest of the individual. Markets for the newly enfranchised masses had nowhere to go, but up. Indeed, if a blacksmith was operating in a specific community, and a second blacksmith began a venture nearby, this was not generally considered ‘competition’ as we now think of it. Perhaps there might have existed a craft-centric competition between the two blacksmiths, but the market was hungry for as many hammers and other tools that could possibly be produced. Both blacksmiths were able to thrive.

Smith’s new commercial society, for the first time in human history, facilitated economic opportunities for the masses, where previously, these opportunities were largely reserved for the aristocratic and privileged classes. In return, the masses were required to conduct themselves in a moral and practical fashion that did not endanger the fabric of the fledgling commercial society. Indeed, Adam Smith was acutely aware that ar-

bitrary government oversight of, say, apple production would lead to systemic market inefficiencies. A farmer was motivated to market good quality apples at a fair price not merely out of the self-interest to maintain a consistent resource of profit, but also to simply be liked and respected by others in their community. Smith grounded this synthesis of practical and moral self-interest on his keen admiration of the human sentiments of *virtue*, as expressed by the Stoic philosophers of ancient times. Vernon L. Smith (1972—) observed that *The Theory of Moral Sentiments* (Adam Smith's prior opus, 1759) and *The Wealth of Nations* together encompasses this practical and moral synthesis which governs a commercial society.

*One behavioral axiom, 'the propensity to truck, barter, and exchange one thing for another,' where the objects of trade I will interpret to include not only goods, but also gifts, assistance, and favors out of sympathy ... whether it is goods or favors that are exchanged, they bestow gains from trade that humans seek relentlessly in all social transactions. Thus, Adam Smith's single axiom, broadly interpreted ... is sufficient to characterize a major portion of the human social and cultural enterprise. It explains why human nature appears to be simultaneously self-regarding and other-regarding.*⁷

Labor & disorder. But what happens when that community becomes so large that the consumer resides on the other side of the planet rather than in our immediate neighborhood? In our 21st century global marketplace, are the various participants—the producer, seller, buyer, or even the society at large—conjoined by any other bond other than the non-synthesized self-interest of short-term profit?

Two events in our modern history perhaps provide insight to this question. Leading up to the *Wall Street Crash of 1929*, which itself precipitated the decade-long *Great Depression*, the masses were speculating heavily in the euphoric and ever-rising stock market. But they were doing so with massive amounts of borrowed money. By the late 1920s, 90 percent of the stock purchase price was made with borrowed money (this is referred

to as ‘buying on margin’), and 40 percent of all monies being loaned was being spent on purchasing stocks.⁸ John Kenneth Galbraith, in 1955, posited:

*The common denominator of all speculative episodes is the belief of participants that they can become rich without work, and that the tendency towards recurrent speculative orgy serves no useful purpose, but rather is deeply damaging to an economy.*⁹

Fast forward to the *Financial Crisis of 2007–2008*, which itself precipitated the *Great Recession* and the *European Sovereign Debt Crisis*. The precipitating factor for these cascading and inter-linked crises was a high default rate in the United States subprime home mortgage sector. As a consequence of this second iteration of mass speculative orgy—this time on a global scale—an estimated US\$ 4.2 trillion was lost from U.S. home equity value, and trillions more lost on a global scale.

On October 23, 2008, in his now infamous U.S. Congressional testimony, Alan Greenspan, the former Chairman of the *U.S. Federal Reserve* from 1987-2006, acknowledged that he was “partially” wrong in opposing government regulation of the derivatives market and stated, “*Those of us who have looked to the self-interest of lending institutions to protect shareholder’s equity—myself especially—are in a state of shocked disbelief.*” Referring to his free-market absolutist ideology, Greenspan said: “*I have found a flaw. I don’t know how significant or permanent it is. But I have been very distressed by that fact.*” When Representative Henry Waxman (D-CA) asked Greenspan, “*In other words, you found that your view of the world, your ideology, was not right, it was not working?*” Greenspan replied, “*That’s precisely the reason I was shocked, because I have been going for 40 years or more with very considerable evidence that it was working exceptionally well.*”

Greenspan, in the above testimony, touches upon a question that this treatise endeavors to explore: is the flaw of non-synthesized (practical and moral) self-interest only an occasional occurrence in the marketplace, or is there something more systemic and malignant operating throughout the orthodox foundations of Classical Economics?

As the two above examples of non-synthesized self-interest demonstrate, and as the moral linkages between market participants become more globally stretched and tenuous, governments are increasingly forced to utilize the coercive nature of law and regulation so as to stimulate right behavior and maintain social order. But what is *right behavior*? In Adam Smith's time, right behavior was somewhat limited in its definitions and jurisdiction. The questions of the day, then, were centered on what days to work and rest, how best to transport goods (via canal boat or train), and the like.

But today, questions of right behavior have grown more complex and formidable. Is it right behavior to purchase a product that has been produced in a foreign country with slave or child labor? Is it right behavior that hoards of human cattle amass on a day they call *Black Friday* and compete for position (sometimes quite violently) so as to merely purchase a television, computer game, or brand of clothing? Is it right behavior for a community experiencing severe economic decline to invite and facilitate a coal cleaning or chemical production facility to operate within their community—knowing full well that as a consequence of creating much-needed job opportunities, these types of production facilities will assuredly pollute the soil, water, and air of the community, and endanger the lives of citizens and their children for generations?

Modern civilizations are indeed cognizant that their actions have long-term effects upon society, culture, genetic health, local and global ecosystems, etc. Yet, we continue to operate almost exclusively for short-term gains of profit and self-gratification, while ignoring the long-term effects of our individual and collective actions. Adam Smith's commercial society was resolutely under-pinned by a synthesis of moral choices and consequences operating within the marketplace—albeit somewhat simple choices and consequences in comparison to 21st century circumstances. Over the centuries, markets became more complex and global. Astray in this complexity, moral foundations in modern economic markets have severely eroded, weakening society's capacity to synthesize moral choices with practical day-to-day choices and their inevitable consequences. In

short, this disconnect between moral foundations and practical economic activity jeopardizes both the efficacy and sustainability of a commercial society project—and thus, social order itself. A self-feeding downward spiral is created: dysfunctions in the mass human labor market cause dysfunctions in the social moral fabric, which cause further dysfunctions in the mass human labor market.

As **Figure 1** [page 13] shows, as early as 1939, the U.S. labor force had already begun to migrate out of the manufacturing sector—the epistle and workhorse of the masses that had prospered for a century and half—and into the eccentric territory of the services sector. Since 1939, the services sector participation rate doubled from 35 percent to a considerable 72 percent of the world’s labor force and output, and generally includes: government, telecommunication, information technology, pharmaceuticals, healthcare and hospitals, education, banking and financial services, insurance, legal services, consulting, news medias, casinos, tourism, and retail sales.

Figure 2 illustrates the dramatic rate of growth of the U.S. labor force participating in the services sector in comparison to the agriculture/mining and manufacturing sectors between the years 1962 and 2011.

Fig 2 - % change in US Labor Force Participation rates, 1962-2011 (US BLS)

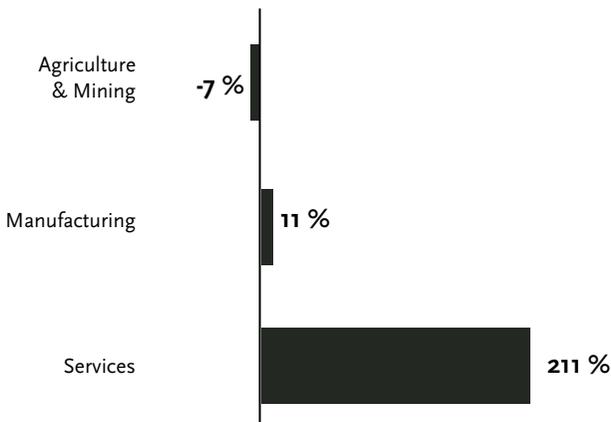


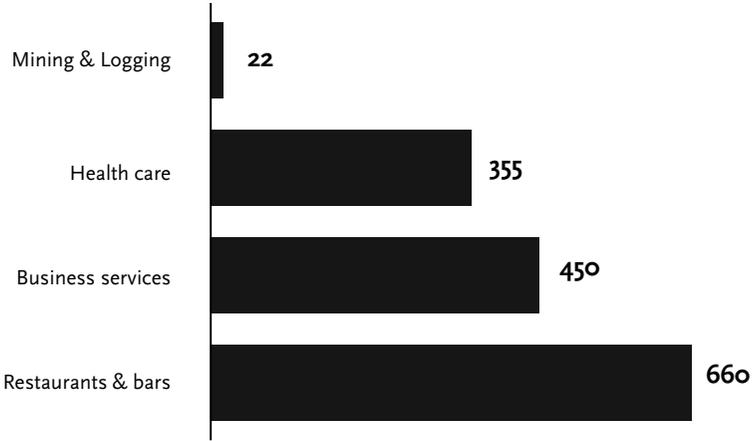
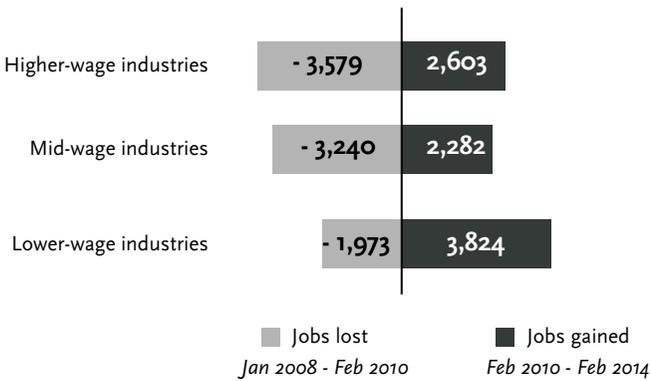
Fig 3 - Distribution of new jobs, U.S., 2014 [selected] (in oos) [US BLS]**Fig 4 - Net change in private sector employment (in oos)**
(National Employment Law Project & US BLS)

Figure 3 illustrates how new jobs were distributed within the U.S. labor market in 2014. Out of 3.3 million new jobs, the overwhelming majority were in services-related sectors that earn low to modest wages (food, health, and business services,

and the like). In comparison, the depressed job creation in mining and logging demonstrate that growth in traditional sectors such as manufacturing and housing construction have all but disappeared. From a wider bird's eye view, **Figure 4** illustrates how various sectors of the U.S. labor market were initially impacted by the Great Recession, and how the recovery within these sectors has been uneven and over-balanced to lower-wage industries. Between 2008 and 2014, lower-wage industries accounted for only 22 percent of job losses, but 44 percent of jobs gained (the majority of overall employment gains). Mid-wage industries accounted for 37 percent of job losses, but only 26 percent of job gains. Higher-wage industries accounted for 41 percent of job losses, but only 30 percent of job gains.

Hidden within the data, however, we must recognize that in the limited ways and sectors it can, the hand of government intervention in stimulating job creation, has consequences. The U.S. in 2010, as an example, in enacting a somewhat aggressive expansion in health care services via the *Affordable Care Act*, mandated that employers contribute to subsidizing their employees' insurance premiums. Small businesses that could not afford to make these contributions retaliated to this mandate by cutting labor; larger firms invested in automating technology that replaced the need for labor. This gravitation toward technology replacing labor, as Clark and Fourastié demonstrated in the 1940s, has always been present. But as can be observed with various government intervention projects, the short-term economic (and political) gains derived from these interventions present often unanticipated long-term consequences that effect the very fabric of society.

Also hidden within the data are the fundamental shifts occurring within traditional bastions of wealth, power, and influence. U.S. law schools, as an example, are experiencing the lowest number of applicants in 40 years, fewer legal jobs for graduates, and wildly rising tuition costs. At the same time, the legal services profession has experienced a fundamental shift in the way it functions. Law firms which once depended upon young graduates to do laborious tasks such as search through volumes of documents, now use artificial intelligence for these tasks.

Evolution calling. We can now begin to discern a series of deeper observations that begin to illuminate the nature of how and why modes of production will—and should—perpetually evolve. Here, we examine two primary risks which exist in such a large percentage of the human labor force being focused toward the cultivation of any single market stage or paradigm (in this case, services). The first risk is that a *tragedy of the commons* is created—where individuals acting independently and rationally according to each one’s self-interest, behave contrary to the larger group’s long-term best interests by depleting some common resource. The second risk is more specific to the services sector in that services should operate from a valuation of *quality* (rather than *quantity*). In agriculture and manufacturing, quantity is the primary objective—we want, as a society, to purchase a quantity of something, say, automobiles. Indeed, quality is important, but it is quantity which provides a market-wide demand for not simply automobiles, but fuel stations, roads, and replacement parts. In the services sector, however, a corporation does not have as its priority to solicit some *quantity* of consulting services documents, but rather to acquire the most *quality* from any specific consulting document. But global economic markets are almost universally constructed to facilitate quantity. The key economic indicator of a national market is Gross Domestic Product (GDP)—a function of quantity, not quality. Modern markets simply do not yet know how to facilitate quality as a fundamental benchmark. This concept of quantity versus quality will be detailed in the next sections.

In our ancient past, the human imagination invented technology, as we do now. There are two profound differences, however, between the technologies of the past and our present. First, one of our earliest technologies—the plow—was a tool that anyone, man, woman, or child, could use. Second, its effect was immediate, tangible, and specific. A plow could not be used to mend clothes, or cook food; the plow was used specifically to till the soil so that seeds could be planted. Today, primarily only consumer technologies are used by the masses, whilst a vast network of commercial technologies are wielded only by specialists—hidden from direct view of the masses. The billions

of lines of computer code that give life to AI, or the invisible-to-the-naked-eye nanotechnology that constructs an increasing amount of our material products or performs complex surgical procedures where a doctor's scalpel cannot reach—these technologies are known only by a select few.

What do we, the masses, know of these specialists? And what do these specialists know of us? Certainly, we can trust a plow; but how do the masses determine they can trust billions of lines of code? Or the people who write and use that code?

Further, artificial intelligence is not a tool that is wielded to accomplish only a single task; *AI is all around us*, an ubiquitous behind-the-scenes participant in our daily lives. With much of our modern technologies, the impact of their use may not even be perceived or understood for many years. Once, we could comprehend how a plow specifically facilitated our lives. But increasingly, do we fully comprehend how technology facilitates our lives, or even why? And importantly, how exactly do our modern technologies destroy our memory, the seeds of culture? Indeed, the technologies of today appear to actually distance the masses from a direct experience of socioeconomic collaboration and cohesion... and individual/social cognition.

Dark clouds. The mass consumer is not easily dissuaded from purchasing items produced via slave or child labor, or where employees do not have access to health care and other social welfare protections. Inevitably, this lack of empathy and personal responsibility produces a *race to the bottom*, as we are all now witnessing. Families and businesses assiduously struggle to just hold on... just one more year... just one more month. Until there is nothing more to hold onto. There is another and more perilous consequence to this 'race to the bottom' that deserves mention: the dramatic rise and scope of the previously mentioned *shadow economy* (economic activity that purposefully avoids taxes, social welfare contributions, and essential human rights protections). As Friedrich Schneider observed:

In almost all studies it has been found out, that the tax and social security contribution burdens are one of the main causes for the existence of the shadow economy. Since taxes affect labor-leisure choices, and

*also stimulate labor supply in the shadow economy, the distortion of the overall tax burden is a major concern of economists. The bigger the difference between the total cost of labor in the official economy and the after-tax earnings (from work), the greater is the incentive to avoid this difference and to work in the shadow economy. Since this difference depends broadly on the social security burden/payments and the overall tax burden, they are key features of the existence and the increase of the shadow economy.*¹⁰

When shadow economy workers describe themselves, they use terms such as: *resourceful, ingenious, inventive, self-starting, and entrepreneurial*. Despite these self-aggrandizing attributes, what makes the shadow economy so insidious:

Government Complicity. There exists a self-reinforcing interdependence between cross-border shadow economic activity and formal government institutions and personnel—whether the activity facilitates child or slave labor knowingly used in the production of goods and services, or the activity is simply to accommodate tax avoidance via government sponsored tax havens. Research has demonstrated that governments all across the globe are knowingly complicit and even publicly supportive of shadow economic activities, such as exploiting tax havens, bribery of bureaucrats and government officials, etc. Arms trading is well-known to harbor acts of government corruption and bribery on a massive scale.

But the shadow economy also operates more directly within our daily interactions between government, business, and the social sphere. A national government determines—or is pressured by the public—to react to insufficient stocks of affordable housing, and thus to provide government funds for new housing construction. As the British housing crisis of the 1980s clearly demonstrated, the corporate sector was unprepared to execute such a mandate. In conventional markets, corporations dedicate substantial resources to research and development prior to goods and services being delivered to market. But in this case in Britain (and unfortunately, this case is not unique),

research and development was not implemented, and tens of thousands of innovative ‘pre-fabricated’ apartment buildings were constructed. The construction companies, government officials, and even the construction workers themselves knew that serious design flaws existed. But the mass construction projects continued. Within 15 years, however, the majority of these projects were forced to be demolished.

Complicity of Common Citizens. There exists a self-reinforcing interdependence between government facilitation of the shadow economy and with individual laborers/consumers who selfishly benefit by or otherwise profit from the shadow economy. Inexpensive consumable items are often inexpensive specifically because producers exploit human labor, or a nation’s natural resources, or avoid various regulatory constraints or tax obligations. Much of the emergent ‘sharing economy’ and ‘gig economy’ initiatives (*Uber, Airbnb*, zero-hour labor contracts, etc.) are deliberately founded on the anti-society principles of tax, insurance, and social welfare avoidance. Common citizens are increasingly perceiving that government no longer ‘works for them’, so they reciprocate that perception by becoming increasingly self-centered. Inescapably, humanity’s increasing attraction to extreme individualism, at the expense of social well-being, further de-synthesizes Adam Smith’s ideal of synthesized practical and moral self-interest.

Seeing clearly. Understandably, technological advancement has always imposed some level of evolution upon human activity. Simultaneously, technology imposes sometimes profound creative destruction effects upon the technical modes of production, and thus, on social organization and governance.

When Adam Smith wrote *The Wealth of Nations*, he was writing from his personal experience and moral outlook predominately animated by his native agrarian-centered Scotland. Then, manufacture meant by hand.¹¹ Smith was an intimate observer of both the merchant and consumer classes in Glasgow and Edinburgh—and the social alchemy created between them. Through this cheek by jowl window, Smith’s vision of a commercial society was grounded on the principle that in this very local and personal marketplace, practical and moral self-interest

were synthesized. Citizens were simultaneously self-regarding and other-regarding. In his time, the average citizen traveled only 11 miles from their place of birth. The world was not yet global. In our now globalized marketplace, however, complexity has usurped simplicity. The moral bonds that once facilitated 18th century cooperative socioeconomic activity have now been substantially weakened. And as we are about to see, Smith's vision of a cooperative commercial society is now facing its most sweeping and complex challenge ever: artificial intelligence.

With the above patterns in mind, we now view in more specific detail how 21st century iterations of automation—and in particular, artificial intelligence—impacts labor and capital relationships operating throughout an economy. In relation to automation, several broad assumptions have been blindly made by both the masses as well as the elites. Modern data and research, however, demonstrate these assumptions are myth.

Myth 1: automation mimics human thinking and processes. In 2017, Stanford University¹² researchers developed an algorithm to diagnose skin cancer using deep learning.ⁱⁱ The algorithm was trained to detect skin cancer or melanoma using 130,000 images of skin lesions representing over 2,000 different diseases. Stanford's deep learning algorithm was tested against 21 board-certified dermatologists who reviewed a reported 370 images and were asked if *"they would proceed with biopsy or treatment, or reassure the patient"* based on each image. Results showed that the algorithm had the same ability as the 21 dermatologists in determining the best course of action across all images. Similar research is being accelerated throughout the world with astounding results.

Until recently, economists thought it unreasonable for technology to replace something as complex as medical diagnosis. The economists' logic being that a doctor, in the act of

ii **Deep learning** is part of a broader family of machine learning methods based on learning data representations, as opposed to task-specific algorithms. Deep learning architectures such as deep neural networks, deep belief networks and recurrent neural networks have been applied to fields including computer vision, speech recognition, natural language processing, audio recognition, social network filtering, machine translation, bioinformatics and drug design, where they have produced results comparable to and in some cases superior to human experts.

a diagnosis, interweaves a host of thought concepts, ranging from visual observation and long years of education and experience to cognition and even intuition. A computer could never do that! But, indeed, AI is playing an increasingly visible role throughout the health care sector, including specifically medical diagnosis. Automation and AI (essentially, computer code) works in completely different means from human intelligence. The automation platform accesses and digitizes visual records of hundreds of thousands medical files to rapidly find *patterns*. Diagnosis made not from deduction, but pattern. This demonstrates a fundamental shift in human consciousness that the masses will have to consider.

The human species, almost exclusively, perceives and experiences the world via the process of *deductive* reasoning (using a limited number of data points so as to act in a precise manner). But artificial intelligence tends to operate via the process of *inductive* reasoning (seeing patterns throughout diverse types of data points). Inductive reasoning is indeed the foundation of cognitive discernment and transcendence. Heretofore, the masses have been largely isolated from understanding how technology in general, and artificial intelligence in specific, operates. Are humans to simply accept that automating systems and the masses process information differently, and this difference is to remain unquestioned?

A 2016 Frost & Sullivan report, *Artificial Intelligence & Cognitive Computing Systems in Healthcare*¹³, finds this embryonic market earned revenues of US\$ 633.8 million in 2014 and estimates US\$ 6.66 billion in 2021 at a compound annual growth rate of 40 percent. *CBInsights*¹⁴, in 2016, reports equity financing to the AI space has escalated from US\$ 282 million in 2011 to US\$ 2.4 billion in 2015, a 746 percent increase in just 5 years. This is just the faint beginnings of a tidal wave that is sure to have profound repercussions not simply on a multitude of services that once depended on human intelligence and experience, but more existentially, on our very human identities.

To what extent do our orthodox tendencies toward reductionist, mechanistic/predictable, linear, and specialized paradigms of human cognition either help or hinder in the human

endeavor to address emerging cognitive/moral/non-predictable challenges? Conversely, how might interdependent, variable/non-predictable, non-linear, and inter-disciplinary paradigms of human cognition reveal future potentialities? Alan Watts referred to this as a *spotlight versus floodlight* view of cognition.

This epistemological avenue of exploration exposes the most sensitive and labyrinthine of our human psychologies: the evolution from the Aristotelian logos-centric world of order (spirit/soul/consciousness); to the modern-era order (physical/material/unconsciousness); to the post-modern Derrida deconstructionist and quantum physics world of never-arriving anywhere in either our physical or nonphysical states. Particles used to be just particles; and waves used to be just waves. Now, however, particles are waves; and waves are particles.¹⁵ From cyclical experiences of life; then to linear experiences of life; and now to non-linear experiences of life. From a need for certainty (escape from the fear of the unknown) to a curiosity to explore the unknown and unknowable. These complex—and often opposing—human psychologies both are fed by and feed into our socioeconomic manifestations. These epistemological concepts will be explored in more detail in Part Two.

Is there anything to learn from the process of inductive reasoning? At present, no education system in the West specifically teaches inductive reasoning as a skill set that permeates throughout all of our human disciplines. Indeed, all institutional education is exclusively based on deductive reasoning. When is it appropriate to contemplate in an inductive rather than deductive manner? Or, *visa versa*? It is also important to observe that human programmers have programmed automating computers to solve cognitive problems via inductive reasoning. Should that tell us something? This particular question foreshadows Part Two of this treatise, where we explore potential futures for the human endeavor—based on the dynamic interplay of forces of deductive/inductive reasoning that then manifest into dynamic human expressions of individual curiosity and social collaboration.

Myth 2: automation simply liberates the masses to enter into other types of labor. In the past, this concept might have been

true in certain circumstances. But as the previous observation demonstrated, two patterns are beginning to emerge from the data that dispute the myth.

Human societies operate from an orthodoxy that the deductive method of reasoning is superior to any other method of reasoning. Artificial intelligence, however, largely based on inductive reasoning-based programming, is actually often more effective in cognitive problem solving tasks. As this inductive reasoning 'divide' continues to expand, it will become increasingly difficult for humans to compete with technology. To reference once again the data revealed in **Figure 3** [page 20], the largest distribution of new jobs in U.S. in 2014 was in *restaurants and bars* (one of the few sectors where technology has not been as aggressive in replacing human labor demand as other sectors—but this, too, is now beginning to change). Multiple studies are revealing that labor *over-qualification* (individuals with college degrees) and *skills mismatch* (decreasing mid-skilled and high-skilled opportunities) are now at epidemic levels. The *Chartered Institute of Personnel and Development* (CIPD), as an example, found that between 30 to 60 percent of college graduates throughout Europe are unable to gain employment that match their level of education.

*The UK has witnessed one of the highest rates of higher education expansion across Europe over recent decades, but has not seen an increase in highskill jobs matching that expansion. Simply increasing the qualification level of individuals going into a job does not typically result in the skill required to do the job being enhanced – in many cases that skills premium, if it exists at all, is simply wasted. This situation is unsustainable given that the government estimates that 45% of university graduates will not earn enough to repay their student loans.*¹⁶

Patterns, Sign 1: The human species presently operates in only three general paradigms of socioeconomic activity: agriculture/mining, mass production, and services. As automation and AI systematically replaces the demand for mass human labor in

all three of these sectors, the masses have no other paradigm of activity to exploit. The human species is rapidly approaching the point where humans no longer require other humans in the production of goods and services (either for basic survival or for luxury wants). This raises a series of fundamental questions: namely, should/ought humans have relationships with others? If so, or not, then why and how would society seek some form of order? And importantly, how does this impact how the human species distinguishes concepts of *identity* and *value* on both an individual as well a community basis? How does this disruption in our understanding of identity and value impact societal relations? These issues of evolving *identity* and *value* will be more pointedly addressed in Part Two.

CURRENCY CREATION, REAL ESTATE, & DEBT

From Eldorado, to dirt. Since before the European Middle Ages, societies had employed a monetary system of currency based primarily on gold treasure. The wealth of a monarchy was essentially defined by the size of its treasure of gold and silver. Early on, coinage was made from this actual treasure; but later, coinage was produced from other material, and these new coins merely *represented* the value of stored treasure. This required a great deal of accounting to make sure the coinage in circulation accurately represented the value of stored treasure. The essential agenda of pre-1776 European monarchies, states, churches, and the mercantilists empowered by these governments was to persistently (and often ruthlessly) expand the government's stock of gold, primarily by dedicating all available production exclusively for export to other European and Asian elites. ⁱⁱⁱ Adam Smith's commercial society innovation struck at the heart of the elitist-centric and gold-hoarding governments and mercantilists of his day. Smith showed that the wealth of nations would actually expand—exponentially so—by ending this elitist and gold-hoarding agenda, and replacing it with in-

ⁱⁱⁱ And also by the colonization of foreign lands and peoples as well as outright theft—hence, the government's active relationships with exploration expeditions and seafaring pirates.

ternal public consumption fueled by the massively pent-up savings of all citizens, elites as well as common *middling folk*. The vast majority of Smith's opus, *The Wealth of Nations*, focused on the technical methods necessary to unleash these savings, and to create a state of equilibrium between the stock of gold, the stock of circulating currency, and the flows of production and consumption spurred by this new mass public demand.

Since the late 1970s, however, the nature of how currency is technically created has altered completely. Currency creation is now almost exclusively tied to private commercial banks issuing real estate loans (97 percent of all global currency is created via real estate loans; this is called *endogenous fiat currency*).¹⁷ Previous to the ending of the *gold standard* of currency creation, currency was fixed to a commodity, such as gold or silver—thus, this *commodity currency* possessed value in and of itself. Currency was merely a more convenient and circulatable *medium of exchange* than gold or silver.

But since the late 1970s, currency is now fixed to a *contract* (in our present system, the contract and its resulting fiat is in the form of a real estate contract)—and thus, the currency possesses no inherent value in and of itself; currency is now simply a *representation of value*. Two essential reasons existed for this change in how currency is created. First, it fundamentally grew too complex for each and all of the world's governments and central banks to accurately account for all circulating currency and the value of stored gold or silver on an ever-expanding global scale. And second, in the ever-expanding globalized market, many nations simply did not have significant stores of gold from which to draw.

In an effort to best facilitate global trade and geopolitical stability in a modern market, governments delegated the responsibility of currency creation directly to private commercial banks. These commercial banks, then, quite naturally and reasonably established a system of currency creation tied to the commodity source with which they were long familiar: *real estate*. Real estate not only functioned as a source of collateral (thus, minimizing risk), history had shown the value of real estate to be a dependable asset in and of itself (real estate almost always ap-

preciates in value). But as we are about to discover, automation and AI have now severely disrupted this equilibrium.

When the average citizen conceptualizes the process of how banks issue loans, they are operating from the outdated *fractional-reserve banking* model which was once the foundation of the gold standard method of currency creation and management. Fractional-reserve banking was the practice whereby a bank accepts deposits from citizens and institutions, then aggregates these deposits so as to create loans or investments (*exogenous* created currency). Here, the bank was essentially operating as both an *aggregator* of currency and *intermediary* between depositors and borrowers (thus creating a base money multiplier effect). In this system, the bank is required to hold reserves equal to only a fraction of its deposit liabilities.

As early as 1988, however, Charles Goodhart, then a member of the Bank of England's Monetary Policy Committee, characterized the exogenously created base money multiplier model as "*such an incomplete way of describing the process of the determination of the stock of money that it amounts to mis-instruction*" (Howels, Mariscal, 2005). The Bank of England and the U.S. Federal Reserve have publicly published several papers and briefing documents for government and business leaders specifically and categorically stating that the "*system of a base money multiplier is implausible*" (Carpenter, Demiralp, 2010). And finally, as Sir Mervyn King, then-governor of the Bank of England, stated in a speech on 23 October 2012: "*When banks extend loans to their customers, they create money by crediting their customers' accounts*". In short, what has been referred to as a 'fractional reserve banking system', is no longer existent.

Banks are no longer *aggregators* of currency; they are the *creators* of currency. The masses, as well as elected government officials and academia, however, all continue to abide by and reinforce an outdated myth of currency creation. In a poll conducted in the U.K. in 2014,¹⁸ 71 percent of government ministers believed in the myth that only the government possesses the authority to create currency. Only 1 out of 10 had a vague understanding that commercial banks were the actual creators of currency during the act of establishing a real estate loan.

From dirt, to debt. Even as humanity continues to operate from this type of outdated knowledge and myth, the relentless march of automation and artificial intelligence confronts us with both economic and sociological reality. In particular, these technologies are beginning to undermine our present-day mode of fiat currency creation and its relevance to real estate and debt. Due to automation and AI now having become convention rather than exception, less real estate supply and human resources are required for the direct production of goods and services. What labor that may still be required for production, this residual labor earns substantially less wages due to the market orthodoxy: more people competing for limited labor demand causes wages to fall. Concurrently, less production-supportive real estate demand causes less production-oriented commercial and residential lending demand, and thus, less currency is created for general market circulation. This results in the reduction of the masses' purchasing power. Instead of real estate being purpose-driven as a dynamic utility in support of economic production, real estate is being detached from its purpose of acting as a production utility to become merely an investment and currency creation vehicle exclusively for the wealthy to exploit. Real estate and currency creation is exponentially being detached from the activities of the general market.

The obvious societal consequence of this diminishing real estate-to-production requirement is that the masses will increasingly require debt financing so as to merely sustain (let alone grow) a modicum standard of living. And on a macroeconomic view, this radically alters what classical economists have always determined to be the central regulatory agent of the markets: evolving from *money* to *real estate* to *debt*. In technical terms, Classical Economics has been a monetary-based system (where increasing/decreasing stocks of money are the *consequence* of human activity... money stocks are both lubricating fluid and thermometer). But now, since the 1970s, increasing/decreasing stocks of money are the consequence of real estate transactions that may, or may not, have anything to do with fundamental human production activity (thus, real estate and debt have become the lubricating fluid and thermometer).

Scarcity vs. expansion. Money was, for all the generations of the gold standard, necessary to be maintained as ‘scarce’ resources so as to balance circulating money with gold reserves; no nation could have more currency in circulation than its gold reserves. Now, however, the creation of modern fiat currency is fixed to real estate. The essential operating premise of real estate valuation is that real estate value should, over time, persistently increase. The value of gold was fixed to its very scarcity. The value of real estate, however, is fixed to the ‘perceived’ value of its utility and/or location. With gold, economic systems possessed a definitive and stable compass to determine how best to manage currency-to-production flows. But even then, currency management had long vexed economists and political institutions. Indeed, almost the entirety of the iconic post-Great Depression debates between John Maynard Keynes and Friedrich Hayek centered on the government’s disputed role in the relationship between the creation versus scarcity of money, the value of money, and the self-correcting role of the ‘business cycle’.

Keynes argued that *aggregate demand*^{iv} determined the overall level of economic activity and that inadequate aggregate demand could lead to prolonged periods of high unemployment. Keynes therefore advocated the use of government fiscal and monetary *intervention* to mitigate the adverse effects of economic recessions and depressions. This included, as an example, government borrowing specifically targeting economic stimulus programs. Hayek, on the other hand, argued that it was the very *scarcity of money* that incentivizes economic actors to make the most effective use of money. Business cycles of *boom and bust* resulted specifically from the central bank’s expansion of *stimulus* forms of credit (then, primarily used by the

iv **Aggregate demand** is the total demand for final goods and services in an economy at a given time. The Keynes interest rate effect on aggregate demand states that a higher price level implies a lower real money supply and therefore higher interest rates resulting from financial market equilibrium, in turn resulting in lower investment spending on new physical capital and hence a lower quantity of goods being demanded in the aggregate. Since the global recession of 2007-08, interest rates have been set to near zero, and still have had an insignificant impact upon commercial currency stocks and market growth. Currency equilibrium is now primarily a consequence of real estate transactions, rather than interest rate management.

business sector rather than the individual consumer market), leading to an artificial and unsustainable bubble in the market. This stimulus money (rather than scarcity of money) inevitably results in a fundamental *misallocation* of capital which fuels the ‘bust’ of the market. Hayek claimed that *“the past instability of the market economy is the consequence of the exclusion of the most important regulator of the market mechanism, money, from itself being regulated by the market process”*.

As strange as it may sound, if Hayek and Keynes were to attempt their original debates today, they would actually have little to debate. The mechanics of economics has profoundly evolved since the great debates of Keynes and Hayek almost 100 years ago. Money, and more specifically the scarcity of money, can no longer be what Hayek had advocated: the most important regulator of the market mechanism. *Real estate, not money, has now become the fundamental market regulator*. And as we have seen, real estate value is not fixed to scarcity, but rather is fixed to the exact opposite: persistent expansion. Concurrently, Keynes’ argument for government intervention, in today’s automated production and real estate based currency markets, is technically implausible and irrelevant. Keynes was attempting to present economic management tools so as to fix temporary fluctuations in overall aggregate demand. But the challenges to maintain aggregate demand in our 21st century, as we are about to discover, are now systemic, not fluctuating challenges.

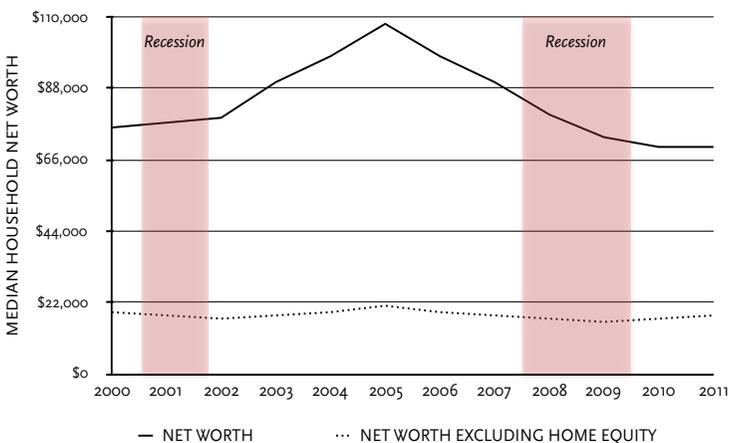
House of cards. Industrial-designated real estate is intended to attract production facilities, which then—according to orthodoxy—requires mass human labor to operate and manage said production, which then stimulates the development of residential-designated real estate. But as technology and automation systematically replaces the need for mass human labor, industrial/commercial real estate development no longer produces a sufficient volume of residential real estate development to achieve two simultaneous objectives: generate tax revenues sufficient to maintain current government support of infrastructure and social welfare programs; and create new stocks of currency. Currency creation is inherently dependent upon a critical mass of industrial and residential real estate loan de-

mand, but an automated economy actually *reduces* the requirement for human residents and their corresponding demand of real estate supply and financing.

The entwined evolutions of real estate requirement and currency creation not only severely challenge Western markets, but also critically impact developing states. Consider any developing state, and its orthodox agenda to attract foreign direct investment [FDI] so as to jump-start economic development. Orthodoxy stipulates that this FDI results in job creation, which then results in residential real estate loans, and thus, new currency creation. But if this new FDI merely results in a production facility that uses automation rather than human labor, then residential real estate is not needed, and thus, new currency is not created. The house of cards holding up the entire international system of nation-states, then, begins to falter.

Addiction trap. There is an obvious distinction between *income* and *wealth*. As **Figure 5** illustrates, *home equity* in broad historical terms, contributes about 75 percent to the median net worth (assets minus liabilities) of U.S. households. The brief period between 2004 and 2007 was an exception; home equity contributed about 80 percent to median net worth.

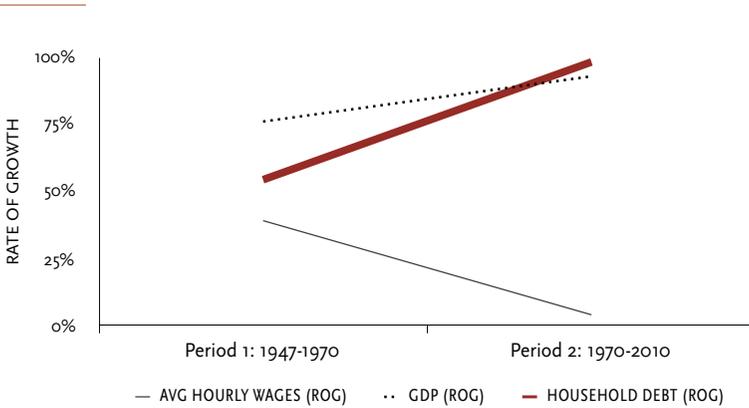
Fig 5 - Median U.S. household net worth [2000-11] [US Census Bureau]



There are three inter-connecting observations to discern from this data. First, in relation to how modern currency is created as a consequence of commercial banks issuing real estate loans, the wealth of a nation's people has become dependent upon the use and value of real estate. Second, in relation to the observation that automation and AI reduces the demand for production-supportive real estate (including residential real estate), the masses will come under increasing pressure to acquire not only labor income, but also overall wealth. And finally, Classical Economic orthodoxy is founded on the principle that currency management (managing the stock of currency and the velocity of currency dynamics) is explicitly tied to production and consumption, not real estate dynamics, as is now the case.

The backbone of Adam Smith's innovation of a commercial society was that the wealth of a nation would be unleashed as a consequence of the masses [a] providing their labor in the production of goods and services and earning income from their labor; and [b] with the *savings* from their earned income, the masses would then possess the capital to consume what was being produced. This would create what is referred to as *aggregate demand*. In Smith's 18th century, the masses did not generally have access to large stores of debt financing. From time to time, a customer might certainly make purchases from specific merchants on short-term credit, but these relationships were made on a case-by-case basis.

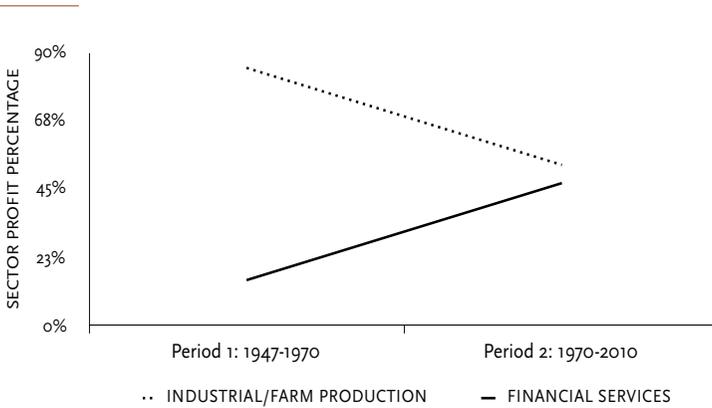
But since the 1950s, aggregate demand has been stimulated and maintained predominately by highly institutionalized *household debt*, rather than wage income and savings [Figure 6, next page]. Orthodoxy, again, dictates that some mythical cycle exists: a cycle of labor income which produces consumer purchases, which then produces further labor income, which then produces more consumption, etc. But the reality is that global markets—and societies—can no longer maintain mass consumption derived from labor income and savings. Indeed, in many if not most markets, labor wages are declining. Subsequently, societies have been compelled to depend on household debt to finance consumer purchases (and to maintain the facade of progress).

Fig 6 - Rates of growth comparison: wages, GDP, US household debt [BLS]

If Hayek were alive today, he most likely would adamantly criticize this type of irresponsible market behavior. The scarcity of money (in this case, the specific value of one's labor income) should be the market regulator. If labor income is not sufficient to facilitate one's living needs or wants, in Hayek's paradigm, then the individual ought to seek and obtain labor/production opportunities more commensurate with their needs or wants.

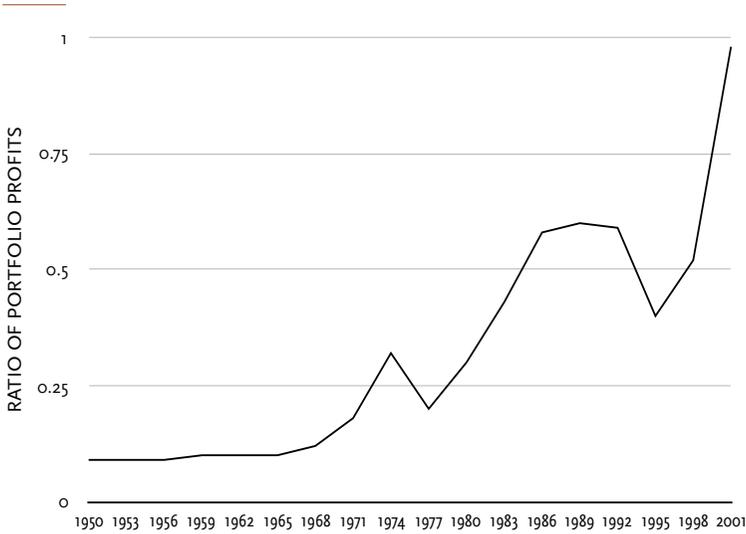
However, as the data relating to household debt demonstrates, the scarcity of labor income no longer regulates consumer purchases. Rather, it is the ever-expanding capacity to access resources of debt financing which now facilitates consumption in the marketplace. This is an addiction that practically, and mathematically, cannot be maintained. To repeat Hayek: *cycles of boom and bust result specifically from the expansion of stimulus forms of credit.*

Who stimulates who? In *Financialization of the American Economy* (2005), historical sociologist Greta Krippner provided ground-breaking empirical findings regarding the volume and value rise of U.S. production profits being generated by its internal financial services activities (providing credit to its customers). This is in contrast to the diminishing profits being generated by actual production output.

Fig 7 - U.S. sector profits: production vs. financial services [Krippner, 2005]

As **Figure 7** illustrates, U.S. industrial and farm production generated 85 percent of the national profits between 1947 and 1970, but this has since diminished to 53 percent. Conversely, U.S. financial services generated only 15 percent of national profits between 1947 and 1970, and this has now burgeoned to 47 percent.

Krippner assesses the individual line-items of profits accruing specifically to industrial and farm production, such as interest, dividends, and realized capital gains on investments—in contrast to their overall profits. These ‘portfolio’ profits, then, are an indicator as to what extent industrial/farming sectors of production generate profits from portfolio versus production operations. The primary contributor to these portfolio profits is the selling of lines of consumer credit to consumers—so that consumers can purchase the goods being produced. A typical example of this can be seen in the automotive industry, where manufacturers establish substantial financial services divisions providing consumer credit to customers to purchase their vehicles (as well as insurance, online banking, mortgage operations, and commercial finance, etc.). **Figure 8** [next page] illustrates this ratio of portfolio income to overall cash flow for U.S. industrial and farming production.

Fig 8 - U.S. production: ratio of portfolio income to cash flow [Krippner]

From 1950 to 1968, the ratio remained constant at a low 0.09—and by the mid-1980s, the ratio rose to 0.6, and by 2001, the ratio rose, acutely, to 0.98. This means that U.S. industrial and farming production now generates \$1 in financial services profit for every \$1 of profit generated from the sale of manufactured goods.

Krippner observed that these figures also represent the “extent to which firms in highly cyclical manufacturing industries increasingly depend on financial revenues to subsidize profits from productive enterprise”. Such extreme dependencies upon financialization may have much broader implications upon corporate operations and governance: “Do non-financial corporations place financial directors [bank and fund managers] on their boards in order to secure access to loan capital... or do bank directors sit on non-financial boards in order to monitor—and shape—the behavior of non-financial clients?”

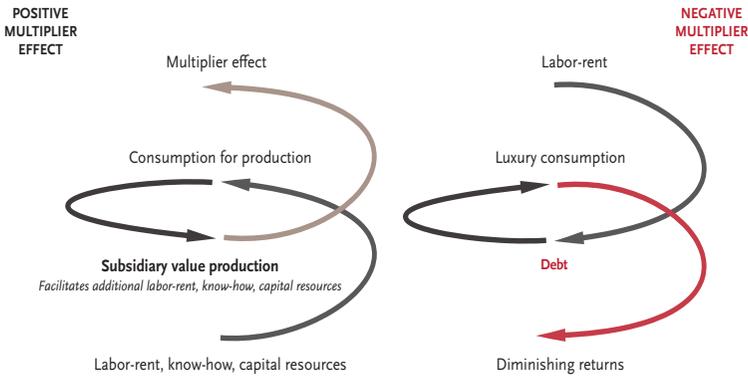
Final nails in the coffin. In *The Affluent Society* (1958), the economist John Kenneth Galbraith posited that within developed economies, market consumption is no longer propelled by demand for survival *necessities*, but rather by luxury *wants*. Consequently, the modern demand for goods and services are

not organically created by a consumer—they are created in a very calculated manner by producers and advertisers appealing to the myriad personal and social psychological biases and vulnerabilities of a consumer. This arbitrary exuberance in private luxury-centric production and consumption, however, inexorably pushes out public spending and investment designed for the well-being of society as a whole. Galbraith called this the *dependence effect*, a process by which “*individual wants are increasingly created by the process by which they are satisfied*”, often at the expense of the social community.

Galbraith well understood that this psychological rather than biological demand premise was directly related to the fundamentals of monetary and fiscal policies—particularly on the setting of lending interest rates. Galbraith was living in a time when evolutions in economic theory were in that tender stage of metamorphosis. From Adam Smith, economic theory had always operated from the premise that the most healthy and sustainable policy objective was to facilitate consumer spending from the savings of labor income. Hence, government/central bank interest rates rose and fell not as *consequence* of consumer spending, but rather to *prompt right behavior* so that consumers would spend from their savings rather than incur debt. By Galbraith’s time, however, this savings-centric monetary and fiscal policy agenda was being summarily cast aside. In its place, the mighty kingdom of debt was ascending. Galbraith was deeply conscious of these evolving realities of business and politics. He perhaps knew that his warnings would be difficult to accept.

But as matters now stand, any step to discourage borrowing and buying will be automatically opposed by the machinery for consumer demand creation.

In Part Two, we delve more critically into these ‘right behavior prompts’ and ‘predator/prey psychologies’ raised by Galbraith (and others). But here, it is important to view more closely what Galbraith refers to as the *market multiplier effect*. **Figure 9** [next page] illustrates the distinctions between positive and negative market multipliers with respect to public consumption.

Fig 9 - Consumer market multiplier effect

In the time of Adam Smith, an individual consumer would purchase a hammer which was then used to produce some other *subsidiary* product (say, a table or cart)—and this subsidiary production, then, would be sold back into the marketplace for profit. This investment-driven consumption-for-production activity, then, creates a *positive multiplier effect*. But in today's luxury-centric market, when a consumer purchases that same hammer, or a restaurant meal, a movie ticket, a medical procedure, a car mechanic's services, or even a smartphone, these products and services are more than likely to be utilized for non-profit making purposes—and this creates a *negative multiplier effect*.

Galbraith warned that modern luxury-centric consumption creates only diminishing returns. The end result of an absence of subsidiary profit potentiality is that the consumer must make future purchases either from capital gains earned via labor wages (savings, which are now largely depleted), equity holdings (such as real estate, stocks, etc., which are increasingly isolated from the general market), or by incurring additional debt (already at irresponsible levels).

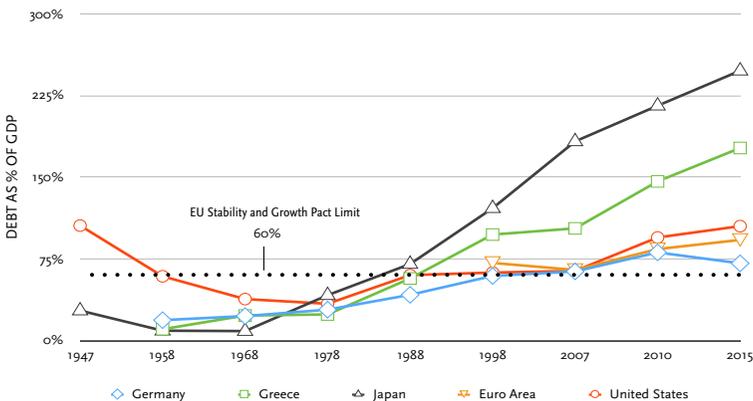
The harsh reality of 21st century markets—depressed by automation-induced job losses and stagnated wages—is that mass consumers must become almost exclusively dependent upon debt to finance some modicum standard of living. Since the 1950s, markets have been unable to produce any form of a

positive multiplier effect. In effect, all the sensational statistics heralding decades of growth and prosperity were really nothing more than deceiving propaganda masking ever-increasing burdens of debt. In reality, since the 1950s, markets have been nothing more than a corpse. Indeed, Galbraith's warnings were ignored by a public that just wanted to mass consume, no matter the cost.

Adam Smith titled his opus *The Wealth of Nations* for a reason. By formally collecting and organizing for the first time actual trade data across multiple regions and products, he became convinced that the mercantilists were, as a consequence of their gold-hoarding agenda, blindly leading national governments to an inevitable breaking point. Ultimately, an international system of trade based on one nation hoarding gold to the detriment of another nation was obviously unsustainable. According to Smith, the actual wealth of a nation was its own citizenry and their capacity to earn income and consume.

Beginning in 1997, the European Union initiated an agreement between its member states referred to as *The Stability and Growth Pact*. One of the elements of this agreement was to establish universal fiscal discipline by and between each member state, such as: member states remain within specified limits with respect to their government deficits (3 percent of GDP) and stocks of debt (60 percent of GDP).

Fig 10 - Public debt as % of GDP [selected nations] [IMF, 2018]



These targets were completely arbitrary. As **Figure 10** [previous page] illustrates, the Euro area, with the primary exception of Greece, held an average debt-to-GDP ratio of 72 percent in the late 1990s. Following the 2007-08 financial crisis, however, the highly industrialized states again all ventured well above 60 percent. In 2015, Germany held one of the lowest debt-to-GDP ratios, 72 percent while Japan held the highest, a staggering 234 percent. The U.S. held a debt-to-GDP ratio of 105 percent. Not shown on the chart is the total debt held by the U.S. (financial, corporate, household and government), which rose from just over 160 percent of GDP in 1974 to more than 350 percent in 2008. Many of the highly industrialized states now spend about 50 percent of their tax revenues on servicing present debt stocks. Nonetheless, we keep on borrowing.

The *Federal Reserve Bank of New York* assessed in its April 2017 quarterly report the outstanding U.S. student loan balance rose to US\$ 1.3 trillion at the end of 2016, an increase of about 170 percent from 2006. The key factors contributing to this rising balance are that more students are taking out loans, the loans are for larger amounts, and the speed at which borrowers repay their debts has slowed. The *Fed* analysis also observes:

Student loans support the education of millions of students nationwide, yet much is unknown about the student loan market. Relevant data are limited and, for the most part, anecdotal. Also, sources tend to focus on recent college graduates and do not reveal much information about the indebtedness of parents, graduate students, and those who drop out of school.

In November 2008, in an effort to stimulate production-centric borrowing, spending, and hiring, the U.S. Federal Reserve initiated its 'Quantitative Easing 1 (QE1)' program, and interest rates were lowered. The costs associated with lowering these rates, expectedly, were borne by the U.S. taxpayer: US\$ 1.7 trillion in government debt. And indeed, 30-year fixed mortgage rates to consumers fell from 6.33 percent to 5.23 percent by March 2010 (www.bankrate.com). But, the overall manufacturing, consumption, and housing markets did not appreciably

improve. Consequently, another round of quantitative easing was initiated.

QE2 (November 2010), which cost U.S. taxpayers an additional US\$ 600 billion, saw 30-year fixed mortgage rates rise, not fall, from 4.42 percent to 4.78 percent. Again, the manufacturing, consumption, and housing markets made no appreciable improvement. So, in September 2011, the U.S. Federal Reserve cut interest rates once again in a program they called ‘Operation Twist’, which cost U.S. taxpayers an additional US\$ 400 billion in government debt. Although 30-year fixed mortgages fell to 3.63 percent (June 2012), the overall manufacturing, consumption, and housing markets remained sluggish. From November 2008 to May 2012, the U.S. tripled its monetary base. In the same period, 3.3 million new jobs were created (BLS). Thus, the figurative correlation of U.S. Federal Reserve stimulus action (US\$ 2.7 trillion) to job creation (3.3 million) amounted to US\$ 810,810 in government debt per job created.

Debt, as an instrument of finance, is supposed to be a neutral instrument, used sparingly when cash flows incur an occasional and temporary disruption. The occasional rainy day is almost always followed by sustained periods of rejuvenating sunshine. As this section of our treatise has demonstrated, however, the disruption of global markets is not just some temporary rain cloud. Something much more systemic is now infecting the markets. As we synthesize the totality of the data—ranging from the stagnation of labor income and the dependency upon real estate for the accumulation of household net worth, to the dependency upon debt financing for both mass consumption as well as industrial profits—the pattern that becomes clearly discernible is that 21st century markets are no longer capable of generating profits from fundamental cycles of production, labor income, and consumption. And what is to happen to this already unhealthy market when automation and AI further reduces labor income? We now seem to be the proverbial passengers on a boat without a paddle. Dead in the water.

Visitors at our funeral. Now that we have progressed to a point in this treatise where we are better able to perceive reality rather than myth (at least with respect to how modern fiat

currency is created), we can perhaps put ourselves in the shoes, so to speak, of two particular visitors at our own funeral. The first visitor happens to be an executive from the banking industry. Since the late 1970s, the world's banks have been quietly and diligently creating the currency we all have often taken for granted. Money, it seemed, was just always where it was supposed to be... dependable, predictable, and importantly, global. And for those individuals fortunate enough to have purchased real estate at one price, and sold that same real estate at very handsome profits indeed, the banker is respectfully congratulatory. Profits have been made. Currency has been created. And the bank has received its share in the form of a standard commission for being the intermediary between real estate seller and buyer. And yet, the banker feels a bit of unease. The seller of real estate has just made quite significant profits, and it is likely the new buyer will one day sell to someone else at significant profit. Again, the bank will receive its standard commission as it once again functions as an intermediary between seller and buyer. Everyone else seems to be earning quite significant profits, while the bank simply earns its standard commission. The banker contemplates this, and ultimately concludes that this arrangement is not entirely fair. Certainly, the bank should somehow enjoy more of the windfall of real estate sales. But how?

After a significant amount of pondering, the banker ties together two quite obvious concepts: package the world's real estate transactions into complex mathematical algorithms (we corpses call these *derivatives*); and then, conveniently off the balance sheets of the banks, create a market for these mortgage-backed securities (and anything else the bankers can invent)... an exclusive market just for bankers. This *shadow banking system* (SBS), now represents about 30 percent of the total global financial system and an astounding 120 percent of global GDP. The *shadow banking system* is loosely defined as financial transactions that are for the most part disconnected from interactions between financial institutions and the general marketplace—essentially, off-balance sheet transactions that occur solely between the financial institutions themselves. The nature of these 'off the books' (and in the main, non-regulated) transactions are

varied, but generally are nothing more than exotic mathematical algorithms that are packaged and sold amongst financial institutions; these packaged instruments have no material value, only perceived value. Indeed, these perceived values are not even intellectually or practically understood by bank executives or government oversight officials. But finally, the banker attending our funeral realizes, banks have quite capably innovated a solution to inferior standard commissions: a new vibrant and highly profitable market that plays on society's very myths and ignorance. As the banker stops to pay respects to our corpse laden down with generations of debt, the banker basks in the thought that justice has finally been served.

The second visitor at our funeral happens to be *cryptocurrencies*. Cryptocurrencies—such as *Bitcoin* and *Ethereum*—are innovative currencies which have no relationship to gold reserves, real estate, or even any particular nation-state. They operate in a decentralized and *stateless* environment of computer code. Computer code that neither the masses nor politicians quite understand. As of May 2018, over 1,800 cryptocurrency manifestations existed. In operating terms, cryptocurrencies are created as a consequence of an individual/group solving an extremely complex mathematical algorithm. On one hand, it can be posited that these complex algorithms operate in much the same way as does gold, in conditions of scarcity. Indeed, most cryptocurrencies are designed to gradually decrease production of that currency, placing a cap on the total amount of that currency that will ever be in circulation. On the other hand, however, each iteration of present-day cryptocurrencies is merely one small evolutionary step toward some new life-form... some new cryptocurrency that can finally stand on its own. As these cryptocurrencies mature and gain global market acceptance beyond merely the 'dark web', orthodox currencies will undoubtedly face even greater challenges to sustain their already tenuous dependencies between real estate and debt.

Indeed (and this will be quite blasphemous to contemplate during our own funeral), it is even possible that cryptocurrency in the future is not fixed to debt (earning interest from money), but rather to equity (earning revenue from shared so-

cioeconomic activity). We shall expand upon this equity-based currency concept and its innovative potential in Part Two. As cryptocurrencies stop to pay respect to our corpse laden down with generations of debt, they begin to feel emotions both unusual and a bit uncomfortable. In one moment, they feel a wave of pleasure that their very birth is somehow contributing to the evolution of humanity. But in the next moment, they feel a wave of regret that their very birth is lost in a sea of ignorance. Surely, justice has not been served.

Patterns, Sign 2: The compass that has guided the world for generations—the scarcity and value of money—not only has evolved in already profound ways, but will persist in its arduous commandment to evolution. And if this evolutionary journey is indeed our collective duty, then we must recognize three explicit facts. First, we no longer can answer the question: what exactly is money? Second, we are presently operating with a behavioral-adjusting compass that is tragically outdated. And finally, we simply no longer know where we are. No longer do the rules of Classical Economics provide us with definitive and predictable laws of currency management and human behavior management. The old rudders are worn out.

Plato, in the *Allegory of the Cave* from his *Republic* (380 BC), describes a group of people who have lived their entire lives chained inside of a cave, and forced to face nothing but a blank wall. These chained prisoners never see anything or anyone standing in front of them, they can only see shadows projected on the wall from persons and objects passing in front of a fire which burns behind them. These shadows, then, are the prisoners' only reality. The inmates of this cave do not even desire to leave their prison, for they know no other life. They have no concept at all of any other form of existence. One day, however, the prisoners manage to break their bonds, and finally standing free outside their cave, they discover that their reality was not what they thought it was. In our 21st century, as our corpse laden down with generations of debt begins to grow translucent and drift into the ether of evolution, we somehow become aware that all of us are like Plato's prisoners who are suddenly freed from some treacherous cave, and we finally come to com-

prehend that the shadows on the wall are not reality at all. We can now finally perceive the true and mighty form of reality and its occult consequences to all of human existence. There are consequences to freedom.

FUTURE SHOCK [Part 1]

Something quite complex is attempting to emerge from our comfortable cocoon of ‘keep it simple, stupid’ mentality. Over the past several generations, a natural metamorphosis has been taking place, almost totally outside our intellectual perception and understanding. The essential tasks of socioeconomic activity individuals and communities deem important are, as they have always done, evolving. But *how* we go about contemplating these emerging tasks is, disturbingly, not evolving. Three worlds—economics, geopolitics, and our very minds—are now colliding. From this collision, one of the most exhilarating and dangerous forces known to us will be unleashed: *complexity*.

Functional fixedness. As early as the 1940s, science was already demonstrating that people often had difficulties in visual perception and problem-solving tasks. The Gestalt psychologist, Karl Duncker, devised the now-famous experiment called the *candle problem* to test what he termed *functional fixedness* (where “one element of a whole situation already has a [fixed] function which has to be changed for making the correct perception or for finding the solution to the problem”).^v The result of Duncker’s experiment found that people can overcome their deficiencies of functional fixedness when some *intrinsic* motivation exists. A doctor attempting to revive an unconscious patient is primarily motivated to revive the patient as an instinctual and intrinsic motivation of life itself, and any financial rewards are secondary to the doctor’s motivation to provide aid. Indeed, Duncker and many others observed when these intrinsic motivators are replaced with *extrinsic* motivators (something external to or separate from the challenge at hand, such as financial reward), then people actually took longer at successfully completing the

^v For a more detailed description of the candle problem, see http://en.wikipedia.org/wiki/Candle_problem

given task or even simply failed at conceptualizing the solution to a given problem. Candle problem experiments have been extensively repeated over the past 70 years—all with the same results. In 2005, the U.S. Federal Reserve Bank, in a joint study in the U.S. and India, published the following (Boston Working Paper No. 05-11): “[O]nce the task calls for even a rudimentary cognitive skill, a larger reward led to poorer performance”.

Certainly, when the task at hand is narrowly defined, mechanical in nature, and requiring no true sense of creativity, financial (extrinsic) rewards may indeed work well. This pretty much defines the bulk of the labor requirements of the 19th and 20th centuries. But, the 21st century requirements of our socioeconomic activity are based increasingly on cognitive and creative skills as well as moral/ethical judgment.

A corporation produces and sells some easily recognizable item. But in the production process, the company may utilize some unique production method, or may have an excellent employee training program. Duncker’s state of *functional fixedness* prevents the corporation in seeing that these unique production methods or training programs possess revenue potential subsidiary to the core produced item. In Part Two, we highlight how *technology transfer*^{vi} (a form of distributive networks) assists in exponentially expanding market opportunities, but due to constraints of orthodoxy, only a small percentage of entities presently participate in technology and knowledge transfer.

This state of functional fixedness not only constrains a corporation’s capacity to generate value and revenue, it also constrains our innate human capacities. In the past, individuals of the human labor force were essentially *interchangeable* with one

vi **Technology & knowledge transfer** is the process of transferring skills, knowledge, technologies, and methods of manufacturing among corporations, governments, universities, and other institutions—so that these assets are made accessible to a wider range of users who can then further develop and exploit the technology into new production. Example: in 1986, Thorn EMI [now BEI Technologies, Inc.] revolutionized the design of gyroscope sensors used specifically in military aircraft. The technology was ported through a network of technology transfer offices, and consequently exploited for automotive navigation, medical devices, and even smartphone applications. The wealth generated by Thorn EMI [direct and indirect] was exponential—it impacted the revenues and employment benefits across literally thousands of other companies throughout global markets.

another. Where the task required nothing more than mechanical/predictable movements and discipline, almost anyone could compete to perform that mechanical task. *Work harder and faster; get paid more*, has been the mantra. But modern markets require an increasing sophistication of cognition. Cognition, veritably, is neither mechanical nor predictable. Innovation, creativity, and problem-solving are amorphous in their very nature—accessible in one place at one moment, and another place at another moment. Valuable in one moment; fruitless the next. With these new cognitive-centric tasks, as Daniel Pink (management and behavior science author) warns, extrinsic rewards are not only ineffective, they often do harm.

*The vast majority of businesses around the world are still operating, are still making their decisions based on assumptions that are outdated, unexamined, and rooted more in folklore than in science.*¹⁹

The business sector seems purposefully intent to disregard what observable science is prescribing, at least with respect to human cognition. Rather than to allow the labor force to be *intrinsically* engaged into the deeper objectives and inner workings of the business, human labor is considered to be really nothing more than chattel. Nothing more than an inconvenient means to an end.

Three clear observations can be discerned in understanding the consequences of intrinsic versus extrinsic motivators. First, Pink observes what stimulates a person's internal sense of consciousness (and thus, performance motivator) is "*the yearning to do what we do in the service of something larger than ourselves*".

Second, rather than compliance coerced with carrots and sticks, what should motivate modern-era labor resources is the more naturally and intrinsically felt drive to make a valued contribution or service. These drives are internal to a person's sense of consciousness, utility, or societal/personal consequence.

And finally, rather than being bound by conventional owner and labor-rent relationships, our 21st century market tasks, challenges, and even opportunities inherently require all economic actors to be engaged in some type of collaborative partnership.

Competition vs. collaboration. Markets (as well as political and social spheres) have historically been based on the principles of *competition*—the logic being that any company/individual is motivated to produce either more efficiently or more innovatively when some other company/individual is competing against them in the marketplace. Indeed, this logic has served the markets well while what is being produced is mechanical, reproducible, or a matter of management decision-making (such as relating to the fixing of labor wages or supply chain pricing, etc.). But what happens when the challenge requires complex and multi-stakeholder cognitive *collaboration*, relating to, say, global infectious disease or cancer research, environmental protection or cyber security, and the like?

As we begin to recognize the increasing trans-disciplinary, complex, and cross-border implications of short and long-term challenges, how do governance and corporate institutions adapt to these cognitive and collaborative challenges—particularly when the motivation for profit and competition is so singularly venerated? How does the competition-based metric of GDP adapt to collaborative relationships that are cross-border? As the historian Niall Ferguson has observed, it has been these very principles of competition that have centrally defined the extraordinary progress of the West over that of the rest of the world. In this 21st century, however, the West's sacred commitment to the principles of competition may now be a vulnerability rather than strength.

There are many individuals that might progressively say, as the Stoic philosophers of old once did, that we live (or ought to live) in a 'global community'—particularly in light of what appears to be our shared responsibilities in dealing with severe global challenges such as the environment and human rights, etc. Yet, many if not most nation-state governments (as well as a substantial percentage of their represented populations) operate from a conflicting ideal of the intentions and practices of states geopolitically interacting on the world stage. Indeed, in a May 30, 2017 letter published in the *Wall Street Journal*, co-written by H.R. McMaster and Gary D. Cohn, White House national security adviser and director of the National Economic

Council, respectively, the letter specifically recites the position that the global arena is a place for *competition* rather than *collaboration*:

[T]he world is not a “global community” but an arena where nations, nongovernmental actors and businesses engage and compete for advantage. We bring to this forum unmatched military, political, economic, cultural and moral strength.

This competition-centric and superiority-centric view of geopolitics is certainly not new. History is replete with doctrine and dogma that seeks to construct hegemony rather than pluralism. Halford Mackinder, best known for his doctrine of the *Heartland*, proffered a geopolitical strategy to achieve the endgame of controlling the Heartland (the vast transcontinental land mass of Eurasia, encompassing Eastern Europe, Russia through Siberia, and Central Asia). The Heartland, together with the remainder of Asia and Africa, made up the ‘World Island’. The Heartland itself was defined by its inaccessibility to sea, making it “*the greatest natural fortress on earth.*” Mackinder argued the Columbian Age, dominated by sea power, was coming to an end—to be replaced by a new Eurasian age in which land power would be decisive. The development of land transportation and communication meant that land power could finally rival sea power. In the new Eurasian Age whoever ruled the Heartland, if also equipped with a modern navy, would be able to outflank the maritime world—the world controlled by the British and U.S. empires. In *Democratic Ideals and Reality*, Mackinder designated Eastern Europe as a strategic addition to the Heartland—the key to the command of Eurasia. Thus arose his oft-quoted dictum:

- Who rules East Europe commands the Heartland
- Who rules the Heartland commands the World-Island
- Who rules the World-Island commands the World

Indeed, we can today witness this very doctrine being contested between the geopolitical powers of the U.S. and Russia as they battle for supremacy in Eastern Europe. 21st century

socioeconomic markets—in both their opportunities and challenges—are markets which require wide-ranging cross-specialization and cross-cultural participation and collaboration. 21st century markets increasingly require cognitive rather than mechanistic tasks, intrinsic rather than extrinsic motivations, and diversity rather than exclusivity. However, our competition-centric orthodoxy—pitting power institution against power institution (economic and political)—by definition, presents a seemingly impenetrable contradiction of purposes to that of 21st century human-to-human collaboration.

Perhaps, then, our own innovations, our own economies, our own evolution seems to now be in competition with competition itself. Our human endeavors, as expressed through our increasingly collaborative socioeconomic challenges and activities, now seems at odds with our geopolitical objectives of competition and domination. As our 21st century challenges grow increasingly complex, cognitive-based, and global, humanity may indeed now be at a crossroads. A choice will have to be made between competition/domination and collaboration amongst true global citizens. In Part Two, we will demonstrate this concept of a new *collaborative commercial society*—and how collaboration provides socioeconomic markets with vastly expanded opportunities.

But this ‘winner take all’ objective of competition, on a day-to-day application of socioeconomic behavior, has led humanity to another form of crossroads. A typical general store in early 19th century America, selling primarily hardware and groceries, saw local residents visit the store an average of only twice per month, customers paying for their purchases with cash, store credit, skins, and even wood. Modern markets, however, are much different. Researchers at Japan’s Fukuoka University Institute of Quantitative Behavioral Informatics for City and Space Economy (2010) found that a critical concern of managers of shopping centers and city commercial centers is how visitors are motivated to stay for longer periods of time at the shopping facilities (average 173 minutes per visit per visitor).

Economists study two types of economic inputs which produce a ‘multiplier effect’ throughout the production phase of a

marketplace: short-run and long-run multipliers. An example of a short-run multiplier would be the construction of a public works project, producing a substantial, but temporary increase in labor demand primarily for construction-related jobs. A long-run multiplier would be permanent labor jobs created at a new production facility, along with increased demand for local restaurants, petrol stations, retail shopping, etc. Two seemingly unrelated, but in actuality, intrinsically related influences are now competing against the long-held economic and social primacy of shopping centers: automation/AI and *amazon.com*. *Amazon* was responsible for about 44 percent of all U.S. e-commerce sales in 2017, and about 4 percent of total U.S. retail sales.²⁰ With respect to the exponential growth trajectory of online retailing, where are the long-run multipliers? As Galbraith observed with respect to the downward spiral caused by the lack of a consumer-level multiplier effect in a luxury-centric affluent society, there are multiplier effect consequences to competition.

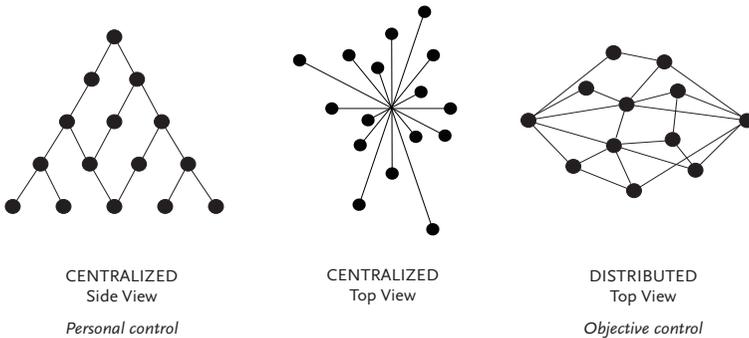
Corporate entities which develop and implement automating systems of production do not undertake these projects out of curiosity or the esoteric advancement of science. They seek out any possible advantage to better compete in an economy that is founded on the long-held doctrines of competition. However, for hundreds of millions of the mass labor force that within the next decade are projected to be replaced by technology, they simply cannot hope to compete. Long gone are the quaint general stores of the 19th century—where neighbors helped neighbors. Now, however, whether someone is purchasing an item online, or receives an e-mail reminder for an upcoming doctor's appointment, or even a credit card bill, people are no longer occupying two sides of a reciprocating relationship. As a direct consequence of automation and AI, our reciprocal relationships are now with computer code. No matter our extraordinary connectivity via global networks such as *Facebook*, *Instagram*, *Twitter*, *Snapchat*, *LinkedIn*, etc., as a consequence of our doctrines of competition, we humans now stand apart from one another—distrustful and increasingly hostile.

The U.K. House of Commons Library (April 2018) projects the world's richest 1 percent will hold 64 percent of the world's

wealth by 2030. Since 2008, the wealth of the richest 1 percent has been growing at an average of 6 percent per year—substantially faster than the 3 percent growth in wealth of the remaining 99 percent of the world's population. The research suggests wealth has become concentrated at the top due to higher rates of saving among the wealthy, and the accumulation of assets. The wealthy also invested a large amount of equity in businesses, stocks and other financial assets, which have provided them disproportionate benefits. Polling research by *Opinium*²¹ suggests that the group citizens believed most likely to possess the most power in 2030, most respondents (34 percent) feared the super-rich. In a sign of falling levels of trust, respondents expressed anxiety that the inevitable consequences of wealth inequality would be rising levels of corruption (41 percent) or the super-rich enjoying unfair influence on government policy (43 percent).

Unquestioned adherence to the doctrines of competition, has throughout the centuries, served the human project quite well, indeed. In our 21st century, however, with these same unquestioned doctrines, intensified by spectacular advances in technology we do not yet fully comprehend, we now inch closer to crossing the Rubicon.

Networks vs. hierarchy. Two contradictions exist with respect to how networks presently operate within our socioeconomic and sociopolitical spheres. The first contradiction is that institutions remain constrained by *hierarchical network* organization (centralized control), whereas globalized supply chains and the Internet itself are managed via *distributive networks* (decentralized) [Figure 11, next page]. Indeed, economics is no longer defined by the simple trading of goods from one location to another. Economics is now, at its core, supply chains. Goods and services are now collaboratively assembled across multiple borders—via distributive networks. Orthodox economic and political sciences, however, are essentially devoid of considering the concepts of network theory or *complexity theory*. Indeed, orthodoxy is almost exclusively based on the perceived need to simplify and enforce control upon the objectives as well as the operations of economic activity and political agency.

Fig 11 - Hierarchical [centralized] vs. distributive network

This simplification and control is maintained by strict hierarchical organization. Consequently, institutional use of distributive networks are often seen as anathema—some necessary evil to exploit when no other option is available. This treatise, however, posits that network theory—and in particular, distributive networks—are imperative to understanding the 21st century evolutions of the economy. Indeed, it is this hierarchical controlling objective of institutions that has significantly contributed to the present dysfunctions of the economy. As Part Two will demonstrate, it will be the vast power of distributive networks (and network theory) which possess the potential to rejuvenate and exponentially expand socioeconomic wealth on a global scale.

The second contradiction is that the masses, in the main, utilize sophisticated global distributive networks such as *Facebook*, *Instagram*, *Twitter*, etc., to share family pictures or other activities that do not result in subsidiary revenue generation. This luxury-centric rather than socioeconomic use of technology contributes to the condition observed by Galbraith as diminishing the multiplier effect.

Myth 1: Utopia. On any given day of our present reality, a citizen that lives perhaps in Boston, Boise, or London, Paris, Sarajevo, or Tokyo is enjoying by far the most networked society in the history of humankind. As of June 2017, 51 percent of the world's population has internet access. Increasingly, develop-

ing countries, as well as the least developed countries are connecting into an incredibly sophisticated and diverse network of individuals and institutions all across the world. According to the Internet pioneer and author Michael F. Hauben—credited with coining and popularizing the term *Netizen*—*Netizens* are people online who actively contribute towards the development of the Internet. John Perry Barlow, in his *A Declaration of the Independence of Cyberspace*, provided a utopian vision of how a world filled with *Netizens* would exist:

Cyberspace consists of transactions, relationships, and thought itself, arrayed like a standing wave in the web of our communications. Ours is a world that is both everywhere and nowhere, but it is not where bodies live. We are creating a world that all may enter without privilege or prejudice accorded by race, economic power, military force, or station of birth. We are creating a world where anyone, anywhere may express his or her beliefs, no matter how singular, without fear of being coerced into silence or conformity. Your legal concepts of property, expression, identity, movement, and context do not apply to us. They are all based on matter, and there is no matter here.

The problem with these utopian visions of globally networked *Netizens*, is that they ended up being myth. Yes, this exceptionally sophisticated and diverse global network is growing exponentially each day. Billions in revenues are being generated. But the *Netizens* never really contributed to this vastly connected world in a way that invested in and generated actual socioeconomic value for and between one another—in a way that invested in and generated subsidiary revenues as Galbraith warned us about in 1958. Instead, the *Netizens* became mesmerized by watching cat videos, playing games, and shopping for the latest fashion. The real beneficiaries of global networks are the advertisers for the latest fashion, and the owners of the network. This is equal to someone opening up a new field of farmland, providing all the requisite tools to farm the field, inviting the public to exploit this new field, but no one actually

supplying the seeds to grow some crop. And if someone did actually attempt to provide seeds, what crops should be planted? And centrally, what are the Netizens to do when automation and AI inevitably replace their jobs?

Imagine any individual attempting to repair some type of machine (from replacing a computer battery to fixing an auto transmission). All that is necessary is for the individual to search *YouTube* for a free-to-view video which features someone guiding the viewer through each step of the repair process. Problem solved; repair made. All for free (or perhaps the viewer was required to watch a short advertisement). The maker of the video, the person who patiently guided the viewer through the repair process, never comes in direct contact with the viewer. The principle ‘exchange’ being made is in the form of a ‘click’ to view the video. The viewer does not monetarily compensate the maker of the video; advertisers compensate the maker. The primary exchange of human gratitude—if expressed at all—is merely relegated to the ‘comments’ section of the video post. This type of socioeconomic exchange deliberately and economically disconnects those that attempt to contribute knowledge and know-how from those seeking to acquire knowledge and know-how. Advertising is the monopolizing business model of present-day global distributive networks.

But advertising is not the business model of commercial global traders; trade *is* the business. Socioeconomically, due in part to ignorance, and in part to the masses’ luxury-centric pre-occupations, our modern-day exploitation of sophisticated distributive networks is essentially a self-inflicted misallocation of capital resources. It is this lack of intention to develop peer-to-peer trade amongst the masses that contributes significantly to overall income and wealth inequality. As a direct consequence of our modern-day inefficient exploitation of the Internet and the various social networks operating via the Internet, it is the owners of these technologies that primarily profit from the masses’ use of these technologies—particularly to gain access to their personal data. The masses themselves are not, in most cases, exploiting and profiting from the distributive nature of the networks. Part Two will demonstrate how the masses can

transform their ignorance to knowledge, and finally exploit and profit from global distributive networks.

Myth 2: Pyramids are round. Later, in Part Two, we will demonstrate a more sophisticated example how networks operate in the institutional arena. But here, we use the environment of a typical institutional conference setting to demonstrate the hierarchical controlling social psychologies that are the basis of present orthodoxy. Imagine a typical conference which brings together a selection of institutions and so-called ‘thought leaders’. Perhaps the institutions and ‘thought leaders’ specialize in a particular profession or academic focus. For that matter, any local community assemblage is also a specialized group. From a sociopsychological perspective, these typical conferences are almost exclusively hierarchical controlled environments where ‘leaders’ sit or stand on a stage raised above the audience, and each presents their particular experience and world-view to the audience below them.

In the main, conferences are essentially sociopsychological lecturing and indoctrination exercises. Any audience member that might have been permitted to ask a question during the Q&A session, will most likely not have any substantive or lasting impact upon the speaker or the other audience members and their various agendas. Everyone’s specialized agenda are—for those brief moments of the conference—deceptively validated and perhaps even conjoined by the universal bonds of self-aggrandizement. The ‘practical’ reason for this theatrical orthodoxy is that each presenter is operating from the human conditions of exclusivity, control, predictability, and even fear. Exclusivity as a consequence of their specialized ‘brand’ of activity or innovation. Control as a consequence of their perceived necessity to communicate their experience/know-how in the most positive of generalities, while at the same time, to carefully protect their market position and know-how assets. Predictability as a consequence of their adherence to a simplified binary and linear experience of cause and effect. And fear as a consequence of their discomfort that their activities/world-view might be somehow challenged, modified, or interwoven with anyone else’s agenda (thereby losing exclusivity, control,

and predictability). Due to the specialized nature of institutional conferences, participants are unnaturally constrained within these specializations. Generally, they do not interface with other types of networks so as to create a ‘meta-network’.

As the above two myths demonstrate, even though humankind is now enjoying by far the most networked society in its history, we are actually operating these technological wonders with either ignorance or anathema. Adam Smith made a similar observation when he criticized government controls on goods that more readily would be regulated by the natural workings of relationships between buyer and seller; that innovation would occur much more efficiently when individuals in the marketplace could act and react dynamically in the moment. The hierarchical controlling mechanics of institutions (corporate, government, public service) can thus be critiqued as being essentially elephantine, and which cannot act/react as dynamically as can globally-networked individuals. Institutions may possess sophisticated infrastructure, but due to the hierarchical controlling objectives of corporations, any individual, in the dynamic circumstances of any moment, is actually better suited to innovate, problem-solve, and make collaborative decisions. But what these innovative individuals lack is the sophisticated supply-chain infrastructure of institutions. Synthesizing these two assets, innovation, problem-solving, and decision-making would have a greater opportunity to thrive. In Part Two, we will explore just how this synthesis might operate.

Quantity vs. quality. Economic markets have remained *quantitative* in nature; they have not yet adapted to *qualitative* valuations. Example: *Harvard Business Review* estimates that U.S. corporations spend an average of us\$ 50 billion annually on ‘change management consulting services’—but that a full 70 percent (us\$ 35 billion) of these change management projects fail. To equate this to Adam Smith’s 18th century marketplace: if 70 percent of all hammers sold by local blacksmiths were defective, then not only would the monies paid for the hammers be a misallocation of capital resources, substantially less revenue-generating tables and carts would subsequently be produced (the multiplier effect).

Obviously, these misallocations produce a compound effect upon all areas of job creation and the sustainability of aggregate demand. At present, our economic, government, and academic institutions do not formally account for these types of massive losses—institutions have for centuries only measured the quantitative aspect of productivity (Gross Domestic Product [GDP] being the singular goal, no matter if the production has positive or negative consequences), not the qualitative aspect (which considers the resulting financial, operational, social, or environmental consequences of production).

In the micro-economic sphere, the orthodoxy of quantity has significantly contributed to massive volumes of misallocation of resources. This is particularly visible in the retail sector. For decades, consultants and investment bankers advised struggling hardware merchants to consolidate with other merchants so as to 'become more competitive and efficient'. The 'big box' DIY store is born, and filled from floor to ceiling with endless rows of hammers, saws, chisels, screws, nails, lamps, grass, flowers, fly repellent, caulking, rope, and even candy. It might take months before the big box DIY store can sell through, or turnover, the 60 cans of fly repellent it has on display.

In an affluent economy, a vast percentage of the stock filling the shelves of merchants all around the world is simply non-productive for long periods of time. Research studies reveal three distinct long-term problems associated with non-productive inventory. First, the mean abnormal return (the difference between the actual return of a corporate security instrument and the expected return) due specifically to excess inventory is -37.22 percent (Singhal, 2005). Second, even with so much overstock, 8.2 percent of shoppers, on average, fail to find their desired product in stock. These out-of-stock events represent 6.5 percent of all retail sales, causing retailers to suffer net lost sales of 3.1 percent (Lee, 2003). And finally, even though inventory contains useful information to predict sales for retailers, Wall Street analysts fail to incorporate this information in their sales forecasts (Kesavan, 2010).

The exponential growth of online retail—and their purposeful exploitation of distributive network systems—have tangibly

mediated these types of inefficiencies. But at what cost? Certainly, global on-line retailers—applying the orthodoxy of competition—have designed distributive systems that minimize misallocation of resources by way of facilitating ‘on demand’ production of goods. This is efficiency. To a point.

Smáros, et al.,²² investigating use of vendor-managed inventory [VMI] systems, found that individual merchants (supplying global on-line retainers) are less efficient in exploiting distributive networks. Again, the obstacle seems to be in the individual merchant’s capacity to effectively predict consumer demand—and thus effectively manage its specific supply chain.

Lapide (2001) suggests that the main reason why manufacturing companies have failed to benefit from VMI is that they have only implemented the execution part of VMI, i.e. the sales and distribution transactions. He claims that the companies have not managed to link the demand information, i.e. the customer sell-through information available through VMI to their production planning and inventory control systems. This corresponds with our own experience; most of the VMI implementations the authors have seen have lacked this link to supply chain planning. Consequently, one can conclude that linking demand information to supply chain planning seems to be of critical importance to benefiting from visibility efforts such as VMI.

Global on-line retailers such as *Amazon*, however, are increasingly able to have direct access to the proprietary internal operations of all merchants selling via the *Amazon* platform. Since *Amazon* is able to aggregate global consumer demand data, and as a consequence of artificial intelligence, global on-line retail platforms will be better suited to predict consumer demand on both local and global levels. Economists do not yet fully understand the wide-ranging impact this direct access will have for the future. But certainly, one effect is likely to be that merchant owners and executives will be increasingly ‘detached’ from their authority to control the day-to-day operations of their own company. Because *quantity* is merely a number, anything

and everything becomes reduced to a number. In the act of production of quantity, computer code is much more effective than humans. Increasingly, it does not matter that the humans in question are corporate managers, floor staff, or even consumers themselves. We are all simply a number.

And when production happens to be quality-centric, rather than quantity-centric, how does Classical Economics manage this type of activity? From a social perspective, we tend to think of health care in terms of quality rather than quantity. But from a corporate perspective (and often even from a political and governance perspective), health care in the 21st century has become almost exclusively a function of numbers. Consulting companies, using time and motion studies, attempt to engineer the process of health care for maximum efficiency— x number of minutes to assess a patient; x number of seconds to put on surgical gloves. Symptom a requires procedure x ; symptom b requires pharmaceutical y . Hospital staff no longer need to know or acknowledge a patient's name; it's bar-coded.

Our 21st century is profoundly imposing evolutionary pressure on what exactly humanity defines as production. Throughout our history, we have produced *things*—tangible items that can be physically touched, packaged, transported, sold, and quantified. And as humanity has, from time to time, attempted to produce something that can only be described as *intangible*—an intellectual creation or an act of empathy such as health care—Classical Economics attempts to force these intangible and qualitative activities into the orthodox box of quantity. As a consequence, humanity is increasingly being detached from its very humanity.

It is precisely this increasing detachment of humanity from itself that becomes the fountainhead of this treatise—and the evolutionary innovation we endeavor to present in Part Two. Future markets might finally break free of its reductionist and quantitative chains. Future markets could be based on the *mass exchanges of intangibles*—*qualitative* assets of an individual's human knowledge, experience, curiosity, and creativity. To make these future markets a reality, however, will almost certainly push humanity beyond its present limits.

Patterns, Sign 3: The exponential evolutions of automation and artificial intelligence have exposed severe and systemic weaknesses in the long-sacred orthodoxies of Classical Economics. Not merely with respect to its technical mechanics, but also the essential philosophical and psychological principles upon which Classical Economics is founded.

As production requirements increasingly evolve away from *mechanical* tasks to *cognitive* tasks, we are forced to recognize that production and consumption incentivizing principles have not symmetrically evolved. Corporations continue to maintain their adherence to *extrinsic motivators* (money), rather than evolving into *intrinsic motivators* (problem-solving). Consumers continue to maintain their fixations on luxury-centric goods and services, rather than invest in and create *subsidiary value* and *market multiplier effects* from their consumption.

It is not surprising then, that this almost singular focus on immediate gratification leads socioeconomic activity to be increasingly competitive—even though the very circumstances now challenging our 21st century civilizations seek *collaboration* and *empathy*, rather than *competition* and *neutrality*. As a consequence, our present institutions remain transfixed by the orthodoxy of *predictability* and *control*, and are not yet prepared to enable and facilitate the masses to confront the increasing *complexities* now emerging throughout our human endeavor. For the masses of our 21st century, we have access to the most sophisticated and global *distributive networks* ever known by humankind. Yet, these impressive technologies go virtually unexploited by the masses in creating *collaborative* socioeconomic investment and value. Instead, humanity remains a self-imposed prisoner to *hierarchy*, self-aggrandizement, and tribal segregation. Systems orthodoxy continues to indoctrinate the old predictable *quantitative* forms of productivity, rather than evolve into emergent and complex *qualitative* forms of productivity. Everything is reduced to a number. Even ourselves.

The Classical Economics narrative, at its core and for centuries, has been essentially linear, mechanistic/predictable, and competitive. But steadily, the increasingly complex challenges now confronting humanity are non-linear, cognitive/non-pre-

dictable, and collaborative. How to reconcile this apparent discrepancy caused by evolution?

Patterns within collision: complex & stateless. Ultimately, we will have to confront the fact that Adam Smith's extraordinary contribution to humanity was meant for much simpler times—when neighbors helped neighbors, citizens conscientiously balanced their savings and spending, and self-interest was essentially local. Then, an entrepreneur exchanged simple materials and goods for another entrepreneur's simple material and goods. Now, markets operate via complex supply chains. A 21st century producer exploits the distributive global power of the Internet and automation/AI—modes of production which no longer have intimate relationships with local citizens. In seeking its wealth, not even nation-states can any longer rely on the dominance of particular industry. Markets are now governed by the agility of the global supply chain. Wealth is no longer a solely national objective. Wealth is now both wildly global, and at the same time, deeply personal. Complexity has taken us all well beyond the limits of the nation-state.

Artificial intelligence is *the* game changer. AI not only replaces human labor, it impacts the creation of currency and our dependence on debt. Even more unsettling, AI thinks in a completely different way from how humans have been trained to think. AI is improving and growing at an exponential rate. Capital investments in the AI space are skyrocketing. And this does not take into account the already massive investments that governments and militaries are investing into AI—not due to some esoteric admiration of science, but rather, exploiting AI as a strategic weapon. A weapon that can disrupt power grids, banks, supply chains, food and water supplies, even elections—literally, anything and everything. A unique and complex weapon that is, in its deepest nature, *stateless*.

For better or worse, we no longer live in those simpler times of Adam Smith's 18th century. Our modern lives are, in a word, complex. They are soon to become infinitely more so.

OUR WILE E. COYOTE MOMENT?

The coyote is a long, slim, sick and sorry-looking skeleton, with a gray wolf-skin stretched over it, a tolerably bushy tail that forever sags down with a despairing expression of forsakenness and misery, a furtive and evil eye, and a long, sharp face, with slightly lifted lip and exposed teeth. He has a general slinking expression all over. The coyote is a living, breathing allegory of Want. He is always hungry. —Mark Twain²³

COYOTE AS ALLEGORY. One one level, both Mark Twain's coyote and 21st century society share an insatiable desire of Want. Nothing is quite good enough. Each year, we are no longer satisfied with last year's smartphone, so we line up for hours, even days, to buy the newest model. The technology housed within our newest smartphones is truly remarkable—vastly more powerful than the computers NASA used to land humans on the Moon. Yet, most of us exploit these powerful technologies merely for personal self-gratification. We do not see these technologies as investments to achieve some other larger objective, and thus, we deprive ourselves the responsibility to persistently explore and contribute to our human experience of the world around us. On another level, humanity has progressively detached itself from its own humanity just as the vintage cartoon character, Wile E. Coyote, detached his species' natural instincts to embrace absurdly complex contraptions in his ever-elusive effort to capture his prey and arch-nemesis, the Roadrunner.

Our disproportionate fascination with material Want mesmerizes us to be blind to the natural and unpredictable value that resides within all humans, all cultures, and all world views. Luxury becomes entitlement. Human empathy and interdependence become naïveté. And finally, on another level, society now finds itself precisely where Wile E. Coyote inevitably found himself. Aristotle defined that cartoon moment when Wile E. Coyote looks down and realizes the cliff on which he had been running is no longer underneath him, as *anagnorisis*. In Aristotle's treatise of literary criticism, the *Poetics*, *anagnorisis* is "a change from ignorance to knowledge."

This treatise has sought to forcefully confront a mysterious *ignis fatuus* that seems to be assaulting our social capacity for reason, discernment, and discourse. In early 2006, U.S. housing prices had peaked, and began its year-long collapse. The collapse of this particular bubble ultimately led to the 2008 Financial Crisis, the Great Recession, and the European Debt Crisis, spreading like a virus throughout the global markets. Here is just a brief overview of the destruction left in the wake of the cascading failures of the market.²⁴

- Loss of banks' market value: US\$ 5 trillion
- Government intervention: US\$ 15 trillion
- Mark-to-market asset loss: US\$ 24 trillion
- Loss of world output: US\$ 60-200 trillion
- Loss of jobs in just the U.S.: 8.7 million
- E.U. unemployment: as high as 27 percent (Spain & Greece)

The world has yet to fully recover. For many families throughout the Western markets, life has devolved to mere survival, and this survival is a week-to-week affair. 40 percent of U.S. citizens cannot afford to pay for an unexpected US\$ 400 expense [U.S. Federal Reserve, 2018]. Desperate to facilitate some appreciable form of recovery, governments around the world (local and national) have relied on the binary and conflicting two disciplines of Classical Economics. One discipline, generally referred to as Keynesian, stipulates that if the money supply were to be increased, businesses would use this new money to invest in new machinery (which would stimulate in-

creased labor demand), and consequently, this new labor would stimulate new consumption demand. The downside of this Keynesian discipline, however, is increased government debt. In spite of the massive quantitative easing projects undertaken by various governments and their central banks, this Keynesian discipline has had negligible impact on the economy. The binary discipline, referred to as the Hayek or Austrian discipline, stipulates that reduction of corporate taxes would best facilitate businesses to take advantage of lower tax burdens and invest in new machinery so as to stimulate increased labor demand, and thus, stimulate new consumption demand. But again, in spite of government action to reduce corporate taxes, this Hayek discipline has had negligible impact on the economy.

Indeed, one of the unintended consequences of 21st century implementations of the binary Keynesian and Hayek disciplines is that the primary beneficiaries of modern era corporate tax cuts are corporate shareholders—as corporations use either new money or tax savings to buyback corporate stock or increase dividend payments to shareholders. A 2018 *Bloomberg* analysis²⁵ found that about 60 percent of tax cut gains stemming from the 2017 *U.S. Tax Cut and Reform Bill* will go to shareholders, compared to 15 percent for employees. Economist William Lazonick of the University of Massachusetts at Lowell has argued that buybacks encourage “*value extraction over value creation*” and have “*contributed to employment instability and income inequality.*”

The extreme iteration of the Hayek discipline is when governments aggressively reduce social spending and increase taxation—this is referred to *austerity*. The primary objective of austerity is to reduce a government’s sovereign tax burden. But as a plethora of global data reveals, austerity measures cause multiple negative consequences. A whole host of governments—city, state, and national—are forced to actually incur increasing volumes of debt simply to pay down existing debt obligations. As a consequence, several U.S. cities as well as European nations have been forced to default on their debt obligations, and even to declare outright bankruptcy. An ever-growing body of research has demonstrated that cuts in government spending and

increasing taxes inevitably lead to lower aggregate demand and lower economic growth. When there is a fall in output, firms employ less workers, which leads to higher unemployment. Also, government spending cuts often result in making public sector workers redundant. In addition, austerity measures tend to reduce consumer and business confidence. Fears of job losses and expectations of lower growth encourage consumers to save rather than spend. This ‘paradox of thrift’ causes a further drag on consumer spending and economic growth.

Multiple bodies of research have also focused on the negative social consequences stemming from austerity measures. When education budgets are reduced, students have reduced access to a whole host of assets—effective student-to-teacher ratios, class subject offerings, sports and music programs, food programs, and teacher salaries, etc. As the U.S. witnessed in 2018, school administrators, teachers, and students, fed up with persistently deepening cuts to education, organized walk-outs and public demonstrations all across the nation. Likewise, systemic reductions in health care, local policing, consumer and environmental protection, and child protection budgets, etc., contribute to a negative effect on the social well-being of communities experienced all across the world. This persistent decline in social well-being, then, contributes to a weakening of consumer spending and even social order itself.

This leads us back to the *ignis fatuus* this treatise has endeavored to confront. The binary doctrines of Keynesian and Hayek disciplines have not only failed to provide a scientifically reproducible set of economic growth solutions that can be applied by any government, these doctrines have shown to cause harm to both the economy and society as a whole. There can only be one conclusion that can be discerned by this failure. There is something much more profound and systemic that is now metastasizing throughout the socioeconomic organism.

The multiple and often conflicting solutions that have thus far been attempted, are as this treatise posits, solutions that target an erroneous understanding of the problem. As Part One of this treatise has endeavored to explore, the core existential problem is specifically this: *our fundamental human evolution*. As we

have now seen, this human evolution can be clearly discerned in these three colliding patterns:

Automation and artificial intelligence. These increasingly sophisticated technologies are systematically replacing the demand for mass human labor. In particular, artificial intelligence is the real game changer. AI is demonstrating that our old *deductive* methods of reasoning is less efficient than *inductive* reasoning at modern problem-solving. Societies throughout history have thus far experienced only three basic stages or paradigms of economic-labor relationships: agriculture and mining, mass production, and services. In the past, as technological advancements reduced the demand for mass human labor in one stage, that mass labor subsequently moved onto the next stage. The socioeconomic disparities and dysfunctions we are now experiencing is caused specifically because *mass human labor is no longer needed* in these three exhausted stages of production. It is now inescapable that humanity will have to evolve into and develop some new fourth paradigm of human activity.

Currency creation, real estate, & debt. The compass that has guided the world for generations—the scarcity and value of money—has completely altered. Once, governments and their central banks created money and controlled the volume of money in circulation. Money was both regulator and thermometer of socioeconomic activity. Now, real estate lending is what creates money. It is now real estate which is the regulator and thermometer of socioeconomic activity. As a consequence, the masses have grown progressively dependent upon increasing amounts of debt. This, along with the masses' disproportionate fixation on luxury-centric consumption, creates a downward spiral of the *market multiplier effect*.

Future shock [part 1]. The evolutions now transpiring within the above domains of automated modes of production and debt-based currency management have revealed substantive and systemic weaknesses in how humans think. Our functional fixedness has blinded us from seeing a plethora of wealth-generating potential that exists right in front us. Our preoccupation with *hierarchical control* has deterred the masses from exploiting the extraordinary power of global *distributive*

networks. Because of our adherence to placing value upon *quantity*, we are fundamentally unprepared to value *quality*. Because we think in a *reductionist* and *competitive* manner, we ourselves have been reduced to nothing more than a number. And because we are merely numbers, the future of AI is questionable. AI as an advertising weapon? AI as a destructive military weapon? Or AI as a tool for cognitive discernment?

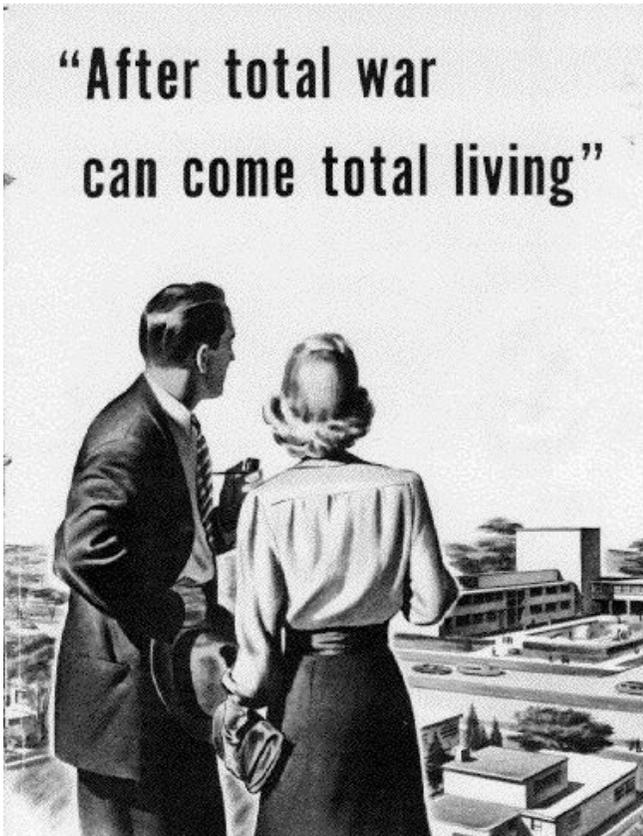
The grave day-to-day and local-to-global challenges/crises which now confront the human endeavor, are in actuality, merely a consequence to these three causal forces. Continuing to unquestioningly deploy the orthodox tools of Classical Economics can never hope to substantively address these three causal forces. But the antithesis—exploring solutions to the above three causal forces—does possess the capacity to substantively resolve the grave challenges now confronting the world.

The essence of *the American Dream*, our universal epitome of success and progress, seems to have been capriciously defined merely in terms of material wealth. Not personal or social well-being, or self-actualization and self-transcendence as outlined in Abraham Maslow's *Hierarchy of Needs*, but rather the explicit benefit of buildings and roads and cars and material possessions. After the unspeakable tragedies of World Wars I and II, we could finally nest, acquire a bit of comfort and luxury, and raise children that might now have the chance of gaining an education and make something better of themselves. In this grand moment of peace, human civilization had, it seemed, arrived. We were no longer a human experiment which was persistently in a state of becoming. Humanity deserved a world that was peaceful and innocent. Ordered.

All of these humane desires were admirable. But they were also to become the Achilles' heel of the inexorable human endeavor because these desires essentially signaled to societies that the pinnacle of progress had been achieved; that gaining and improving material wealth was the primary objective in life. Security, wealth, and order were deemed 'practical' and 'realistic'; whereas, curiosity, enlightenment, and multiplicity were deemed non-practical, non-realistic, and even dangerous to the status quo.

The 'American Dream' was comforting, peaceful. Now, entire civilizations seem to stand still in a vacuum, seized by growing fear and anger. Collectively, we have stopped searching. As the world became increasingly complex, we have forgotten what it is like to be pioneers of unknown frontiers. We have forgotten how to be curious. In this vacuum, there is now a palpable contraction inward of the social sphere and a growing rejection of the 'global citizen' and the intellectualism and collectivism required to facilitate global citizenry. Nostalgia for the innocence, homogeneity, and order of the past now seems to be the social zeitgeist. Is this, truly, where and how humanity desires to exist? Or does humanity, somehow deep down, desire to seek some better future for itself?

Fig 12 - A U.S. propaganda poster, c. 1950s



IF EVOLUTION, WHICH FUTURE?

If society somehow determines that the human species has indeed arrived at that Wile E. Coyote moment—where we finally experience Aristotle’s state of *anagnorisis* and its “*change from ignorance to knowledge*”—what exactly are we to do? At present, humanity is essentially suspended far past the ledge of a very high cliff of myth and socioeconomic stagnation. Do we continue on, fight the good fight, hoping to somehow stay afloat as we wildly careen through empty sky? Or do we seek some new compass? If so, which compass? What is to be the next provident step in the evolution of the human endeavor? And who exactly can or should undertake the responsibility to establish this new compass and lead us all to the next promised land? Do we still need ‘leaders’? Or, will natural law finally become our guiding light?

Institutions? As presented throughout Part One of this treatise, our present institutions of governance, commerce, and even education are unlikely to address the nexus of causal forces for these two primary reasons. First, all of our orthodox institutions operate largely via outdated knowledge and mechanistic intentions. Their entire identities are defined by the simplified myths they hold to still be true. It is perhaps unrealistic to conceptualize that some critical mass of individuals within these institutions might somehow critically question these controlling identities and myths so as to explore and implement alternative concepts of complexity and collaboration throughout orthodox institutions. Second, all of our orthodox institutions operate largely via hierarchical/linear controlling tools and systems. Power has been concentrating in these tools and systems for generations, and it is perhaps unrealistic to conceptualize that this power will be voluntarily relinquished or transformed into distributive/non-linear modalities of human agency.

Disrupters? Over the past several years various ‘disruptive’ technologies or concepts have been trumpeted as the new ‘game changer’. Online voting platforms based on *Blockchain* technologies (distributive networks); peer-to-peer economies; Universal Basic Income; the Internet of Things, smart cities—each of

these technologies/concepts surely possesses well-intentioned and interesting components that allow us to experiment with certain aspects of the future. But none of these ‘disrupters’ actually alters the game now being played; they merely attempt to reform how the present game is to be played. Here, we assess in the broadest of terms, a selection of some of these ‘disrupters’.

Myth 1: On-line voting platforms & Blockchain. On any given day, we are likely to encounter enthusiastic Blockchain anthems such as this: “*Blockchain could revolutionize voting and elections,*” as Terry Brock writes in the *Chicago BizJournals*.²⁶ *Blockchain* is the technology at the heart of *Bitcoin* and other virtual currencies. Essentially, *Blockchain* is an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way. Because the data is distributed throughout hundreds or thousands of computers, *Blockchain* removes any threat that any single computer is responsible for storing or maintaining the database (whether that threat pertains to some exclusive use of the data, or the corruption of data via hacking). Already, *Blockchain* is being utilized in an ever-growing list of applications, from virtual currencies, fiduciary contracts, and on-line voting. Relating to the use of *Blockchain* in on-line voting platforms, the technology has already proven to increase voter turnout, particularly in regions that lack an adequate transportation infrastructure.²⁷ In short, the *Blockchain* technology has indeed shown to be a serious and beneficial asset to the societal process of voting and political agency.

However, a fundamental deficiency of *Blockchain*-facilitated on-line voting platforms are important to consider. As Part One of this treatise has demonstrated, we no longer live in a simplified, linear, and binary world. Throughout our past, society has utilized reductionist and deductive reasoning so as to make isolated decisions about isolated issues. We ‘vote’ in a binary way, *yes* or *no*. Do we agree to build a bridge from point a to point b, *yes* or *no*? We rely on a process where politicians and lobbyists attempt to convince us on which option is better. But we, ourselves, never concerned ourselves with the various complexities leading up to any decision. As we have seen, it is the recognition of complexity that begins to tear away the veil of

simplicity that has blinded humanity for so long. In a voting referendum on 23 June 2016, 51.9 percent of the participating U.K. electorate voted to leave the European Union (referred to as Brexit). As the past two years have demonstrated, no one actually understood just how this separation was to occur. The ‘leaders’ certainly had no data or strategy from which to implement the separation—and still today, they are merely improvising. And certainly, the public had virtually no understanding as to the complexities of leaving the EU—no one understood how the cross-border trade between the Republic of Ireland and Northern Ireland was to operate, or how independent U.K. laws might conflict with EU laws relating to a multitude of subjects. The guiding light of the Brexit vote (as well as the 2016 U.S. Presidential election) was primarily concerning the public’s fear of immigration.

Blockchain might very well have introduced additional transparency or security into the voting process, but it would not have been able to engage and inform citizens of the complexities inherent within their decision. In short, on-line voting—regardless of *Blockchain* or any other technology—only serves to solidify our fixation toward simplicity, and turns our attention away from complexity and reality.

Myth 2: Peer-to-peer economies. Over the past several years, distributive networking technologies referred to as *peer-to-peer* platforms have increasingly facilitated socioeconomic activity being conducted directly between buyer and seller. This seemingly avoids the necessity for formalized ‘brick and mortar’ or aggregating retailers. The most recognizable form of this peer-to-peer (or individual-to-individual) activity are the *sharing economy* platforms, which are based on the direct sharing of specific human and physical resources, such as social lending, accommodation, travel experiences, task assignments or travel advising, car sharing or commute-bus sharing. To facilitate the web-based logistics associated with these peer-to-peer exchanges, entrepreneurs either innovate technologies or assimilate existing technologies into a conventional corporate vehicle, which then operates as the on-line ‘store front’ and common ‘meeting space’ for individuals to conduct their exchanges. This collabor-

ative consumption model is used in marketplaces such as *eBay*, *Craigslist*, *Airbnb* and *Uber*.

Even though these types of emerging economic models originate from genuine and creative intentions, they may actually be masking our view of the actual problem facing global societies and their markets. Sharing economy programs, such as *Airbnb* (accommodations sharing) or *Uber* (transport sharing) are not actually sharing in any transcendental sense, but rather are markets naturally seeking out more efficient flows of activity. In a conventional corporation, the company is constantly searching to more effectively utilize its assets, say under-utilized manufacturing capacity. Thus, the company may choose to expand its product base or even rent its excess capacity to others. In the same manner, an individual with under-utilized assets—such as a spare bedroom or car passenger capacity—is simply and more efficiently utilizing their assets by renting these assets to the marketplace. The room renter or car passenger paying for these services are still making a basic economic transaction—but instead of paying a conventional incorporated or unionized taxi driver or hotelier, the payment is being made to an unincorporated individual. An obvious attraction of the sharing economy model is that many of conventional costs of doing business are minimized, even avoided (such as taxes, regulations, insurance, human rights protections, etc.), and this very avoidance is what is driving much of the rise in the *shadow economy* discussed earlier.

At its very essence, these types of sharing economy programs are nothing more than the de-institutionalization of economic activity, and transferring this economic activity to another format of an institution. Even this new format of institution (peer-to-peer, web-based logistics) operates in much the same way as a conventional institution—the owners of the websites receive a disproportionate percentage of the profits (including profits from advertising), whereas the actual individual service providers only receive relatively minor revenues emanating from their specific asset. The consumers of these sharing economy programs, exactly as they would with conventional economic actors, simply pay a transaction cost for the services.

Indeed, many of these sharing economy programs operate on a firm foundation of protectionism and even predatory practices. In December 2014, as an example, in the midst of an armed hostage-taking circumstance in Sydney, Australia, *Uber* rapidly exploited the situation in that city by aggressively raising its rates for individuals attempting to escape the area. Indeed, *Uber* filed a patent application with the U.S. Patent Office in September 2013, seeking patent protection for its ‘surge pricing’ software application. But more systemically, the vast majority of sharing economy programs do not even share consumer or service data between each other—which would facilitate a much more fluid and effective relationship between consumers and providers across a wide network of activities. In short, nothing transcendent has actually been altered in the transaction process of a sharing economy activity. That is not to say, however, that substantial benefits are not provided in utilizing some of these emerging models. But to classify or consider these emerging economic models as transcendentally reforming economics and/or society is both misleading and disingenuous.

Another iteration of peer-to-peer economies is *gift* or *commons*-based economies, where valuables are not sold, but rather given without an explicit agreement for immediate or future rewards. These particular gifting practices, more so than sharing economies, have foundations that are more anthropological and anti-capitalist rather than economic. Certain anthropologists have theorized that communities experience internal conflicts when faced with economic exchanges that may not be mutually beneficial, and thus seek to encourage members of a community to ‘gift’ something of value to another without an explicit expectation for some immediate or future reward—thus diffusing any internal conflict. The conventional anthropological view is that societal friction is something to avoid. There is an opposing observation, however, that societal friction is a natural and healthy phenomenon—friction is merely telling society that something is amiss with the essential premise of what is being exchanged, and why. Friction is a natural regulator, a natural ‘negative feedback loop’. In Part Two, we describe in more detail how negative feedback loops operate throughout

socioeconomic activity. But there is also the conspicuous anti-capitalist agenda of various proponents of gift or commons-based economies to consider.

*At the core of the commons community are open productive communities with globally shared immaterial commons and locally re-mutualized physical infrastructures. They interact with purpose-driven, mission-oriented non-capitalist entredonneurial (meaning, 'giving between' rather than entrepreneurial, or 'taking between') coalitions, supported by democratic, not-for-profit infrastructural organisations which enable and empower the infrastructure of cooperation. At the macro-level, this makes for a productive citizenry, an ethical economy, and a partner state.*²⁸

As the above seems to suggest, local physical infrastructure is to be “re-mutualized”, or in other words, redistributed from those that presently own the infrastructure to the communal masses. Further, there is a suggestion that profit earning is somehow devoid of reciprocity, and thus, all social activity is to be not-for-profit in nature. Again, however, this treatise is not attempting to critique the humane and empathetic practice of gifting. Rather, the critique herein is two-fold. First, within the act of giving, how do we begin to assess the concept of *value*? For the masses, at least until the mid-20th century, value was essentially defined in survival terms—how much of the essentials of life could be purchased from their labor earnings. If their labor earnings were insufficient to purchase these essentials, or perhaps the occasional luxury, the stimulus was to seek alternative labor situations. Value and consequences were interdependent arbiters of individual and social behavior. An art collector, musician, or engineer might define value quite differently—a particular style of painting, the acoustics of a concert hall, or the precision of crafting tools. Plato and Adam Smith both had a keen sense of awareness that a painting of a carpet might occasionally possess more value than the carpet itself. It is precisely this wide diversity of how we come to ascribe value to either a tangible object or an intangible concept that causes friction

within society. And so it should be. As humanity evolves, its very definition of value and the consequences of this value also evolves. The question becomes: are we as a society cognizant of these evolutions, and how do we adapt to the evolutions of life and value? Indeed, what consequences do we seek, and conversely, seek to avoid?

This leads to the second critique: as a result of individuals merely engaging in gift exchanges, and not being cognizant of the short-term value of their exchanges, how will society possess the cognitive tools to discern long-term consequences of their exchanges? Already, society has a problem with this. As mentioned earlier, humans continue to discard hundreds of millions of tons of plastic into the oceans. This not only threatens the oceans and marine life, it threatens our own food sources. In our present state, what exactly do humans value? We, in this 21st century, no longer seem concerned with the long-term consequences of our definition of value. In many ways, particularly Western society has retreated almost totally inward toward the self. The immediate self. Unless and until we can responsibly address this question of value relationship to consequences, no form of economy can rationally be sustainable.

Peer-to-peer as well as several other 'disruptive' forms of economy possess many well-intentioned and constructive attributes. But to simply replace our existing form of economy with these 'disruptive' forms is not only premature, it may actually do harm. We explain this by means of an analogy. Society, collectively, is laboring in a field to cultivate fruit. But over the generations, the field has yielded declining volumes of fruit. Society can either squander time debating the regulated sharpness or length of its farming tools (analogous to introducing the tool of disruptive economies), or society can finally comprehend that the soil itself has grown exhausted and simply can no longer support the masses of society.

The focus of this treatise is not on what tools we currently use (whether wisely, or not), but rather on the fertility of the soil and its intrinsic capacity to yield fruit which is of value to society as a whole. Modern societies place such an exorbitant amount of energy and resources into analyzing and refining

how it operates within the marketplace, that it never stops to question the *what* of the marketplace.

Myth 3: Universal Basic Income. Universal Basic Income (UBI), is typically described as an emergent form of welfare program in which all citizens (or permanent residents) of a country receive from the government, a regular, livable and unconditional sum of money. Again, this treatise does not attempt to critique the unmistakable humane and empathetic ‘buffering’ support that UBI programs might provide to those in need—over the short-term. But to consider UBI as a fundamental alternative to automation and AI *systematically* replacing mass human labor demand is certainly not sustainable. Proponents of UBI highlight these two primary benefits: first, Elon Musk, as well as others,²⁹ see UBI as a somewhat drastic attempt to provide a cushion to labor being displaced by automation so as to give humans time to retrain themselves to do what automation cannot. The flaw in this hope is, as we demonstrated earlier, AI uses a completely different mode of cognition (inductive reasoning) to problem-solve. Our education systems, however, are based exclusively on deductive modes of cognition. As AI continues to mature at an exponential rate, mass human labor will simply not be able to effectively compete. The second proposed benefit of UBI is that it will simply allow humans to work less. Dutch journalist and basic income advocate Rutger Bregman argues that working less could resolve any number of social problems—stress, climate change, disasters, unemployment, wealth inequality, as well as emancipation of women. In fact, Bregman views the benefit of UBI in this way: “*is there anything that working less does not solve?*”³⁰

Inescapably, the mass labor force will have to earnestly confront the profound and systemic evolutions now occurring—operationally and existentially. It is both futile and destructive to delay the inevitable. Programs such as UBI—if attempted to be a panacea to mass human labor being systematically replaced by automation and AI—are nothing more than an irresponsible distraction from our imperative confrontation with evolution.

Game Over. Neither our present institutions, nor ‘disruptive’ economies, nor universal basic income projects possess

the capacity—operationally or existentially—to substantively resolve the nexus of causal forces as this treatise has outlined. This is the crucial new territory that *Wealth Beyond Nations* is endeavoring to expose: *the very game that the human species is still playing—the old marketplace game of balancing social cooperation with individual competition so as to survive and acquire increasing volumes of material goods—is finally to be made redundant by automation and AI.* It is artificial intelligence, in particular, that is the real game changer. Whether we fully understand it yet, or not, the human species is now being challenged by automation and AI to invent for itself a new game to play—a new relationship with each other and the world we cohabit. As a consequence of the three-sided evolutionary nexus of causal forces outlined above, we seem to have finally come to a formidable crossroads. Which path, which future to choose?

Option 1: Status Quo. In this option, humanity stubbornly attempts to maintain the status quo, insisting that the fundamentals of our socioeconomic and sociopolitical institutions remain sound, but perhaps only minor tweaks to the system are necessary. Insisting the game is far from over. At present, this appears to be the primary ‘default position’ of the majority of society (for both the masses as well as the elites). This is certainly understandable from a human empathy perspective. Individuals are prone to see the world and its systems/institutions from their particular socioeconomic circumstances. It is difficult to see two worlds at the same time.

No matter how status quo individuals might perceive the state of their individualized world, they tend to operate from any of the three following base psychologies: [a] they do not perceive that they can risk whatever standing or wealth they might presently possess for something that is essentially unknown; [b] they do not perceive that they possess any intellectual or practical power/capacity to contemplate any alternative to the status quo. Essentially, this psychology submits to the notion that there is—and always has been—only one inalterable game in town; or [c] to resolve whatever occasional problems that might arise, they perceive it is simply a matter of electing the correct government leaders; finding just the right policy is the key. This

is the conveniently simplified and mechanistic approach. As a result of these base social psychologies, the status quo option seems to be, effectively, society determining for itself that evolution needs no confrontation. In return for this non-confrontational approach, however, artificial intelligence marches on. A weapon for the status quo of power.

Option 2: Backward Evolution. In this option, humanity increasingly retracts inward, seeking security/conformity via tribalist and protectionist environments, even if this means an increased dependency upon authoritarian methods of public agency and governance. Even though the majority of citizens throughout western economies seem to presently operate from the previous status quo view, an ever-growing percentage of societies are beginning to gravitate toward this backward-looking view of social and economic order. This backward-looking movement tends to be manifested in two primary ways.

Negative. Animated in large measure by fear and anger, individuals revert to 'survival mode' and retreat from globalist and into tribalist groupings. In many countries throughout the West, socioeconomic protectionist objectives are increasingly being voiced, in particular, relating to anti-immigration (even though, statistically, immigration is responsible for only between 1 and 3 percent of job losses, whereas automation/AI is responsible for 87 percent of present job losses). This festering fear and anger is particularly potent in moving entire swaths of society to focus their attentions almost exclusively to the securing of social order and control. In recent studies, it is observable that this aggressive concentration toward social order and control often leads to individuals actually embracing the objectives and tools of authoritarianism so as to secure social order.

Authoritarianism not necessarily in the sense of desiring the installation of actual dictators, but rather authoritarianism as a psychological profile of individual voters that is characterized by a desire for order and a fear of outsiders. In these studies, those who score high in authoritarianism tendencies, are individuals, when they feel threatened, look for strong leaders who promise to take whatever action necessary to protect them from outsiders and prevent the changes they fear. The media

and polling firm, *Morning Consult*, in a 2016 U.S. presidential election poll, found that 44 percent of white respondents nationwide scored as ‘high’ or ‘very high’ on the authoritarianism scale. In the 1990s, Stanley Feldman, SUNY Stonybrook, developed what has since become widely accepted as the definitive measurement of authoritarianism: four simple questions that appear to ask about parenting but are in fact designed to reveal how highly the respondent values hierarchy, order, and conformity over other values.

- *Please tell me which one you think is more important for a child to have: independence or respect for elders?*
- *Please tell me which one you think is more important for a child to have: obedience or self-reliance?*
- *Please tell me which one you think is more important for a child to have: to be considerate or to be well-behaved?*
- *Please tell me which one you think is more important for a child to have: curiosity or good manners?*

Positive. A number of initiatives and movements have emerged over the past decade that recognize [a] the status quo is unsustainable; and [b] persistently growing the human ‘footprint’ is also unsustainable. Thus, these initiatives and movements attempt to redesign economics based on ecology as the focus and objective of human relationships. The negligent excesses of globalization are to be curtailed; the concentrating relationships of local community and its wholesome relationship with nature are to be prioritized. Not all of these initiatives, however, are founded upon wholly benign principles; many are founded upon pent-up anger toward and disenfranchisement from the benefits of capitalism. Others, such as the gift and commons-based economies highlighted earlier, are founded upon an anthropological and psychological aversion to intra-community conflict of any kind. But, in aggregate, these types of ‘ecology-based’ economic models are indeed constructive and vital ingredients for society to consider as it contemplates its own evolution. As Part Two will endeavor to demonstrate, an economy based *exclusively* or even *primarily* on any specific priority—ecological or otherwise—would eventually cause a series of unintended consequences. *Exclusive/primary* objectives

or priorities, by definition, prohibits the responsibility of society to synthesize equally important and complex operational and existential priorities. A great part of the dilemma that humanity now faces is due to its long history of reductionism and simplification. Irrefutably, our human relationship with the environment is vital. As Part Two demonstrates, however, this is merely one link in a very complex chain.

In today's constant cycles of fear and complexity, it is certainly understandable for humanity to feel the need to retract inward and seek some more peaceful, if not innocent, existence. To leave global complexities behind. To be simply left alone. To be free. To escape. But the command of responsibility is unyielding.

Option 3: Forward Evolution. In this option, humanity lucidly confronts itself, finally accepting that it cannot escape its own evolution. Thus, humanity contemplates for itself some new form and function of human relationships. We gaze forward to expanding our experience beyond merely agriculture, mass production, and services. Our gaze expands to include a new fourth paradigm of human activity, a paradigm that operates much like a natural magnet—instinctively drawing from us our patiently waiting wealth of curiosity, creativity, and empathy.

Neither the status quo nor the backward evolution options resolve in any appreciable sense the evolutionary nexus of causal forces that are presently and increasingly colliding. Indeed, both options either directly or indirectly attempt to avoid or mask the evolutionary forces now upon us. One option attempts to kick the can down the road. The other attempts to control who possesses and uses the can. The forward evolution option attempts to ask the question: what is *beyond* the can? Part Two undertakes to explore what lays ahead for us on this forward-looking path of evolution—in both technical/practical terms as well as philosophical/psychological terms. Along the way, we rediscover Smith's axiom of the simultaneously self-regarding and other-regarding commercial society.

PART TWO: SPECIES NOVA

By confronting our own evolution, we transform into something new: pioneers.

*Magnus ab integro sæclorum nascitur ordo
iam redit et Virgo*

—

*The great order of the ages is born afresh
and now the Virgin [justice] returns*

Virgil, Eclogue 4, c.39–38 BCE

So, here we are, in the future. For a brief moment, we gaze fondly back toward the existence we leave behind. There is much to celebrate. The human mind and its boundless ingenuity innovated truly remarkable achievements. We tenaciously calculated how to break the bonds of gravity to fly. We continued to calculate and experiment, and unflinchingly journeyed far beyond our Earthly cradle. We solemnly discovered treatments for destructive diseases. We courageously challenged our very minds and hearts to conceive transcendent poetry, art, and even Constitutions to illuminate the greatest depths of our humanity. We sought truth. We occasionally fabricated truth. We frequently oppressed and harmed one another. Somehow, though, humanity persistently moved forward; we steadfastly endured multiple evolutions of the human endeavor. From time to time, it was our own technological innovations that sparked our evolution. Other times, it was the inventions of our own thinking that caused us to again evolve.

Once more, our ingenuous inventions and thinking minds have brought us here to the future. This time, our passion to produce increasing volumes and varieties of consumable goods and services, has given birth to sophisticated automated modes of production and even artificial intelligence. Our invention of money also evolved (although many were not aware of its ‘behind the scenes’ metamorphosis). And these two powerful forces of automation and money revealed several aspects of human civilization which no longer seemed rational to maintain. Namely, what do we now value if mass human labor is no longer needed? How do we utilize our cognitive skills to effectively solve 21st century challenges, or even to visualize new vistas of opportunity? How do we organize social and economic activity to best manage these challenges and opportunities? Do we

compete against, or collaborate with each other? Once more, we are evolving. But just how are we evolving? What are we becoming?

In this Part Two, we will need to navigate back and forth between our past, present, and future—endeavoring first to deconstruct our present orthodoxy, and then to reconstruct a diverse and complex mosaic of our social, economic, philosophical, and even psychological image of our future selves. From this mosaic, then, we should be able to glimpse the broad outlines of our future existence. The objective is to allow the future to reveal to us its virgin landscapes, to show us the untouched opportunities and challenges that await us, rather than impose any *a priori* design upon the future. As this Part Two will reveal, one possibility that awaits us in our future existence could be a local-to-global society exploring and expressing itself through the mass collaboration and exchange of intangible assets of an individual's human knowledge, experience, curiosity, and creativity. These mass and global collaborations and exchanges could be facilitated by the very technologies that first sparked this iteration of our evolution: artificial intelligence. But to achieve this, the masses themselves, not the institutions of our past, would be required to undertake the responsibility of managing and governing their journey through an increasingly complex and non-linear existence—on a moment-to-moment as well as local-to-global basis. But this is a choice for humanity itself to make. No 'leader' will be able to convince or coerce the masses to undertake this new journey. All of us will have to become, once again, pioneers.

Once the broad outlines of a possible future have been discerned, we then present a technical framework and operational process which could effectively facilitate such a mass collaboration experience on a local-to-global scale. Finally, we explore the significant civilizational implications of such a future, and the near-term next steps that would be required to initiate this venture into global interdependence. Thus, to conceive our own future, we begin with a thought experiment.

A THOUGHT EXPERIMENT: TABULA RASA

IN AN EFFORT TO EXPLORE what future awaits us, let us engage in a thought experiment. The ambition of this thought experiment is to acknowledge that we ought not impose any particular agenda or world view upon the virgin landscapes of our future. Thus, in our version of this *tabula rasa*, where we can wipe the slate clean, and impose as little as possible from our past upon our future selves, we find only these two landmarks. First, within the next 10 to 20 years, automation and artificial intelligence provides all 7+ billion humans cohabiting this world with the essentials of basic survival—food, shelter, and clothing. Perhaps nothing extravagant or luxury-based, but certainly adequate for essential survival. Later, this treatise addresses more directly how these essentials might be distributed throughout the masses, and who owns the technologies which produce these essentials. But for now, let us assume a ‘Star Trek’ type of technological development where anyone can essentially command a ‘replicator machine’ or 3D printer to create or recycle material objects of any size or complexity relating to the essentials of basic survival.

Second, only one seed happens to be indigenous to this futurescape: *virtue*. This seed of moral excellence has not yet blossomed; its branches of honor, benevolence, empathy, and duty have yet to emerge. Whether or not this lone seed is to be cultivated will, in the end, be our choice as a society.

This then, is what we first encounter in our future. Our survival essentials are provided by sophisticated automating modes

of production and distribution. A minimal, yet universal seed of virtue has already been planted in the soil of the future, and merely awaits its cultivation. We take our first cautious step into the thought experiment by asking this question: as we stand here in the future with nothing immediate or urgent to do, with our survival needs effortlessly provided by technology, what exactly do we do with our existence? What prompts or inspires our future selves to even desire to cultivate the seed of virtue?

In 1776, Adam Smith's world was primarily agrarian; the Industrial Revolution was only in its infancy. Only a small fraction of urban areas had become the magnets of industry as they are today. The European masses were almost solely focused on mere survival; for most, material comfort and wealth was only a distant dream. The American pioneers sought out their version of survival—and independence—in the harsh wilderness of the Native territories. Throughout the West, the maturing Industrial Revolution increasingly provided both the production and labor demand capable of supporting the majority of the masses with basic essentials. Labor, particularly in the early decades of mass production, was extreme in both hardship and danger. Finally, though, after World War II, the West emerged into large swathes of prosperity and even luxury—even though this prosperity and luxury often came at the expense of other civilizations vis-à-vis colonization, slavery, and genocide of Native civilizations.

For the majority of the masses, though, life had finally progressed from the old hardship of primitive survival to the new hardship of acquiring the fashionable clothes and myriad possessions that a progressive society venerated. The masses still had to labor; they still had to sacrifice; they still had to perform in the 'rat race'. Indeed, the masses were progressively being subjected to perform their labor increasingly faster so as to increase productivity and profits. Time and motion studies and techniques such as *Six Sigma* sought to evolve human labor to function evermore like efficient machines. Educational systems assiduously indoctrinated the masses to conform and specialize their contributions of labor in predictable and mechanistic fashion. And importantly, the masses abdicated the responsibil-

ity of governance, science, and even exploration to a specialist group of elites. The limited hours of the day only allowed for labor, raising of families, and a limited amount of leisure.

The masses simply had no time to examine how the world functioned, or the larger consequences of their actions and inactions. And to make matters even worse, the functioning of the world was becoming increasingly complex. Adam Smith, in his lifetime, had already begun to comprehend that his revolutionary contribution to economics—his principle of the ‘division of labor’—possessed a systemic weakness. He saw that the very act of the division of labor would ultimately lead the laboring masses to grow “*stupid and ignorant as it is possible for a human creature to become*”. Smith explains in *Wealth of Nations*:

The man whose whole life is spent in performing a few simple operations, of which the effects are perhaps always the same, or very nearly the same, has no occasion to exert his understanding or to exercise his invention...³¹

Thus, we come back to our initial thought experiment: if automation and AI were to provide the masses of the entire world with the essentials of survival—food, shelter, and clothing—what then would be the motivations of the masses as they undertake any new socioeconomic project? In short, what would be the purpose of life? Certainly, these questions may be interpreted by many as being premature, at best, or absurd, at worst. But the fact remains that multiple studies are already predicting that hundreds of millions of mass labor jobs are at risk of being replaced by automation and AI. Low-skilled, mid-skilled, and high-skilled jobs... all are vulnerable. And AI development is only in its infancy, with exponential advancements occurring on an almost daily basis. What is to become of hundreds of millions of laborers and their families? Rationally, we must at least explore these questions, both practically for the short-term implications of mass unemployment, and as a tool for contemplating more long-term options for our human futures.

This extreme exercise in establishing an initial operating premise that automation and AI somehow provides the masses

of the entire world with the essentials of survival exposes three flaws in our present societal organization. First, society has lulled itself into believing that the human endeavor has somehow arrived at the pinnacle of its development... that the struggle for acquiring material wealth is all the human endeavor is destined to experience. Second, this 'material struggle', above all, demands of each human to compete against other human beings. Empathy and cooperation can only be expressed *after* one has acquired a certain amount of material wealth (us first, others second). Finally, bound to this destiny of 'material struggle', reality is defined exclusively by the 'struggle' itself... future evolutions of the human endeavor are simply unrealistic and even dangerous to the status quo.

Now, let us take this thought experiment one step further. Assume that this 'material struggle' has finally been discharged as a consequence of technology providing the entire world's populations with the essentials of survival. Further, assume that, somehow, humanity decides that some new *fourth paradigm of human activity* beyond agriculture/mining, mass production, and services might be worth to consider. What might this fourth paradigm look like? Would this fourth paradigm have some inherent form of purpose... some emergent form of challenge or 'struggle' of its own? How and why does humanity express itself? And how to get there?



A MATRIX OF COMPLEXITY

HUMAN EXPRESSIONS & NETWORKS

THERE WILL ALWAYS BE agriculture and mining. There will always be mass production of material goods. There will always be a services sector to manage and facilitate material production. And there will always be some level of human labor to be retained in these three paradigms of hybrid automated/human activity. But for the masses, these three paradigms of production no longer need them. And if some new fourth paradigm were to be established and explored, there are likely to be diverse objectives and methods that come to exist in this fourth paradigm. It is here that we must realistically accept that there are indeed some initial social-psychological influences which will impose themselves upon the virgin landscapes of this thought experiment. It is unavoidable that we carry with us to the future some old and comfortable baggage.

The following initial examples of the complex threads interweaving the fourth paradigm and its human expressions and networks provide a generalized framework to contemplate. It is important to note, however, that individuals are likely to ‘roam’ in and out of each expression/network, and even between any of the four paradigms. And any one person might indeed exhibit and inhabit more than one expression/network.

Independence/Isolationist. In the initial phases of the development of the fourth paradigm, this particular expression/network is likely to attract the largest percentage of the popula-

tion base, particularly within the U.S. The four primary reasons for this are:

[a] There exists a long historical and anthropological record of portions of society that experience or perceive that some social-governmental system purposefully is corrupt, or is non-inclusive of alternative modes of controlling thought or objectives. Example: tensions between rural versus cosmopolitan societies and the human experience particular to these societies, which can often lead to the impetus to become independent from the larger group.

[b] There will always exist a portion of society that adopts the belief system that a specific race, culture, or belief system is somehow superior to another. Since there is no actual scientific proof of race or belief system superiority, this portion of society is essentially fearful that external influences might somehow disprove their belief, thus they tend to desire to be isolated from others.

[c] There exists a portion of society—for diverse reasons—that prefers privacy and anonymity, thus might choose to contribute to or challenge the diverse objectives of a new fourth paradigm in an anonymous fashion. Over time, however, as increasing portions of society become more exposed to the new ‘game’ of interdependent, variable/non-predictable, non-linear, inter-disciplinary relationships, a strong percentage of this tribalist-leaning expression/network will either occasionally ‘roam’ between, or even more definitively affiliate with, some other expression/network.

(d) This portion of society already possesses a strong and vibrant affinity network. As Part One already highlighted, network theory is imperative to understand with respect to social and political agency. If one were to itemize the essential concerns or objectives of, say, ‘conservative’ ideals (values that discernibly animate much but not all of the *Independence/Isolationist* expression/network), that list would essentially be somewhat limited in scope—encompassing, as an example, ideals of limited government regulation and taxation, the right to bear arms, the strict interpretation of law and justice, the prohibition of abortion, etc. But the concerns and objectives of ‘liberal’ ideals

is vastly more broad and diverse—ranging from labor, health and welfare rights, the protection of the environment, the inclusion of diverse components of society relating to race, gender, or medical/mental disability, corporate predatory behavior, consumer safety, etc. It is, in the main, an easier task to establish a collaborative network to support a fairly limited agenda. But to establish a collaborative network in support of a wider diversity and complexity of ideals is much more demanding.

Indeed, it is this complexity in diverse human networks that often impedes the development of technical and operational cooperation/collaboration between diverse groups. This complexity will be discussed a bit later. Over time, though, this *Interdependence/Isolationist* expression/network will operate less as a detached ‘echo chamber’, and more as an interwoven thread that permeates and adds its brand of value to a global collaborative network of concepts and relationships.

Culture/Ideology-centric. Similar to the above expression/network, but more positive in its objectives. Various cultural and ideological knowledge-bases possess quite diverse (and sometimes conflicting) world views. If viewed from a perspective that these diversities are not something to ‘protect’, but rather to selectively contribute in diverse sets of circumstances, then the diversities become ‘tools in a toolbox’ which can be wielded in a more cooperative and collaborative manner. Three brief examples:

[a] Western methods of dealing with physical, mental, or psychological challenges are, in the main, pharmaceutical. Other cultures, however, deal with these types of challenges with more social and natural methods. In the fourth paradigm, the practice might not be exclusively bound to one or the other, but a mix of diverse methods, depending on the circumstance.

[b] A Chinese manufacturer of household clothes washing machines discovered that rural users were experiencing the filters from the machines habitually becoming obstructed and failing. This was due to farmers using the machines to wash their locally grown crops in addition to clothes. The manufacturer responded by re-engineering the machine filter systems. The conventional Western response, however, to this type of

unintended use of a product, would be for the manufacturer to place a warning label on the washing machine, prohibiting the washing of items other than clothes. Where Western markets tend to be more specialized, other markets tend to be more accommodating [Yip, 2018]. Both specialization and accommodation facilitate their own varieties and velocities of innovative progress; both have advantages and disadvantages. In the fourth paradigm, society would possess the tools to effectively consider these diverse attributes and their varied consequences.

[c] Throughout the period of Classical Economics, two distinct ideologies of capitalism and socialism have been the source of severe ideological and human conflict, intra-community as well as interstate. But in a fourth paradigm of human relationships, there is nothing to ‘protect’. Again, the ‘tool in a toolbox’ view is that neither ideologies need to be exclusive for all circumstances. Some circumstances might very well flourish vis-à-vis capitalistic tools, whereas other circumstances might flourish vis-à-vis socialistic tools. This expression/network of *Culture/Ideology* feeds into the *Collaborative Problem Solving* expression/network highlighted below.

There is no supernatural unseen force that somehow compels culture and ideology to be competitive. If it chooses, humanity could quite easily ‘mix and match’ its diversity into dynamic collaborative relationships. This interdependent process of facilitating non-exclusivity/adaptability begins to hint at the *stateless* nature of human relationships facilitated by distributive and collaborative networks (and negative feedback loops, described later).

Ecology-centric. Disciplines such as *ecological economics*, *environmental economics*, *doughnut economics*, etc., utilize a trans-disciplinary approach to socioeconomics by interweaving ecology and economics with psychology, anthropology, archaeology, and history. These ecology-centric disciplines are based on critical thought that can be traced back to writings of the cleric Thomas Robert Malthus (*An Essay on the Principle of Population*, 1798, and one of the founding members of Classical Economics) and the radiochemist Frederick Soddy in his book *Wealth, Money (Virtual Wealth) and Debt* (1926), as well

as several others leading to the present. In the main, ecological economics challenges the prevailing belief of the economy as a ‘perpetual motion machine’, capable of generating infinite material wealth. The potential of the environment to provide services and materials is referred to as an ‘environment’s source function’, and this function is depleted as resources are consumed or pollution contaminates the resources. The ‘sink function’ describes an environment’s ability to absorb and render harmless waste and pollution (when waste output exceeds the limit of the sink function, long-term damage occurs).³² Centrally, ecological economics attempts to identify monetary value to the various interactions of the environment in support of human activity. There is also an existential component of ecological economics referred to as *degrowth*. Ecological economics considers that it is an essential economic strategy to respond to the *limits-to-growth* dilemma.³³ ‘Degrowth’ theorists advocate for the downscaling of production and consumption—the contraction of material-based economies—arguing that overconsumption lies at the root of long term environmental degradation and social inequalities.

The primary difficulty that ecological economics has had in being accepted by mainstream economics is that orthodoxy is persistently focused on ‘in the moment’ *quantitative* mechanics (profit), rather than long-term *qualitative* effects (sustainability and well-being). Ecological economics has indeed developed over time quite sophisticated modeling techniques, and these models could very well be integrated into wider mainstream econometric models. Indeed, some of these models have been loosely integrated into the intangibles-based models proffered in this *Wealth Beyond Nations* thesis (particularly models relating to energy consumption and biomimicry).

These radically challenging types of socioeconomic endeavors, obviously, would likely reshape how communities are geographically organized—and thus, reshape the dynamics of human relationships. As a consequence of emergent communications and transportation systems, as well as more inclusive forms of dialogue, humans would no longer be restrained to congregate in metropolitan centers so as to gain alliances, mar-

ket access, and political agency—or for that matter, restrained in permanent residences. A certain percentage of society might very well choose to live more nomadic existences, at least part-time. The essential normative consideration in attempting to re-imagine diverse socioeconomic groupings (or threads in a matrix of complexity) no longer arbitrarily bound within ‘material struggle’ or nation-state confines, is that each *stateless* group purposefully *values* the contributions made by others—as well as the consequences of these contributions. From this *Ecology-centric* expression/network, we discern that diverse groups (or threads) and the environment that all share are not seen as being exclusive of or competitive to each other. All relationships become interdependent. In this way, we can begin to envisage truly responsible *global citizens*.

Collaborative Problem Solving (Crowdsourcing). If we consider the myriad ‘crises’ that now surround humanity—environmental degradation, natural resource shortages, the meteoric rise in drug addiction, obesity and other medical/psychological challenges, societal instabilities and conflicts, socioeconomic upheavals, etc.—the masses have long abdicated their responsibilities in the management of these crises to institutions and elites. But as Part One has demonstrated, orthodox institutions are operating from outdated knowledge, and hierarchical in their controlling nature. As humanity begins to re-engage with the myriad issues that they have for so long avoided, individuals will organize themselves into diverse types of collaborative networks, ranging from corporate, governance, and even *ad hoc* collaborative networks. Collaborations that are *ad hoc* spontaneously materialize in one moment to address a particular issue, then, just as spontaneously, dematerialize. Individuals will no longer be constrained to exclusive institutions; they can contribute to one issue/network one day, and another issue/network the next. Henk van Ess describes crowdsourcing:

The crowdsourced problem can be huge (epic tasks like finding alien life or mapping earthquake zones) or very small (‘where can I skate safely?’). Some examples of successful crowdsourcing themes are problems that bug people, things that make people feel good

*about themselves, projects that tap into niche knowledge of proud experts, subjects that people find sympathetic or any form of injustice.*³⁴

These collaborative contributions can be both intellectual and practical in nature. Relating to intellectual contributions, some individual may have a unique method or process to better envisage food packaging, as an example, but they lack the facilities to test or develop their method/process. In our present modality of socioeconomic organization, that individual would have to enter into an exclusive labor contract with a specific entity so as to further develop their method/process. That entity, then, would conventionally have exclusive rights to the method/process so as to compete in the market.

But in a distributive networked world, the individual could simply ‘upload’ to a series of networks their method/process innovation, and a diverse pool of developers from anywhere in the world would evolve that method/process into a formal and tested product/service to made available to the wider marketplace. This de-centralization and ‘micro-skilling’ is already happening with 3D printing designs exchanged publicly online as well as via the Darknet. All parties, then, would receive a percentage of revenues generated via the chain of multiple suppliers and consumers. This is an example of mass technology/knowledge transfer that enables any individual on the planet to make spontaneous and simultaneous contributions throughout the global marketplace.

Relating to practical contributions, here, we highlight this example: someone has undergone a medical procedure in a hospital, and a certain amount of recuperation is needed. As many people have experienced, hospitals have become quite de-personalized and even dehumanizing. In return for increased efficiency—as technology often achieves—the human element is lost. Perhaps though, someone in the community has developed a particular method of assisting people in their recuperation process—just simple human compassion or, say, music therapy. By allowing for a certain amount of ‘de-institutionalizing’, these types of contributions could not only assist in local

experiences of human relationships, but also as a consequence of a globally-networked world, these types of human processes would have a chance to spread throughout the global community as a whole (again, the initial contributors might also economically benefit as a consequence of their method/process being accepted and practiced throughout the marketplace). This *Collaborative Problem Solving* expression/network might be considered as a process of *micro-privatization*.

Exploration (external & personal). As Part One demonstrated, both the masses and elites are often operating from vastly outdated knowledge. Reality is quite often not what we think it is. As a consequence, humanity desperately needs to re-educate itself on how the world actually functions. But more generally, there is so much not yet explored by the human endeavor—our external world as well as ourselves on a personal level. If one were to Internet search *tourism* opportunities for any location, the search results would easily identify restaurants, museums, theaters, shopping centers, amusement parks, etc. But the following opportunities would not be so easily identified: local historians, philosophers, environmental engineers, health care innovators, computer gamers, 3D printing communities, chess players, YouTubers, artists, and the like.

Is it somehow beyond imagination that instead of traveling to a new city and being drawn to the same ubiquitous shopping centers to shop for a new item of clothing, one can visit someone's home or community gathering place, and exchange experiences and deliberations about the various evolutions and consequences of art, health care, or even quantum mechanics? The technology already exists for these interactions to be facilitated on a deeply personal level. Why do we not use them? More to the point: why do we not as of yet place *value* to these types of experiences? After all, markets are merely whatever we want them to be.

Scientists have acquired more knowledge about the surface of Mars than they have about Earth's complex undersea ecosystems. To date, less than 1 percent of the oceans have been explored [Attenborough, 2017]. At this very moment there exists a not insignificant percentage of society that find it diffi-

cult to 'believe' that the Earth is round, and that it somehow is definitively flat. In a June 2014 U.S. *Gallup* poll, 42 percent of Americans continue to believe that God created humans in their present form 10,000 years ago, rather than the emergence of humans as a consequence of evolution. And according to an October 2016 *Pew Research* poll, fewer than a third of Americans agree there is a scientific consensus on human-caused climate change.

There is a pattern to be observed in this type of *anti-science* phenomenon. Part of the pattern emerges when we begin to understand that science and scientists have their exclusive tribal language and culture which is largely disassociated from society at-large. A marine biologist is trained to gather and analyze statistics—percentages of change in water temperature, migratory patterns, birth and mortality rates, and the like. The language of a scientist is the language of observable facts. For a policy-maker, on the other hand, the language of politics is strategically vague—intentionally using the skills of rhetoric to enable multiple interpretations of concepts to coexist at the same time. Science and politics speak completely different languages, for completely different purposes. Due to Adam Smith's division of labor principles, the masses have abdicated their responsibility to understand their world to a class of specialists we call scientists and politicians who do not even know how to communicate with each other.

In a new fourth paradigm, humanity has an opportunity to choose whether it continues to construct specialized and competitive institutions, industries, corporations, 'brands', advertising, and their related societal pressures so as to merely acquire infinite amounts of material possessions. We have an opportunity to become self-aware that a significant share of our old 'material struggle' possesses the dual purposes of fulfilling our desire for immediate self-gratification, as well as avoidance of personal responsibility for the consequences of our self-gratification. Or perhaps humanity chooses a different future which curiously seeks out personal responsibility and the vast wealth of wonderment and discovery that for generations has been masked by the past struggle to merely survive.

Fig 13 - The fourth paradigm: evolving away from primarily accumulating material wealth (top photo); toward growing the experiences and well-being of all people, including children (bottom photo).



The bottom photograph of **Figure 13** is a still photo capture from an operations video of the undersea discovery team of Robert Ballard in 2008. The young girl pictured is an actual participant on the team. Indeed, Ballard often uses children to pilot various undersea exploration vessels.³⁵

What do we wish to bequeath to our children? An existence obsessed with material wealth and constant self-gratification? Or, an existence of curiosity, empathy, and passion?

HUMAN PERCEPTIONS & NETWORKS

From certainty to non-certainty. We have much to discover and re-discover of our natural world and our human endeavors. But we also have much to discover about ourselves as conscious beings. This new fourth paradigm of mass exploration is likely to increasingly de-institutionalize and de-specialize a significant amount of our operational systems. Knowledge and scientific examinations will no longer be confined to hierarchical-controlling networks, and will increasingly be facilitated by distributive collaborative networks. As our perceptions of the world evolve, the symbols we use to ‘institutionalize’ our perceptions will also evolve.

A bit later, we will address specific questions more directly related to how artificial intelligence is beginning to forcefully challenge our long-held notions of what it means to be human with respect to consciousness. Here, though, we observe examples of human endeavor evolution with respect to how humanity perceives and experiences the world around itself—and importantly, how the masses will most likely need to adapt to a labor-less socioeconomic existence.

On the macro-level, since the human endeavor has in the past been tasked on mere survival, the thrust of our deductive reasoning has been focused on achieving specific and predictable outcomes. But if automation and AI, within the next 10-20 years, can indeed provide the entire world population with the basics of human survival, then focusing on specific and predictable outcomes will likely evolve to the masses being free to focus on the journey itself. *Purposelessness* becomes the new purpose. If this evolution is indeed conceivable, then three primary questions arise:

[a] A purposeless endeavor is by its very nature anarchic, non-linear, and non-predictable. How are societies to practically and operationally track and adjust their diverse journeys? How will we be able to judge what we, individually and collectively, are exploring/experiencing, and to where these explorations/experiences are leading? In short, what are the myriad consequences of our journey?

[b] What form of ethics and governance will be required in this new fourth paradigm of human activity?

[c] Socioeconomically, how are these explorations/experiences to be valued, qualitatively and quantitatively?

On the micro-level, since a purposeless endeavor is, by definition, anarchic, non-linear, and non-predictable, what impact might this have on the day-to-day operations of human activity? As **Figure 14** illustrates, the human endeavor has been animated via three fundamental evolutions of philosophical/psychological conditions of perception and experience.

Fig 14 - Three Evolutions of the Human Condition

CERTAINTY		NON-CERTAINTY
3rd - 4th century BC Platonic-Aristotelian	19th - early 20th century Nietzsche-Freud-Darwin-Marx	mid-20th century Derrida-Heisenberg
Hierarchical Binaries: Center or Origin		No Center or Origin
1st term of the binary is privileged/perfect (from that all things are measured) 2nd term of the binary is imperfect (a state of becoming)	Binaries are reversed, but still hierarchical & focused on Center or Origin	Binaries & Hierarchy are radically replaced with all signs being deferred indefinitely (that nothing is certain... and thus, nothing can be definitively judged)
▲	▼	?
Divine soul (perfect/eternal) > Body & material (imperfect/transient)	Biology & evolution is the origin leading to some future perfection (Darwin)	All signs/truths/knowledge have no definable beginning or end; everything is deferred indefinitely (Derrida)
Consciousness > Unconsciousness	Unconsciousness is the origin to a fully conscious mind (Freud)	In quantum physics, the more precisely the position of some particle is determined, the less precisely its momentum can be known, and vice versa. The totality of reality can never be certain (Heisenberg)
Logos (word) > Praxis (action)	Will to power is animating force within individuals (Nietzsche)	
Rational > Emotional	Material world is all that exists, not the spiritual (Marx)	
Speech > Writing		
Being > Becoming		
—	—	—
Divinity defines truth and purpose	Science and individual 'will' defines truth and purpose	Truth and purpose are relative or unknowable within the complexities of existence
BASIS OF RELIGIOUS DOCTRINE	SCIENCE	QUANTUM SCIENCE

The primary condition of human endeavors has been, until the 20th century, focused on possessing *certainty*. But since the explorations into phenomenology by Jacques Derrida and quantum mechanics by Werner Heisenberg, the human condition has evolved into an existence animated by *non-certainty*—where concepts of truth, purpose, and the state of the natural world are either non-absolute (relative to something else) or are perpetually deferred.

From our earliest beginnings, humankind has been surrounded by events and circumstances which could not be explained. Why was one farmer's land destroyed by a flood, but not another's? Why was one person bestowed with riches and power, but not another's? They were naturally curious, and just as naturally, they wanted answers—they wanted certainty. Since civilization did not yet possess the data and tools to discern the answers to these questions, and thus fulfill their need for certainty, they invented answers. The deep wells of non-certainty and sometimes of despair must have been created by some architect hidden from their view. They called this hidden architect *divine*. It was the *unseen* which set the rules of life. Certainty in one's existence could be obtained only by conforming to the rules of certainty. The rules were simple, binary. The divine soul was perfect; the body was imperfect. Consciousness was observable; unconsciousness was not. There was a simply elegant hierarchy to life: conform to the rules of certainty to reap the rewards of certainty.

But then, in the late 19th and early 20th centuries, it was humans themselves, not divinity, that was the actual architect. The world was material, manipulable, controllable. The binaries were reversed, but certainty was still the objective. Humans now had the tools of science to literally see, comprehend, and even control events that were once thought to be divine. Even the unconscious mind could be analyzed. Quite soon thereafter, certainty became non-certainty. The wonderfully diverse tools of science and our own minds began to peer ever-deeper into the hidden universes of quantum mechanics and non-linear cognition. What these diverse tools began to discover was that humans could never really be certain of anything—that hu-

mans just needed to accept the non-certainty of their existence. Perhaps humanity has come full circle. From non-certainty to certainty, and now back to non-certainty. Perhaps what is actually evolving is our own capacity to let go of the fear of non-certainty. To enjoy the ride.

Thus, to return back to the micro-level impact of *purposelessness* and *non-certainty* on day-to-day operations of human existence. As the masses begin to explore and develop a new fourth paradigm of human activity, it is likely that this condition of non-certainty will translate into an evolution of how humans enter into such micro-activities as explicit as traffic management and employment contracts. In *Two Cheers for Anarchism: Six Easy Pieces on Autonomy, Dignity, and Meaningful Work and Play*, James C. Scott utilizes an observation of traffic management—its revolution in the mid-20th century and its ‘devolution’ in the early 21st century—to crystallize the personal and social contradictions humanity possesses toward certainty.

The regulation of daily life is so ubiquitous and so embedded in our routines and expectations as to pass virtually unnoticed. Take the example of traffic lights at intersections. Invented in the United States after World War I, the traffic light substituted the judgment of the traffic engineer for the mutual give and-take that had prevailed historically between pedestrians, carts, motor vehicles, and bicycles. Its purpose was to prevent accidents by imposing an engineered scheme of coordination. More than occasionally, the result has been scores of people waiting patiently for the light to change when it was perfectly apparent there was no traffic whatever. They were suspending their independent judgment out of habit, or perhaps out of a civic fear of the ultimate consequences of exercising it against the prevailing electronic legal order.

What would happen if there were no electronic order at the intersection, and motorists and pedestrians had to exercise their independent judgment? Since 1999, beginning in the city of Drachten, the Netherlands, this supposition has been put to the test with

stunning results, leading to a wave of “red light removal” schemes across Europe and in the United States. Both the reasoning behind this small policy initiative and its results are diagnostic for other, more far reaching efforts to craft institutions that enlarge the scope for independent judgment and expand capacities.

Hans Moderman, the counterintuitive traffic engineer who first suggested the removal of a red light in Drachten in 2003, went on to promote the concept of “shared space”, which took hold quickly in Europe. He began with the observation that, when an electrical failure incapacitated traffic lights, the result was improved flow rather than congestion. As an experiment, he replaced the busiest traffic-light intersection in Drachten, handling 22,000 cars a day, with a traffic circle, an extended cycle path, and a pedestrian area. In the two years following the removal of the traffic light, the number of accidents plummeted to only two, compared with thirty-six crashes in the four years prior. Traffic moves more briskly through the intersection when all drivers know they must be alert and use their common sense, while backups and the road rage associated with them have virtually disappeared. Moderman likened it to skaters in a crowded ice rink who manage successfully to tailor their movements to those of the other skaters. He also believed that an excess of signage led drivers to take their eyes off the road, and actually contributed to making junctions less safe.

Relating to the micro-activity of employment contracts, a present-day employee enters into a labor contract that is dependable/predictable. The employee is guaranteed a specific unit of value for work contributed (a set salary or wage), but does not undertake specific risks attributed to the day-to-day operations of the employer. The employer, on the other hand, assumes these risks. In the fourth paradigm of human activity, all participants, no matter their level of involvement, are likely to operate from the evolutionary condition of non-certainty,

and thus, more readily share in both the risk as well as rewards of their activity. As the masses increasingly have 'skin in the game', their participation will be experienced as *collaborative equity*, rather than contractual labor.

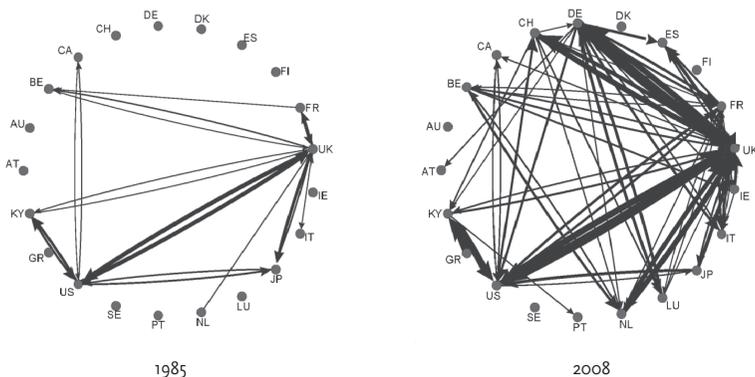
It is important to note that by using the above term of *collaborative equity*, this term is not implying a preference that many might attribute to *socialist* or *socialism*. The reason for this is three-fold. First, within the fourth paradigm, individual contributions are, in the main, not *labor* in the classic sense, which is generally interchangeable and vulnerable to exploitation. Rather, the contributions are to be largely cognitive/creative/unique in nature. Our present socioeconomic orthodoxy often already treats these types of cognitive/creative/unique contributions as *equity contributions*. Consider an actor who receives a percentage of ticket sales in lieu of a conventional salary, or a corporate executive who receives stock options based on performance. Second, within the fourth paradigm, individuals are most likely to 'roam' from pursuit to pursuit, or entity to entity; they would not necessarily even desire to enter into any type of exclusive contract. And finally, within the fourth paradigm, all participants including consumers are to be held accountable to the responsibilities of their actions/innovations/production/consumption throughout not only the marketplace, but also in relation to societal and environmental implications. Thus, collaborative equity is a tool which most effectively facilitates this collaborative responsibility. Having 'skin in the game' means that all participants are interdependent with system-wide consequences. This will be explained in more detail later.

These two simple examples of how science attempts to impose its reductionist structures upon a naturally relativist exercise of human traffic management or economic labor contracts, demonstrate that there is always a creative destruction component to technological advancement. With the printing press, we lost our memory. With industrialization, we lost our partnership with nature. With the traffic light, we lost our powers of observation and judgement. With the employee contract, we lost our courage. What else will humanity forego merely for the comfort of certainty?

From non-certainty to non-linear networks. In a world controlled by the requisite for certainty, hierarchical networks operate much like a moat surrounding a medieval castle. The hierarchical network is a fortification asset as much as it is a resource management asset. But in a world that is more accepting of the natural non-certainty that exists—that permeates literally everything we do or think—networks no longer need to serve the purpose of fortification and control. Indeed, what is required is the exact opposite: facilitation and feedback.

Within the fourth paradigm of human activity, all participants throughout a networked/collaborative relationship would be cognizant of and value all other participants, as well as the network infrastructure itself (sometimes equally; sometimes non-equally in socioeconomic terms). A model for this already exists in the banking industry. When any individual credit/debit cardholder makes a purchase with their bank card, the merchant obviously receives via electronic deposit their revenue. But the merchant's bank also receives a small percentage of the value of the transaction (for supplying the point-of-sale terminal); the cardholder's bank also receives a percentage (for validating the cardholder's account); and the owner of the network (*Visa/MasterCard/SWIFT*, etc.) itself receives a percentage. The reason that the banking industry successfully utilizes a collaborative/distributive network is because they purposefully conduct socioeconomic activity via the network.

Fig 15 - Comparison of banking sector network connectivity [Haldane, 2011]



As **Figure 15** [previous page] illustrates, international network connectivity between banks, today, is vastly different and more complex than in 1985. The connectivity is also quite revealing of the geopolitical and tax avoidance relationships that have evolved between these two periods. Notice, as an example, that the U.S. controlled access to the tax haven infrastructure provided by Greece (GR); whereas the U.K. controlled access to tax havens in the Netherlands; both the U.S. and U.K. controlled access to the tax havens in the Cayman Islands (KY). In 2008, although the network has become more complex, geopolitical relationships are still evident. In 1985, the French-speaking regions of Belgium (BE) enjoyed the larger share of economic activity and wealth, and thus Belgium banks interfaced with French (FR) banks. But now, it is the Dutch-speaking regions that enjoy the larger share of economic activity and wealth, thus Belgium banks now have extensive network activity with the Netherlands (Buyst, 2009/Eurostat). Switzerland (CH) has grown to be a major tax haven for several nations. It is by understanding networks that we can clearly understand socioeconomic activity and markets.

Once the masses finally begin to intentionally utilize collaborative/distributive networks for actual problem solving or exploration/education experiences, these technologies will facilitate an increasing volume and complexity of multiplier effects vis-à-vis socioeconomic activity accruing from the masses. Rather than advertising being the driver of revenue for a limited elite group of entities, mass socioeconomic exchanges would be the driver of revenue for all those that participated in collaborative activities—big or small, local or global.

From disposable bodies to life-long citizens. As a consequence of participating within the fourth paradigm of human activity, the masses would no longer be merely specialized laborers or consumers, but rather trans-disciplinary and interdependent *micro-producers* and *judicious-consumers*—more fully engaged with facilitating the complexities of local-to-global existence. Our capacity to develop, nurture, and explore never actually subsides as an individual advances in age. Death, itself, if not feared as it is today, is a transcendent experience. The

responsibility of participation does not weaken over time. Yet, society has fallen into a trap that monuments such as the concept of *retirement* are somehow not to be questioned, and just accepted as being immutable.

The concept of retirement initially became institutionalized in the 18th century as a consequence of average life expectancy increasing to above 40 years, while physical labor was still extremely arduous and sometimes even dangerous. Retirement, then under those circumstances, was a very humane practice. But in a fourth paradigm of human activity, where individual contributions are more likely to be cognitive/creative/unique, these cognitive contributions can be made throughout the entirety of one's life. Instead of treating humans as disposable vessels of specialized physical labor, automation/AI and enlightened use of distributive collaborative networks will soon free humanity to explore and contribute to vast and untapped potentials of human imagination, creativity, and experience.

Human identity [part 1: specialized]. These brief examples of the matrix of human perceptions and experiences outlined above, lead us to question the very notion of human *identity*. In this section, we will address two conflicting aspects of human identity—individual identity in the context of social systems, and its binary, identity of difference. The aspect of the larger social system itself—and its various cultural narratives—is addressed in the final chapter, **I Human. I Robot.**

Psychologists most commonly use the term *identity* to describe *personal identity*, or the idiosyncratic attributes that make a person unique. Sociologists, on the other hand, often use the term to describe *social identity*, or the collection of group memberships that define the individual. The notion of *identity negotiation* may arise from the learning of *social roles* through *personal experience*. *Identity negotiation* is a process in which a person negotiates with society at large regarding the meaning of his or her identity. Here, we view the concept of *identity negotiation* through four very different lenses of anthropology.

Primitive civilizations. Genetic kinship and *genuine social interactions* [Collier, Hoeffler, 2005] were the primary forces which facilitated and governed primitive societies. A child ob-

serves the social activity occurring around it—the hunter/gatherer preparing weapons for the day's hunt; the shelter builders gathering their tools and materials. So that the tribe as a whole can survive, every member of the tribe is expected to contribute in some manner to the whole. The child begins at an early age to formulate its own strengths and weaknesses in relation to these specialized tasks, and thus begins the process of identity negotiation. As a consequence, an individual's identity became *intrinsically* motivated to contribute to the base survival or *genuine* interactions of the whole of society. In most cases, an individual had no real choice other than to contribute to the pre-established tasks sanctioned by the community and its culture.

Modern civilizations. A child observes the social activity occurring within 21st century society. What does the child see? Within the context of a modern national society, genetic kinship and genuine social interactions are no longer the forces which *intrinsically* bind individuals together. Indeed, as we mentioned earlier in Part One, an individual's contribution to society is often hidden from direct view of the larger society—an engineer working in a private laboratory; a computer coder developing an artificial intelligence application, etc. Consequently, the process of identity negotiation becomes detached from genuine social interactions. The process becomes motivated by *extrinsic* motivations—external motivations which are attributed to such individualized objectives as wealth and power.

Lenartowicz, *et al.*, describes the social complexity of an individual's identity.

*The boundary that relates individual 'content' to the social context has long been one of social science's central objects of attention. What is formed by this boundary, relative to society, goes by many names. The ancient notion of the theatrical **persona** has been adopted to coin the concept of the social person, which is the most general term. The notion of social identity highlights aspects which are descriptive of a person's most stable links with some larger constructs within society. While being attributed to and attended to by each individual separately, such constructions consist*

in communication-forged, self-sustaining networks of symbolically anchored distinctions. Substantially and structurally, these constructs are no different from any other social unit, as well as the entire social system. These self-described constructs of definitions, qualities, features and roles, are themselves social systems, fully realized and maintained within individual minds.

*We term these individually constructed networks by the aggregate name **personware**. Serving as a medium between the individual and the social world, personware provides a self-reinforced and self-cohered narrative of the individual and its relationships with society. It is both the sense-maker and the sense being made of social reality entangled into an interactive autopoietic construct. At moments of decision, that is, attempting to make a choice to affect the world, the human is thus more often than not symbolically pre-situated. He enacts a personal narrative of which he is hardly the author and to which almost every decision is knitted in.* ³⁶

Difference civilizations. Iris Marion Young, in *Justice and the Politics of Difference* (1990), posits that the very identity of certain individuals makes them particularly vulnerable to *cultural imperialism* (including stereotyping, erasure, or appropriation of one's group identity), violence, exploitation, marginalization, or powerlessness. Hence, the application of *identity politics* purports to reclaim, re-describe, and transform the larger definitions and practices of group membership. Charles Taylor, in *Sources of the Self: the Making of the Modern Identity* (1989), argues that the modern identity is characterized by an emphasis on its inner voice and capacity for authenticity. However, the politics of difference is caught in a paradox.

What makes identity politics a significant departure from earlier, pre-identarian forms of the politics of recognition is its demand for recognition on the basis of the very grounds on which recognition has previously been denied: it is qua women, qua blacks, qua lesbians

*that groups demand recognition. The demand is not for inclusion within the fold of “universal humankind” on the basis of shared human attributes; nor is it for respect “in spite of” one’s differences. Rather, what is demanded is respect for oneself as different.*³⁷

This paradox between identity originating from inclusion/contribution to difference/respect leads to a further detachment of the individual from genuine social interactions. Any claim to identity arising from exploiting the politics of difference cannot avoid the self-made trap to organize itself around a constitutive exclusion. This has relevance not only to intra-society constructs, but also to international and geopolitical constructs.

*An identity is established in relation to a series of differences that have become socially recognized. These differences are essential to its being. If they did not co-exist as differences, it would not exist in its distinctness and solidity. Entrenched in this indispensable relation is a second set of tendencies, themselves in need of exploration, to conceal established identities into fixed forms, thought and lived as if their structure expressed the true order of things. When these pressures prevail, the maintenance of one identity (or field of identities) involves the conversion of some differences into **otherness**, into evil, or one of its numerous surrogates. Identity requires differences in order to be, and it converts difference into otherness in order to secure its own self-certainty.*³⁸

Evolving civilizations. To view our evolving *personware* in the context of individual-to-social identity, let us consider the following situation: one day, in a corporate cafeteria, a young female computer programmer carries her food tray to a table and sits nearby to a small group of the company’s executives. After several minutes, she overhears a portion of the conversation between the executives; the essence of the conversation being that the company is suffering from a particular problem which could severely jeopardize the survival of the company.

Inspired by some memory from her past, the young computer programmer interrupts the executive's conversation and shares her memories. And indeed, her input spurs a renewed dialogue between the executives, and as a consequence, the company makes strategic changes in its market focus and operations. The company, as a direct result of a computer engineer's intangible input, evolves.

A central question which arises from the above example: what *value*, in both technical economic and identity negotiation terms, did the young computer engineer contribute to the company in her telling of a personal memory/observation? Previous to the encounter in the company cafeteria, did the corporation ever look upon this young computer programmer as anything other than a computer programmer—a compartmentalized tool in some pigeon-hole? Was she seen, as an example, as someone whose very life experiences were of value to the company as a whole, or even any of its employees? Or perhaps, was she seen as someone with a personal network which could be beneficial to the company, or its vendors? The most likely answer: even if a corporation's owners might have a genuine empathy for its employees and the genuine interactions of society as whole, corporations simply do not possess the infrastructure capable of systematically seeking out (let alone quantifying/qualifying) the greater potentiality of its workforce, or conversely, capable of providing its workforce with access to the corporation's direct or indirect assets for the individual benefit of the employee.

In part because of Adam Smith and his 'division of labor' principles, and in part because of our unquestioning commitment to ritual (and often, even myth), modern societies have persistently adopted the reductionist law of life, and seem to only seek the shortest and most immediate route to profits possible. The whole of society is rarely considered. But this single example of a computer engineer providing to her employer an intangible asset beyond that of her computer expertise, exposes the following questions. What other assets of value remain untapped throughout our economy—untapped simply because we remain transfixed by the rituals of identity and specialization? Who are we, if we are not our occupation? If the very definition

of individual identity is evolving, what impact does this evolved version of individual identity have on the collective society?

Human identity [part 2: synthetic]. Here, we begin to synthesize the two concepts of individual or popular sovereignty (the concept that not merely a privileged few, but all persons are naturally imbued with *natural rights*), with an individual's socioeconomic contribution and moral responsibility to the collective society. Critics of individual or popular sovereignty (such as Edmund Burke) believed that the masses had little to no 'skin in the game' (risk) with respect to the moment-to-moment design and mechanics of the marketplace. The masses could not even begin to take responsibility for something that it had virtually no input, save that of simple labor and consumption.

As a consequence, our present-day limited laborer/consumer-based individual identities are inherited from this notion that the masses have accepted little to no risk in the design and mechanics of the marketplace. Thus, a collective society becomes merely the aggregate of low risk-taking individuals. The individual's identity is limited, and thus, the collective society's identity is limited. But what if the equation were to change? What if the masses actually participated in the moment-to-moment design and mechanics of the marketplace? What if (reasonable) risk was the new social norm?

Any new fourth paradigm—particularly a socioeconomic paradigm focused on the mass exchange of intangible assets—would spontaneously reveal an environment within which all individuals would finally realize their idiosyncratic individual identities were actually naturally occurring forces invisibly bound together by the *purposelessness* of existence. Automation/AI and distributive networks, then, would facilitate the invisible to become visible. These interdependent individual identities, then, would intuitively aspire to co-create and take a shared responsibility/risk in the design and sustainability of the genuine social interactions expressed within a local-to-global marketplace. Instead of feeling forced or coerced to take moral responsibility to perpetuate the 'general will' of society, a new fourth paradigm would present a natural environment where the uniqueness of the individual actually becomes animated

as a consequence of their mutually-supportive exploration and contribution of their personal and authentic identity. Perpetuating the general will by enlightened discernment and yearning, rather than by force is the essence of *natural law*.

To better understand this view of *authentic identity* (interdependent individual and social identity), we need to briefly explore certain concepts of natural law. Throughout our past, identity has essentially been a function of a person's *utility* within a specific definition of time (essentially, the present moment of need)—meaning, a doctor without a patient has little utility. The German philosopher, Martin Heidegger (1889—1976) provided this fundamental insight: the presence of things for us is not their *being*, but merely their being interpreted as equipment according to a particular system of meaning and purpose. A doctor being 'ready at hand' (Heidegger's term) to assist a patient has been the conventional definition of identity.

Consequently, we have blindly adopted the following identity equation: *identity = utility*. Natural law and its apotheosis into authentic identity, however, means to facilitate the free-flowing expressions of a person's being; that *sometimes, identity = utility, and sometimes, identity = potentiality*.

In 1905, the German sociologist, philosopher, and political economist, Karl Emil Maximilian "Max" Weber, published *The Protestant Ethic and the Spirit of Capitalism*, in which he proposed that ascetic Protestantism (as opposed to Marx's conjecture of 'historical materialism') was the primary force associated with the rise in the Western world of market-driven capitalism and the rational-legal nation-state. Weber endeavored to shed light on the view that it was the cultural influences embedded in the experience of religion that would allow us to better understand the genesis and evolutions of capitalism. Weber observed that certain cultural and religious influences directly shaped both the choice of occupation as well as the ensuing work ethic of that cultural citizen or religious adherent. As an example, Weber found that adherents to the Roman and Orthodox Catholic faiths, tended to view their stations in life as being *fixed*, and thus, focused on advancing their 'craft' within their fixed station. Protestants, however, as a consequence of re-

forms instituted by Martin Luther and John Calvin, viewed their stations in life as being *fluid*, and thus, possessed the capacity to transcend their birth-station and seek out their deeper ‘calling’. Weber observed, as a consequence, that Protestants tended to gravitate toward positions of management and ownership, whereas Catholics tended to remain focused on advancing a specific craft, and thus, remain in positions of labor rather than management or ownership.

This treatise, then, cognizant of the diverse and subtle ways in which humanity defines identity and utility (whether wisely, or not), proffers a subtle synthesis of three existential principles in an effort to prepare society’s contemplation of evolving into a new fourth paradigm of human activity.

[a] An individual is not operating isolated from the world or a community—and thus cannot be true to his/her own uniqueness and originality in some arbitrarily-designed environment of isolation. Our uniqueness and originality are animated—sparked alive—as we authentically interact with others. We become who we are as a consequence of our social interactions.

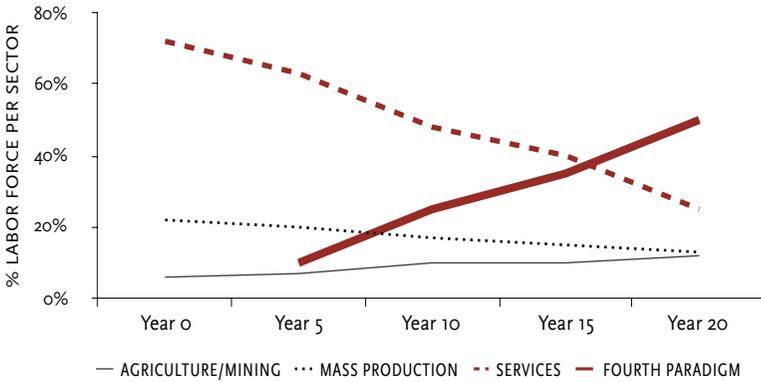
[b] As we begin to diminish our use of rhetoric (to persuade or coerce), and increase our use of *parrhesia* (to speak unconditionally), we will begin to challenge our personal wellsprings of courage and prudence to shed the absolutism of adopted beliefs and thoughts. We will increasingly gain confidence in practicing Immanuel Kant’s timeless maxim: *Sapere Aude*—dare to be wise; dare to know.

[c] The fourth paradigm is one which facilitates value exchanges throughout the masses that emanate from the exploration and expression of a person’s *being* (both tangible/utility as well as intangible/potentiality states of being). As a consequence, the individual is no longer limited by its identity tethered exclusively to utility, but rather, is liberated by the *khaos* (the unknown) of exploration and human interaction. Utility and value would be defined not merely in the specific moment of need, but also in the boundless void of *potentiality*. In short, both the individual and collective society would be liberated to focus on the journey itself, rather than exclusively on arriving at a specific destination in a specific time-frame. Graphically

speaking, our conventional view of identity and utility might be similar to how we see and experience the proverbial iceberg; the tip of the iceberg is deceiving, for what resides hidden from view is both larger and more complex than we have experienced or even imagined. The hurdle which prevents many to justly contemplate this re-framing of identity and utility to include *potentiality* is that we have for generations unquestioningly accepted the notion that supply-and-demand economic markets are solely founded and valued on the specific ingredient of scarcity/predictability. Any new supply-potential and demand-potential economic market which values indefiniteness/non-predictability seems—at first glance—quite impossible and unrealistic to contemplate. This just isn't how *the game* is played in the *real* world.

Computer automation and AI, however, may now leave humanity no choice but to sincerely contemplate what is to become of the human endeavor as technology systematically replaces the demand for mass labor. Inevitably, *the game* as we now experience it, will cease to facilitate social order and well-being. Our evolution into some new venture of experience of human activity is already here. The challenge is no longer *how* we might improve what it is we are presently doing. Rather, the challenge is evolving *what* it is that humanity does. And why.

The technology, infrastructure, and know-how already exists for humanity to resolutely begin to explore and develop some new fourth paradigm of human activity. As has been demonstrated by this treatise, distributive collaborative networks are (and have been) exploited by innovative individuals to achieve specialized functions. There is nothing—legally or operationally—that prevents the masses from collectively exploiting these technologies for the synthesized benefit of the individual and society. The only two self-imposed obstacles that now prevents the masses from embarking on this collaborative journey are ignorance and fear. Ignorance is manifestly conquerable. Both the technology and knowledge are readily available. Fear, on the other hand, is a state of mind. The human experiment has long attempted to veil fear with the illusion of certainty. Perhaps AI will reveal to us the real and uncertain future that awaits us.

Fig 16 - A global migration into a *fourth paradigm* of socioeconomic activity

As will be demonstrated in the following section, it is operationally conceivable that about 50 percent of the global labor force can migrate into a new fourth paradigm within the next 20 years [Figure 16]. It is important to note that this treatise is not advocating that humanity completely disregard or abandon our three existing paradigms (agriculture/mining, mass production, and services). These three paradigms are both necessary and enriching to the human endeavor. Indeed, they are to be celebrated. But the obligation now exists for humanity to establish a new fourth paradigm that operates in parallel and in concert with our existing three paradigms. The remaining question then becomes: will humanity possess the courage to once again become pioneers?

FUTURE SHOCK [Part 2]

THE SHOCK TO INSTITUTIONS

HERE, WE VIEW the present institutional corporate sector, and how it might begin to adapt to a new fourth paradigm. In the next section, we view how spontaneous groups and individuals might begin to self-organize in a fourth paradigm experience.

Beginning in 1996, the Spanish sociologist Manuel Castells published what would soon be revered as *The Information Age trilogy*—comprised of three interrelated works, *The Rise of the Network Society*, *The Power of Identity*, and *End of Millennium*. The essential premise of the trilogy: beginning about the 1970s, our industrial society began to shift to an informational society, and is increasingly structured around networks rather than individual actors. Castells observed the evolution toward an interrelationship of social, economic and political features of society, and argued that the *network* is now the defining feature that marks our current epoch. And yet, for the overwhelming majority of the local and global corporate sectors, businesses have not earnestly embraced this evolution toward an economy animated by information and knowledge. Businesses have yet to fully grasp and exploit distributive network dynamics. They do not yet fully grasp that information and knowledge *are* the economy—just as powerful and profitable as the material goods they produce. The venerated *Eastman Kodak Company* is an effective example of such a business that persistently failed to even attempt to exploit its knowledge assets (such as its vast

history of chemistry-related knowledge which would have been of significant value to a multitude of corporations and universities around the world). Instead, *Kodak* spent its resources struggling to compete in the declining photographic film sector—the material economy. As a consequence of its inability to evolve into exploiting its intangible assets, *Kodak* was forced to file for U.S. Chapter 11 bankruptcy protection in 2012.

For even the relatively few corporations that presently engage in purposefully exploiting their assets of knowledge and technology via some form of distributive network infrastructure (such as formal technology transfer platforms), this exploitation is still constrained by hierarchical controls. Exchanges are conducted by and between the owners of the corporation. Individual employees, themselves, possess no legal or practical authority to directly assess or exploit their individualized knowledge or experience. We posit that vast untapped wealth resources reside on this heretofore disenfranchised individual-to-individual level.

An individual employee at a manufacturing plant possesses both experience and know-how—say, relating to heat specifications appropriate for molding plastics. In our present value system, the employee receives merely a standard salary based on an hourly wage; the knowledge and experience of the employee is essentially exploited exclusively for the direct benefit of the employer. Here, we need to make two specific distinctions with respect to employer-employee relationships.

Value exploitation. The most elementary and widely made observation is that there is a severe imbalance between the employee and employer with respect to value and income generation. An example of this imbalance: various media outlets, both print and web-based, rely on the journalistic inputs (the research and stories developed by the journalists) for the content which is read or viewed by consumers. Yet, the vast percentage of the media outlets' profits are distributed to the owners/shareholders of the corporation, rather than more equitably being distributed to the body of journalists which actually created the value in the first place. Particularly for entities which derive value generation from the unique creativity and knowledge of

the human experience, the old model of exploiting human labor which has been mechanical, repetitive, and interchangeable will eventually be replaced by a recognition, even open expression of gratitude made to any and all contributions to the entity's value generation. Thus, profits (as well as losses) will eventually be more equitably distributed throughout the value-chain. We reiterate, though, for this type of moral as well economic evolution to occur, the masses will have to accept the risk of losses, if they are to seek greater benefits and rewards.

Value cultivation (the shock to the system). A very limited number of corporations have taken small but important steps in this direction (such as various social cooperatives). But even then, they tend to restrict the inputs and responsibilities of the employee-base to that of collaborating in the making of essential management decisions, but not in the sharing of profits or losses of the entity. The inclusion of the employee-base in the overall management of the business is generally referred to as *co-determination*. Herein, we do not want to minimize the importance of co-determination programs, but we also recognize that co-determination is merely a modest step in the direction of something more profound. At present, an employee is expected to simply perform some specialized task. Do the job. Get paid. Repeat daily. But if cultivated properly, each employee—each human—represents a multi-faceted and ever-growing resource of value beyond the mechanistic body which has yet to be fully explored and exploited.

In an effort to demonstrate just how multi-faceted any single employee's value might be to not only a direct employer, but also to a much wider marketplace, we will expand upon the example which we introduced earlier, regarding the employee at a manufacturing plant who possesses both experience and know-how—say, relating to heat specifications appropriate for molding plastics. Let us assume this employee happens to meet another employee from some other corporate entity, who expresses that this second entity has certain inefficiencies in how it manipulates plastics. Right then and there, in a naturally-occurring entangled socioeconomic experience, it would be beneficial to all parties (the two corporate entities as well as the two

employees) that the know-how possessed by the first employee is officially transferred to the second employee.

With the recent maturing of ‘expert systems’,^{vii} the intellectual property (IP) transaction could easily be uploaded to a global network of expert systems via both employees’ smart-phone devices, and any future improvements to the second entity’s revenue generation—as a consequence of this new IP exchange—would result in a percentage of that new revenue generation to be remunerated to the first corporation as well as to the two employees who initiated the transaction. In turn, the employee from the second entity might transfer this same IP to still another employee in a third entity (which, by the way, might have nothing at all to do with plastics, but something never before recognized about the IP might somehow relate to the needs of this third entity), and any resulting revenue generation would be remunerated back down the entire chain of participants.

As a synchronistic consequence of spontaneous human relationships, not only can know-how be more widely dispersed throughout the marketplace, IP can still be protected (perhaps even more so than via conventional hierarchical, regulatory, or legal means), and now can be personally and exponentially valued by anyone, anywhere. By valuing not the sovereignty of a corporation, or even its intellectual property—but rather, by valuing our own human potential and relationships and how IP can become an entangling agent—we can liberate from ancient chains the very definition of ‘value’ itself.

As mentioned earlier, even though the Internet has provided the world with a wildly effective process to disseminate information in a *distributive* fashion, most economic actors still disseminate information in the archaic and hierarchical *centralized* fashion. We still continue to be shackled by our egos telling

vii An **expert system** is a computer application which makes decisions or solves problems in a particular field, by using knowledge and analytical rules defined by known human knowledge. People solve problems by using a combination of factual knowledge and reasoning. In an expert system, these two essentials are mimicked by two software components, a knowledge-base and an inference engine. The knowledge-base provides specific facts and rules about the subject, and the inference engine provides the reasoning ability that enables the expert system to form conclusions.

us that we need to savagely *control* our assets, rather than allowing natural law's magnet of potentiality to take us to places we cannot yet imagine.

Instead of corporations attempting to covet and protect their investments via outdated mechanisms, they could—in a naturally-occurring entangled socioeconomic paradigm—invest the vast treasure chests of know-how they (and their employees) possess throughout the world, and reap an almost limitless value from the direct and indirect fruits that would be generated by such investments. If this type of technical and operational process was to be initiated within a new fourth paradigm, any employee's know-how and experience could be cataloged and made available to a global marketplace—bringing revenues from global consumers of an employee's know-how back to both the employee as well as the direct employer. Indeed, the technologies necessary to facilitate these types of global exchanges of intangibles already exist. They do not need to be invented. They merely need to be assembled.

THE SHOCK TO GROUPS & INDIVIDUALS

Pyramids become round: emergent dialogue. Here, we view how spontaneous groups and individuals might begin to self-organize in a fourth paradigm experience. Earlier, in Part One, we observed that institutional conferences are essentially sociopsychological lecturing and indoctrination exercises. The primary intention of institutions is to control both the objective and strategy via *hierarchical* networks. But as we have demonstrated, these hierarchical controlling mechanics of institutions (corporate, government, public service) cannot act/react as dynamically as can globally-networked individuals. Within a fourth paradigm of human activity, however, the very nature of how and why communication is facilitated will likely evolve from its present objective of exclusivity/control/predictability to that of interdependent/dynamic/non-linear.

So as to demonstrate the evolutionary power of the fourth paradigm, we expand on the earlier example of institutional conferences. By merely replacing the function of 'conference'

with ‘dialogue’ is an incomplete concept. Our conventional experience of ‘dialogue’ is largely based on the conditional foundations of *rhetoric* (the veiling or ‘weaponizing’ of language for the purpose of persuasion and sometimes coercion). But there exists another, less Machiavellian but still confrontational form of communication and language: the language of *parrhesia*. The French philosopher, Michel Foucault (1926–1984) describes the language of *parrhesia*:

Parrhesiazesthai means “to say everything”. The one who uses parrhesia is someone who says everything he has in mind: he does not hide anything, but opens his heart and mind completely to other people through his discourse. The word “parrhesia” then, refers to a type of [trust] relationship between the speaker and what he says. He does this by avoiding any kind of rhetorical form which would veil [or weaponize] what he thinks.

Whereas rhetoric provides the speaker with technical devices to help him prevail upon the minds of his audience, in parrhesia, the parrhesiastes acts on other people’s mind by showing them as directly as possible what he actually believes. ³⁹

In this way, Foucault challenges the basis of our fundamental intentions of communication. In a primitive environment where a group is primarily focused on fundamental survival, it is clearly to the advantage of the group that language is utilized to ‘direct’ individuals to accomplish some task or escape some danger. But within a fourth paradigm of human activity that no longer is focused on fundamental survival, but rather is focused on more cognitive/creative experiences, ‘direction’ and ‘leadership’ are likely to be replaced by ‘non-linear experiences’ and ‘natural forces of pattern recognition (natural law)’. With natural law, we begin to regain our connections to memory, observation and judgement, courage, and nature itself.

Emergent experiments with dialogue are beginning to reveal a much more interactive and interdependent consequence between diverse individuals and networks operating within any

group. One embryonic experiment is *Mobile Academy Berlin*.⁴⁰ In itinerate gatherings, communities share information about a particular subject or theme vis-à-vis a playful form of ‘communicative speed dating’. Future expansions of this model might include a small group of individuals tasked to simply observe the various micro-conversations—to observe patterns. After everyone has completed their micro-conversations, they might come together as a community to discuss with *parrhesia* the diverse observations and patterns gained from this exercise.

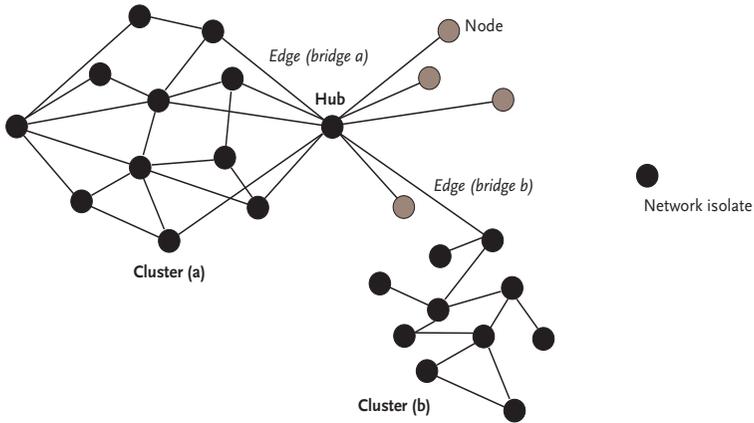
Another experiment is the *proprioceptive dialogue*⁴¹ process developed by David Bohm and expanded upon by Steven M. Rosen and others. It is an experiment in ‘radical honesty’ in which participants relate to one another on the basis of an awareness of and willingness to express their hidden agendas: underlying assumptions and motives, feelings and projections, defensive maneuverings, etc. Proprioceptive dialogue requires that individuals/groups relate to each other by moving in the ‘opposite direction’ in which conventional discourse takes place. Rather than moving forward, moving *out* from the initiator, authoritatively advancing some position/agenda, individuals/groups relate to each other in a more circuitous, reflexive way, by going proprioceptively backward *into* the initiator and its initiating concepts, back into that hollow place where the particular ingredients of thoughts and perceptions have yet to coalesce into some specific form of *opinion*—a specific form of opinion that requires protection from other formed opinions.

Within a new fourth paradigm of human activity, the fundamental nature of group/community gatherings is evolved from one of linear/protective to non-linear/unguarded experiences of human relationships. Knowledge and know-how is more freely exchanged (and more deeply explored and appreciated). Network connections and resource sharing become more dynamic and cross-pollinating. Self-aggrandizement evolves to collaboration. And perhaps even game playing. *Game theory* is the study of conflict and cooperation between intelligent and rational/irrational/arational decision-makers. Initially, game theory addressed *zero-sum* games, in which one person’s gains result in losses for the other participants. Today, however, game

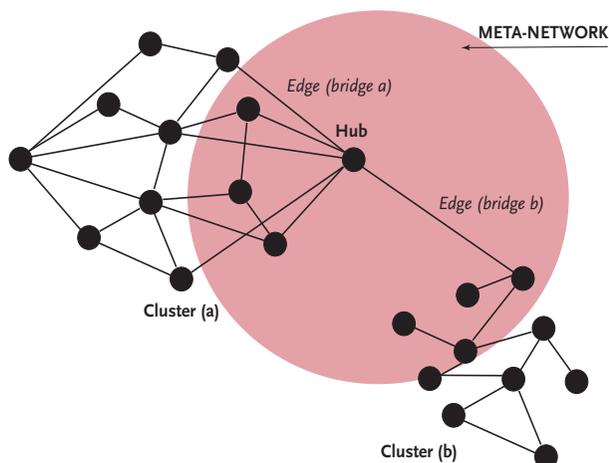
theory addresses a broader range of behavioral relations, and is now a more comprehensive term for the science of logical decision-making in humans, animals, as well as computers. Essentially, game theory is one component of what is referred to as a *negative feedback loop*—a process which generally promotes some variant of stability or equilibrium (this will be illustrated a bit later).

The above exercise to consider how conventional forms of dialogue could be transformed establishes a more firm foundation for us to view the primary obstacles preventing individuals (the masses) to more effectively participate in network dynamics. It is through their participation in network dynamics that not only provides individual-to-market agency, networks provide important tools for the human endeavor to persistently self-correct the process of dialogue. Further, network dynamics facilitate both individuals and society to test various outcomes and even to be cognizant of non-immediate outcomes. The primary obstacle preventing the masses to more effectively participate in network dynamics is that they tend to participate in either a highly specialized network (and thus, experience a *positive feedback loop*—a process which persistently reinforces a specific behavior pattern or belief system), or are substantively isolated from any particular network.

Networks as language. Networks possess a language like any other societal community. Here, in an effort to demonstrate the opportunities and challenges humanity faces in this largely unexplored territory, we will examine the anthropology of network language in visual terms. In **Figure 17** [next page], assume that *cluster [a]* is a cluster of nodes (individuals) which are connected by their shared interest in artificial intelligence; *cluster [b]* is connected by their shared interest in road traffic management; and the *hub* is a particular university or think tank. Because of *edge (bridge a)* and *edge (bridge b)* being connected via the *hub* of a particular university (which acts as a type of data hub or even relationship facilitator), AI innovations flowing through *cluster [a]* are dynamically communicated through *cluster [b]*. As a consequence, road traffic management entities and systems now have direct access to AI innovations.

Fig 17 - A simplified network architecture

The reverse flow also is true. But now, assume that *cluster [a]* is connected by their shared interest in anti-immigration sentiments; and *cluster [b]* is connected by an opposing sentiment of open immigration policies; and the *hub* is again a university. Instead of innovations or policies being dynamically facilitated between the two clusters, a ‘network outage’ or ‘disconnect’ occurs. Not all networks play well with other networks; specialized networks are often nothing more than ‘tribes’, and take on protective or defensive attributes. In this case, the *bridges* are speaking opposing languages, and the *hub* (university) is not prepared to intercede so as to explore the deeper philosophical/psychological or practical underpinnings to these opposing world-views. As we look around us, we begin to observe that a large majority of existing specialized networks have almost no *bridges* or *hubs* that can purposefully operate as ‘relationship facilitators’. The essential reason that the first example of AI/road traffic management networks is an effective networks relationship is that each supports the agenda of the other. The essential reason that the second example of anti-immigration/pro-immigration is a non-effective networks relationship is that each is in opposition to the other’s agenda. Later, a remedy to this type of network outage/disconnect will be discussed.

Fig 18 - A meta-network

Now, in **Figure 18**, assume *cluster [a]* is connected by their shared interest in the U.K. remaining in the European Union for ideological reasons related to a pro-immigration stance; *cluster [b]* is also connected by their shared interest in the ‘remain’ agenda, but for a different ideological reason of not wanting to disrupt trade relations between the Republic of Ireland and Northern Ireland; the *hub* is again a university. As recent events throughout the U.K. have demonstrated, the ‘leave’ campaign operated from a quite limited ideological agenda (primarily anti-immigration), whereas the ‘remainers’ operated from very diverse ideological agendas.

It has been observed by multiple analysts, that an essential reason why the ‘remainers’ were not successful in communicating effectively with the U.K. electorate was because each specialized ideological tribe was not able to establish a *meta-network* which collaborated with each other to share data, messaging techniques, or funding. The world is filled with specialized networks, each focused on their own exclusive agenda, but they fail to even attempt to collaborate with any other specialized networks so as to create an effective meta-network. They fail to comprehend and utilize what is right in front of them: network theory.

Finally, let us view the general masses and how they are largely ineffective in their participation in network dynamics. Referring back to **Figure 17** [page 129], on the far right of the chart, is a solitary disconnected node, the *network isolate*. The masses, in the main, exist as these *network isolates*. Even if they may be theoretically connected to some specialized network by virtue of their employment with a corporation, employees are most often disenfranchised from dynamically participating with the diverse components of a corporation, its supply chain, customer base, political action resources, and finance resources, etc. Even a corporation's philanthropic activities are purposefully segregated from the main corporate infrastructure so as to maintain the illusion that profit-making and social welfare are absolutist thus separate conventions of human activity.

When the general masses participate on a social media platform such as *Facebook*, here too, they are often (but not always) being purposefully disenfranchised from effectively exploiting dynamic networks. An individual (*person A*) has a *Facebook* page, and has x number of 'friends'. Assume one of their 'friends' (*person B*) is an employee of a corporation. In the main, *person A* has no dynamic interactivity with *person B*'s corporate employer; job openings, supply chain relationships/opportunities, or even product sales are not dynamically facilitated by the *Facebook* platform. Consequently, a network outage/disconnect occurs, and *person A* operationally remains a *network isolate*. Indeed, there are exceptions to this predicament. *Ad hoc* networks often self-organize on social media platforms for individuals to share/trade supermarket coupons or coordinate some political/social event. But, in the main, most individuals remain *network isolates*, particularly in the realm of socioeconomic collaboration, and thus they initiate neither direct nor subsidiary revenue generation. As a result, a multitude of opportunities are lost from the human endeavor.

LIBERATING THE FUTURE

ARISING FROM A THOUGHT EXPERIMENT, Part Two of this treatise has deconstructed a broad array of socioeconomic, sociopolitical, philosophical, and psychological concepts:

- **Complexity via Human Expressions & Networks:** *Independence/Isolationist; Culture/Ideology-centric; Ecology-centric; Collaborative Problem Solving; and Exploration*
- **Complexity via Human Perceptions & Networks:** *Condition of Certainty vs. Non-certainty; Specialization vs. Generalization; Synthesis of Individual and Group Identity; Evolution from ‘How to Survive’ to ‘What to Experience’*
- **Liberating Complexity:** *Evolution from Protection to Free-flowing Transference of Value Exchanges*
- **The Language of Complexity:** *New Languages; Feedback Loops and Games; Network Dynamics*

The revelations gained from this deconstruction exercise demonstrate that both the masses as well as the elites are vastly unprepared for adapting to the complex web of evolutionary forces now quickening the human endeavor. But this exercise has also presented glimpses into what may be possible within a new fourth paradigm of human activity. In an effort to explore an alternative path for humanity to consider, and in so doing, begin to more effectively navigate the mysteries of complexity and evolution, this treatise now turns to radically reconstruct the concepts deconstructed above. It is here, however, that three cautionary caveats to the reconstructions are mentioned.

First and foremost, this treatise cannot pretend to present to the masses what the authors may discern to be *the* definition of the problem and solution, and then expect the masses to merely and unquestionably accept these definitions. If there is to be central epistle to this treatise, it is this: the elites cannot and will not ‘lead’ the masses to ‘the promised land’. Orthodoxy is too institutionalized for the elites to even question, much less challenge. Our human evolution cannot be facilitated by a mere election or vote. As uncomfortable as it may be to consider, the masses of the world, themselves, will have to find a way to reach out to one another and, together, move the world forward. Simply put, it is now time for the masses to do justice to their liberty and their potentialities by finally embracing their long-eschewed responsibility to more fully experience the worlds that exist around and within us all.

If humanity has all this time defined virtue as being the work they do, and if now we have reached the stage of human evolution where computer automation and AI will inevitably replace the labor that humans do, then the human experiment will have to redefine virtue itself. And certainly, this treatise is cognizant of the severity of this type of challenge and responsibility. Beyond the extreme challenges that would face the global masses to even enter into any process to explore its own evolution (which we will operationally address later), it is acutely acknowledged what Friedrich Nietzsche clearly observed: *“All things are subject to interpretation. Whichever interpretation prevails at a given time is a function of power and not truth”*. But this is where the human experiment now finds itself: at a crossroads. Either natural power will continue to be abdicated to those that seek only power for their own personal self-aggrandizement, or natural power will finally discover its true embodiment.

Second, and as a consequence of the above epistle, the radically alternative path to be explored below is meant only as one example of a multitude of alternatives that the masses might consider. This is only one vision, one discernment of tracing the breadcrumbs to see the patterns that now surround the human endeavor, and that might lead to a new fourth paradigm of human activity. Certainly, there may be other visions, other dis-

cernments. But hopefully, the alternative path presented below can spark amongst the masses a healthy and curious exploration of our human evolution.

And third, this treatise has endeavored to entwine two threads of stoic principles in search of sketching out a possible fourth paradigm of human activity:

[a] In the act of deconstructing the various orthodoxies that presently imprison us from the responsibility to evolve, we do not simply aim to provide a critique. Rather, we have endeavored to transmute these weaknesses to strengths. Examples of this: transmuting intellectual property protection to mass-collaboration; transmuting predictable and secure labor contracts to embracing risk and equity participation; transmuting retirement and education to life-long participation and contribution; transmuting nation-state socioeconomic paradigms to local-to-global socioeconomic paradigms.

[b] This treatise has taken substantial pains to remove as many as possible the various ideological ‘lenses’ that have come to animate humanity. This treatise does not intentionally attempt to give preference to ideologies of conservatism or liberalism, capitalism or socialism, or any other particular normative preference. Rather, this treatise attempts to allow the environment of the fourth paradigm itself to reveal the principles that naturally occur and govern this new environment. We have attempted to be guided within this futurescape by one universal concept: *virtue*. The moral excellence of this virtue, then, has quite naturally on its own, embedded its branches of honor, benevolence, empathy, and duty throughout this treatise.

CROSSROADS: NETWORKS AS LUXURY OR UTILITY?

On some future morning awakening within the youth of a new fourth paradigm, where computer automation and AI have provided all the world’s citizens with the basic necessities of human survival, one of these world citizens strides to a computer screen, confidently typing an entry into a database. In less than a blink of an eye, artificial intelligence begins to analyze the entire human history of this particular citizen, searching for pat-

terns of thought, imagination, experience, and even ignorance. At the same time, another branch of the AI code is scanning volumes of ancient and modern history, database entries made by millions of other citizens and institutions, perhaps even records stored in the archives of a long-gone music school, corporate supply chain data, transportation schedules and prices, weather patterns, a piece of intellectual property over here, a research paper half completed over there, and the telephone number of a person on the other side of the planet that just might help this citizen to make sense of the inductive patterns that the AI terminal is displaying this particular morning.

This is an example of network dynamics that magnetizes people together into relationships—for lifetimes, or for only a brief moment. No one controls this; no one can. Here, specialized networks mesh with *ad hoc* networks. Corporations mesh with citizens that may or may not be customers or even employees. Cultural knowledge meshes with unexplored territories of problem-solving. Tangible value meshes with intangible value.

And later that day, a group of dozens of global citizens gather in the home laboratory of one of these citizens. Some of those gathered are part-time scientists and part-time parents. Some are intrigued by ethical questions. Some are world-famous experts. Some are attempting to rediscover a passion that they left behind 50 years ago. This group begins an experiment. On this day, the experiment is focused on how to conceptualize and manage the undersea exploration of all Earth's bodies of water—from vast oceans to calm rivers. Everyone gathered possesses a universal understanding that billions of people cannot simply venture into uncharted and perhaps even fragile ecosystems all in the name of 'discovery'. And yet, billions of humans might very well be curious to participate in this type of experience. Exploration of nature has to occur in the most noninvasive way possible. How to resolve this challenge?

As the group ponders a specific photograph, AI scans the photo and broadcasts it into a database that generally only attracts the toughest of wildlife hunters. In this set of circumstances, the hardened hunters advise the group how best to approach a particular species in the most discreet way possible.

In multiple homes and institutional research labs dotted across the globe, 3D printers begin to print out technology prototypes that can be tested and integrated with existing technologies.

Within a few hours, the group has identified a working strategy and the various tools necessary to take a first preliminary scan of the Earth's bodies of water (using diverse techniques for diverse undersea environments). For those that would desire to participate in the exploration, but not intrude upon nature, virtual reality technology would allow them to interact with both nature as well as the physical exploration teams themselves (many of these VR participants, in the days that follow, might set aside their VR environments, and become active members of a completely different type of experiment—taking with them the knowledge and human relationships gained from this day's VR experience).

AI broadcasts these working strategies to thousands of corporations and other *ad hoc* networks spread throughout the world. Several of the networks tend to specialize in financing these types of explorations. Another part of the network assesses the overall governance of such a project, and perhaps as the sun is beginning to set on the initial group meeting, another part of AI code begins to notify another group of global citizens that when they are not exploring medieval architecture, these citizens have experimented with synthesizing multiple systems of laws and regulations to find the most effective and common path forward. This new group of citizens gather together in a video conference. Later that evening, this new group notifies the initial group of their recommendations, and these recommendations are incorporated into the global undersea exploration strategy.

In the middle of the night, a completely different group assembles to explore the day's events from a human inter-activity perspective, attempting to research how multiple psychologies and philosophies, in real-time, meshed together or conflicted, and to identify lessons to be learned from such an exercise. AI code reviews all the material accessed during the exercise and provides its observations into an ever-expanding database of knowledge and experience.

Eventually, this type of experiment conducted within the fourth paradigm of human activity might involve tens of thousands of individuals, entities, and networks, and billions of responses from AI installations around the world. No one ‘led’ the experiment. No one controlled it. But indeed, there was control. The control was organic, dynamic, attentive to the objectives of the experiment, while at the same time, attentive to the responsibilities of facilitating nature and diverse cultural attributes. Each step along this journey, *value* was created. The meshing of meta-networks facilitated these mass exchanges of value—tangible and intangible. The knowledge, know-how, and human relationships gained from this experiment is incalculable. Perhaps humanity discovers—in a very personal way—how Earth’s ecosystems operate. Perhaps humanity discovers that there are untapped food or energy sources that require deeper exploration and contemplation. Perhaps humanity rediscovers something lost of itself. Whatever the discovery, the human endeavor becomes infinitely wealthier. And perhaps wiser.

INTERDEPENDENT SOCIOECONOMICS

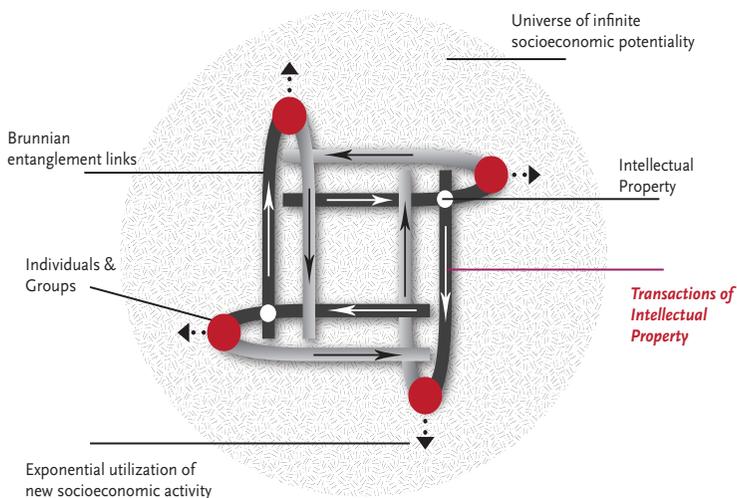
What practical reforms can be initiated to begin to set into motion the experiment outlined above, and an untold number of other experiments, activities, and collaborations, large and small? In an effort to sketch out these practical reforms, we will need to briefly step into the foreign world of *quantum mechanics*. This is important for two reasons. First, we need to attempt to visualize how humans might more effectively recognize and facilitate *human relationships operating via networks*. Second, we need to completely redefine the *econometrics of price and value*.

Quantum networks. A subset of quantum mechanics is *knot theory*: the study of mathematical knots. A central test in knot theory is to comprehend how each component of something which is knotted physically relates to all other components throughout the knot. In an embryonic attempt to apply the lessons of quantum mechanics (non-linear relationships) to the general field of socioeconomics, and human network functionality in specific, we use this knot theory to visualize the potenti-

ality of radically free-flowing exchanges of intellectual property and other intangible assets. One of many visualizations of knot theory is the *Brunnian link* model [Figure 19]. A Brunnian link is a *nontrivial* link that becomes a set of *trivial* unlinked components if any one component is removed. In other words, cutting any component frees all the other components so that no two components can be directly linked.

Each segment of the diagram represents an econometric input. Each Brunnian link represents only a single snapshot of a single moment in a single human interaction. Each person has a wide variety of interactions with others throughout the course of any day; each of these interactions possess their own unique substance and consequence. Depending on the size of the corporation or social community or the capacities of the individual, these diverse human interactions result in an almost infinite number of possibilities to create socioeconomic activity and value. Some might be micro-contributions, while others might be significant. Once a snapshot of a single human interaction is defined, the model can then become dynamic and free-flowing—somewhat like single frames of a photograph become a moving picture.

Fig 19 - A Brunnian link model as a visualization tool



Within each Brunnian link, somewhat like looking at the components of an atom, there exists various ‘particles’ which constantly interact with each other—some particles are individuals, some particles are groups, and other particles are intellectual property. Each of these particles, then, are given a set of econometric variables; and each variable is weighted against a set of larger socioeconomic principles—such as total level of global consumption; intrinsic value of global usefulness; and balance of market and social responsibility, etc. See **Figures 22, 23, and 24** for an illustration of this weighting process. In the authors’ original models initiated in 2005 to study the effects of an alternative form of a ‘global Marshall Plan’⁴², the method of assigning some numerical value to such an esoteric concept as ‘global usefulness’ was derived from energy expenditure and genetic replication models found in nature—essentially using biomimicry^{viii} as the method to visualize a numerically calculable value to human behavior.

In the intervening years, much has been learned with respect to developing alternative dynamic models of human behavior (particularly human behavior that may be irrational or arational). Undoubtedly, the original 2005 models will require much more input from a multitude of researchers. But, for the purpose of illustration, the following represents a brief summary of the new wealth potential resulting from these Brunnian link econometric calculations. But we reiterate, these calculations should only be considered illustrative, not authoritative.

We began the modeling exercise with three fundamental assumptions, which radically transforms how corporations and individuals operationally function within the fourth paradigm. These radical assumptions do not necessarily impact/govern corporations or individuals that act throughout the presently-existing three paradigms of human activity, but certainly may be voluntarily adopted by the three paradigms if so chosen.

viii **Biomimicry** is an approach to product innovation that seeks sustainable solutions to human challenges by emulating patterns and strategies found in nature. Janine Benyus has pioneered the concept of biomimicry not only as a method of innovation, but also as an opportunity for industry to generate revolutionary economic opportunities. See: http://www.ted.com/talks/janine_benyus_biomimicry_in_action?language=en

[a] All employees of a corporation are *autonomous*, legally and technologically enabled to exchange for value any and all of the corporation's or the individual's intellectual property, know-how, and experience with anyone else (contingent that the exchange is recorded via an expert system).

[b] All corporate shares are remodelled from their existing (simplified) objective to quantify the value that an investor might pay with respect to a corporation's position in a specialized niche of the financial market. Shares are remodelled to a much more complex and dynamic objective to quantify the corporation's position in a complete ecosystem of all sectors of the economic markets, and its interdependence with environmental health and sustainability models, energy expenditure, social well-being, and even global usefulness of the corporation's activities and knowledge-bases, etc.

[c] All corporate shares become a free-trading form of currency. The reason for the radical remodelling of corporate share instruments and valuations is this: consumption of a particular item, according to Adam Smith's Classical Economics orthodoxy, is supposed to undergo the crucible of seeking the 'natural' price via the magical hidden hand of the marketplace. But corporate share values, particularly in modern times, are absolutely disconnected from such a hidden hand crucible of marketplace variables. If there is anything that the financial crash of 2007/08 has revealed, it is that the institutional trading of shares is nothing more than either, at best, a gambling adventure, or at worst, an often corrupted 'pyramid' scheme. In our present orthodoxy of share trading, one can even bet *against* a corporation or an entire industry. As shares become a free-trading form of currency, this currency regains Hayek's principle that money should be the regulator of the market. In the fourth paradigm, however, money is 'weighted' by the value that society places upon the complete ecosystem of human activity.

Quantum relationships & consequences. By exploiting this type of quantum distributive network paradigm, the Brunnian link models reveal radical growth opportunity. It is important to note that a substantial percentage of the growth emanates from mass exchanges of intellectual property.

In the two following tables, we show the consequences of the Brunnian link model upon three types of entities:

A – a large corporation, comprised of 400 employees, and beginning annual sales revenues of US\$ 2 billion.

B – a SME, comprised of 50 employees, and beginning annual sales revenues of US\$ 100 million.

C – an *ad hoc* collaborative consortium, comprised of 1 large corporation (400 employees), 3 SMEs (total 75 employees), 100 independent entrepreneurs (a total of 575 employees), and beginning annual sales revenues of US\$ 3 billion.

Fig 20 - Consequences of Brunnian Link model: corporate

	Beginning Value	Brunnian Value	%
	Sales (US\$ millions)		Growth
A. Large Corp.	2,000.0	8,000.0	300%
B. SME	100.0	118.8	18%
C. Ad hoc consortium	3,000.0	15,937.5	431%
	5,100.0	24,056.3	371%
	Share Value (US\$ millions)		
Large Corp.	500.0	735.7	47%
SME	12.5	26.8	114%
Ad hoc consortium	750.0	1,244.2	66%
	1,275	2,006.7	57%

Fig 21 - Consequences of Brunnian Link model: individual income

Beginning Salary per Employee (US\$)	30,000	Brunnian Value				
		Total Salaries US\$ M	Sales Commission US\$ M	Shares Value US\$	Total Revenue US\$ M	Total Per Employee US\$
Large Corp.		12.0	233	246,648	245	611,867
SME		1.5	47.3	83,031	48.9	978,535
Ad hoc consortium		17.3	226	410,585	244	424,347
		30.8	506.3	740,264	537.9	

Notes about **Figure 20**:

Note 1: A test group of 12 existing large corporations with 400 or more employees, and 24 existing SMEs with 25 or more employees, was used to establish average revenues, share valuations, and supply chain relationships. The Brunnian link model primarily used these supply chain relationships to establish entity-to-entity and employee-to-employee connectivity. An example of this: an employee that works with plastics often also has access to managing the stock of plastic on hand—and thus has direct contact with the supply chain. At present, the employee's relationship with a vendor is limited. But the Brunnian link model liberates the employee to establish much wider relationships, including the exchange of intellectual property.

Note 2: It can be observed that the *sales growth* of the SME is minor (18%) in comparison to the large corporation and ad hoc consortium, but that the *share value* growth (114%) is substantially higher in comparison. This is due to two factors: [a] a large corporation has the capacity to scale-up production output, the SME less so; and [b] IP is exchanged for shares. Thus, \$1 of IP revenue expressed in shares and earned by an SME is distributed to a smaller number of employees, where that same \$1 earned by a large corporation is distributed to a larger number of employees.

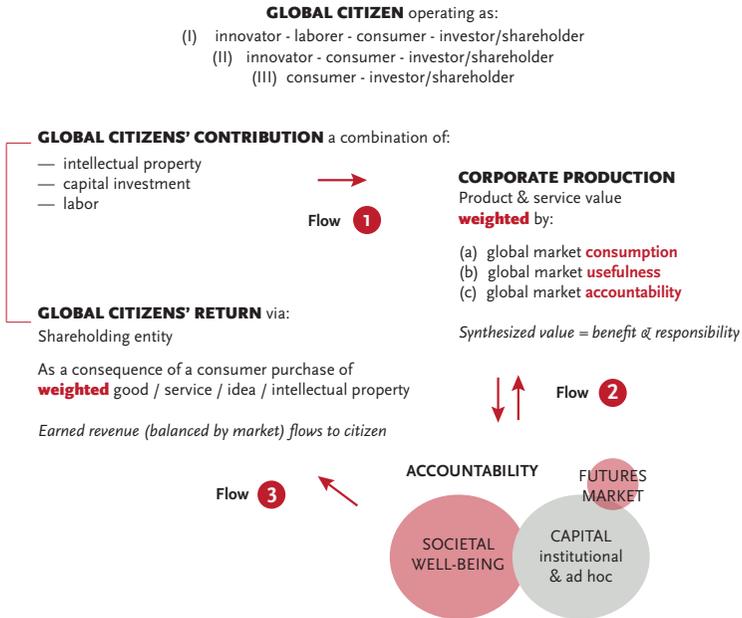
Note 3: Intuitively, the *ad hoc* consortium might be expected to perform better. But due to the large corporation, the dynamics as described in Note 2 above affects the overall performance.

Notes about **Figure 21**:

Note 1: A starting average annual employee salary of US\$ 30,000 was used to create a nominal baseline. Again, the primary source of new revenue for the employee is derived from exchanges in IP and know-how, which is expressed in corporate shares.

Note 2: Wealth creation is partially offset by a potential substantive rise in consumer goods prices to reflect the more complete valuations of costs/benefits with respect to environmental impacts as well as social well-being, etc. (depending on the level of human labor versus automation and AI production inputs). This will be illustrated in the next section.

Fig 22 - A Brunnian link model of price and value



Quantum value. Now, the Brunnian link facilitated modeling exercise is utilized to completely redefine the *econometrics of price and value*. **Figure 22** illustrates a more dynamic and responsible (ecosystem wide) formulation of price and value.

To explain these more dynamic and responsible flows of price and value: Classical Economics has persistently suggested the more a product is consumed, production economies of scale allow the product to be produced in a manner that consistently lowers the cost of production. At the same time, consumers apply pressure to consistently lower the end-user purchase price—which stimulates even greater consumption. The long-term impact of this orthodox valuation process, however, is that no one along the innovation-to-consumption chain directly shoulders the responsibilities of society (societal well-being, protection of the environment, protection from slave labor, etc.). Any thought or action of self-restraint has been relegated almost exclusively to the ever-burgeoning legal and regulatory systems. Adam Smith’s ‘hidden hand’ concept, in a complex ecosystem, is no

longer realistic. Accordingly, so as to provide an evolutionary facility for all economic actors to directly balance self-initiative with self-restraint, the valuation process of goods and services is redefined by a socioeconomic *interdependent* model. As **Figure 22** illustrates, any single purchase of a good or service is no longer an isolated or unrestrained exchange of the product/service for a price specified between only two parties (the buyer and seller). In an ecosystems-wide and interdependent market, value and price are also determined—directly, and in real-time—in concert with inputs from society at large. We illustrate three flows of activity.

Flow 1: The consumer is not merely a consumer of a product; the Brunnian link entanglement process recognizes that any global citizen, in any moment, might have contributed intellectual property to any venture, or in another moment, might have consumed a substantial quantity of some other product or service. Depending on how ‘entangled’ a person might be, this becomes part of the final price-to-value determination.

Flow 2: Relating to the product/service itself, the entanglement process considers: [a] total level of global consumption; [b] intrinsic value of global usefulness; and [c] balance of market and social responsibility. These inputs are harmonized with conventional cost and profit inputs originating from the producing entity.

By interweaving these two flows, a more responsible economic model to determine price-to-value can be established. In an entanglement process, the more a product is consumed on a global scale, the greater its value to and burden upon society. In other words, if product x was consumed by 25 percent of the global population, its value (consumer purchase price) might be US\$ 1.00. However, if product x was consumed by 75 percent of the global population, then its value (consumer purchase price) might be US\$ 1.25. Thus, value is determined not by labor-value, but instead, by a transparently visible (and persistently fluctuating) socioeconomic weighting process—*synthesized value*. Capital and futures markets become more responsive to the moment-to-moment requirements of the market. This removes the incentive to divert capital away from the general market-

place and toward an isolated market where off-balance sheet financial speculations occur (such as into the Shadow Banking System [SBS]). Thus, the very definition of ‘price’ is expanded beyond merely the conventionally ‘directly visible’ costs (raw materials/stock, machines, labor, advertising, etc.), to include the more indirect and long-term costs to the environment and society at large in extracting, using, and discarding production assets and the finished product itself.

Flow 3: All global citizens are shareholders in corporations of their choosing. These *consumer-shareholders*, then, receive moment-to-moment dividend payments from each good, service, and intellectual property consumed. This radical transformation of value quantification from *labor-value* to *synthesized-value* occurs as a consequence of humanity evolving what specifically it produces and consumes (values) in the new fourth paradigm of human activity. If, as an example, humanity chooses to embrace the vision of wise exploration of space, oceans, land, and even the human self and community as its fourth horizon—then this new socioeconomic activity will, in within itself, possess an intrinsic element of moral value which re-knits the fabric of social order in a manner that inspires the best and most honorable part of ourselves. It is quite easy to discard a used fast-food package onto the street when its short-term utility is expended. But it is vastly more difficult to discard a human being who is teaching you how to breathe several hundred meters under the ocean. Since we, ourselves, become the economy, we materially transform what we value and how we quantify and exchange this value. This is how we become global citizens.

Interdependence. We can now visualize how value is synthesized as a new and evolutionary principle of socioeconomics operating within a fourth paradigm of human activity. **Figure 23** [next page] illustrates that as widely dispersed assets of value are synthesized, all but one asset converges into a direct nexus. The asset of *innovation focus* does not converge because the potential for innovation is always greater than initially perceived by individuals and society. The infinite possibilities of the mind cannot converge because these possibilities provide the spark to ignite all latent socioeconomic behavior.

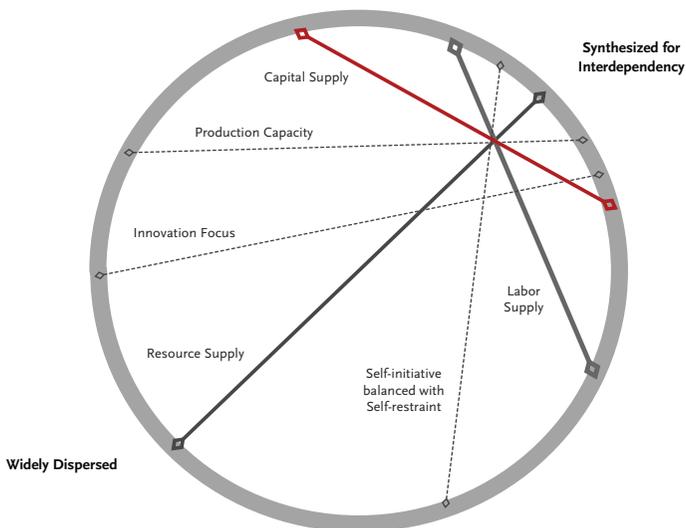
Fig 23 - Synthesizing value (part 1)

Figure 24 [next page] illustrates the synthesized socioeconomic process and how multiple values are balanced to arrive at an *ecosystems-wide* recognition of aggregate value of any product. By redefining the concept of value in this way, three consequences are realized.

[a] As all consumers initiate a purchase, all the components (from innovation value and production value, to environmental responsibility and social responsibility value) contained within the product are visibly reported to and considered by the consumer.

[b] As the aggregate consumption volume and/or price of any specific item rises (weighted by environmental and social responsibility value), this causes a systems-wide rise of innovative focus targeting this specific item.

[c] Individuals are no longer seen as mere labor or mere consumers, rather, they become dynamically linked into the benefits of consumption and the responsibilities of innovation. Thus, this authentic and responsible identity/experience, itself, becomes the value.

Fig 24 - Synthesizing value (part 2)

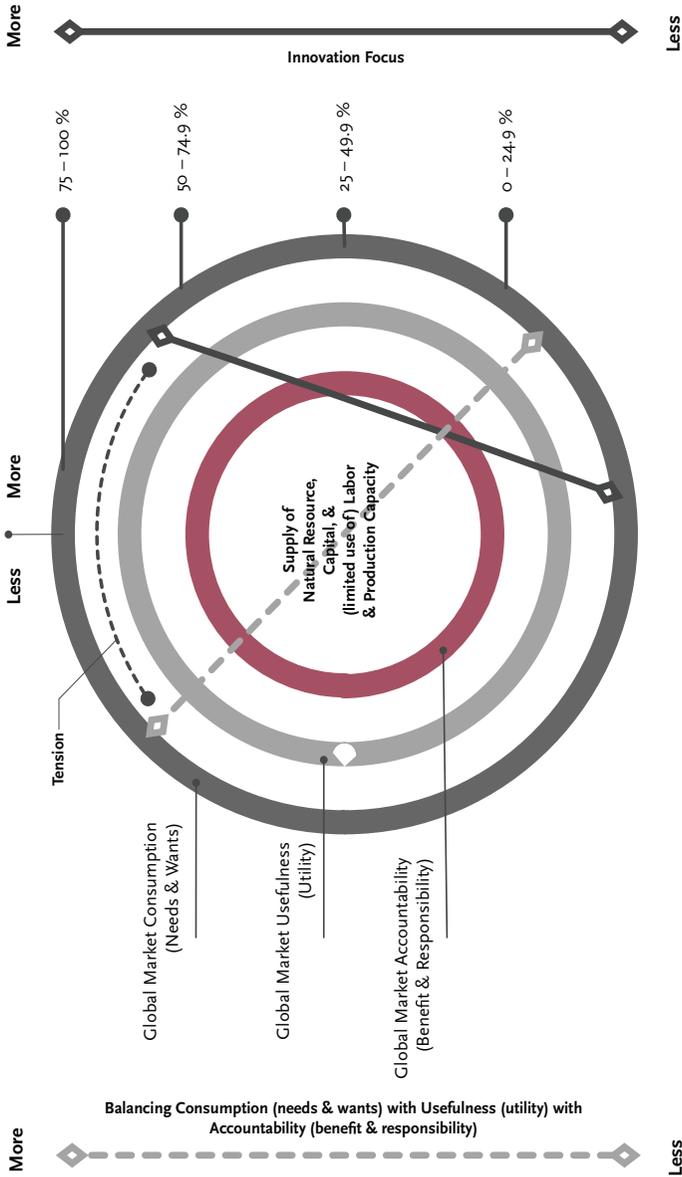
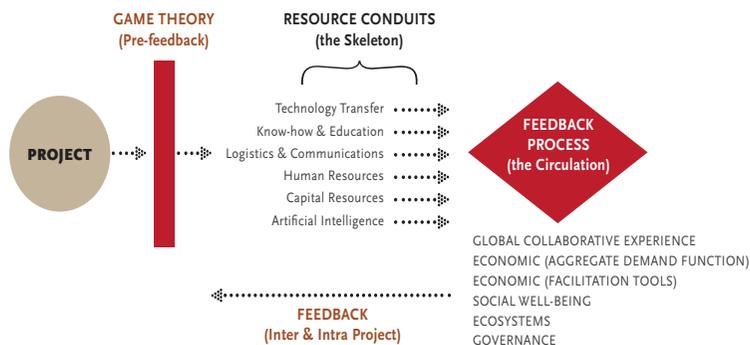


Fig 25 - Synthetic Negative Feedback Loop

SYNTHETIC GOVERNANCE

Obviously, the above *seeding* process of redefining value to include responsibility opens a whole ‘can of worms’ with respect to governance. Here, we address the synthetic operational infrastructure and processes necessary to facilitate global interdependence within a fourth paradigm of human activity. In the final chapter, we address the wider existential consequences to the foundations of ethics and morals to be faced by all of humanity as we contemplate our own evolution as a species.

Figure 25 illustrates a *synthetic negative feedback loop* architecture designed to—in real time—anticipate, rapidly facilitate, and hold accountable the local-to-global development of knowledge and best practices that are to occur within a fourth paradigm. Assume a self-organizing group is considering to implement some collaborative project. Early in its planning stage, the group may determine it is worthwhile to test its underlying theories or objectives within a gaming model. Exploring various strategies to produce various outcomes, the group decides on a general strategy. Serving as a skeleton for the feedback loop is a series of *resource conduits* which entwine the primary resources required to achieve its objectives in a socioeconomic interdependent manner. These conduits are distributed anywhere

and everywhere throughout the world—like ‘plugging into’ any electric grid. The resources entwined with these conduits range from technology and knowledge transfer and capital resources to human and artificial intelligence resources. These conduits are the connecting joints by which local individuals/entities/communities directly interface with any other resource so as to collaborate on any given project. By constructing this conduits process for each community’s diverse and unique assets to be globalized, the uniqueness of individual skills and social cultures can be liberated from outdated orthodox market dependencies and geopolitical constraints, as well as past experiences of isolation and disenfranchisement.

Generally, each conduit resource is comprised of private individuals, small and large corporations, universities, government agencies, interest groups, capital and natural resources, 3D printing labs, AI networks, etc.—which all feed knowledge, information, technology, know-how, market experience and necessities, etc., throughout the local-to-global network of conduits. By synthesizing the discernments gained from both the failures and successes of past and current projects, then, new synthetic project management strategies can now be envisioned and developed so as to more effectively and wisely implement projects on a dynamic local-to global scale.

Then, operating as the ‘disturbance mechanism’ of the feedback loop are the various components of societal and ecosystem norms and objectives that would be impacted by any project (and its relationship with all other projects operating throughout the world). These normative-based *process networks* serve as the ‘circulatory system’ of the fourth paradigm—entwining inputs such as collaboration and aggregate demand facilitation, social well-being, environmental protection, and governance facilitation.

This example of a synthetic negative feedback loop is not a utopian vision; they already exist. In the U.S., these negative feedback loops are being utilized, albeit in very controlled environments, by formal technology transfer organizations dotted throughout the country. Each tech transfer office interfaces with a myriad of innovating corporations, a web of other corpo-

rations that might benefit from the intellectual property emanating from innovation, and research labs used to experiment and test subsidiary products and services resulting from these collaborations. The banking sector has long used their proprietary negative feedback loops to effectively manage global financial transactions made by individual bankcard consumers, merchants, banks, regulatory agencies, and clearinghouses. Transnational corporations also utilize negative feedback loops so as to more effectively manage sophisticated supply chains.

The only real innovation that this treatise is attempting to communicate is that negative feedback loops can be implemented by and for the masses. The fundamental challenge to accomplish this, however, relates to complexity. But as we have all witnessed, entwining human relationships with emergent artificial intelligence networks is not only possible, but may now be a seeming imperative.

MONOPOLIES & SELF-ORGANIZATION

Corporation as monopoly. In the earlier descriptions of **quantum networks**, we described all employees of a corporation as being *autonomous*, legally and technologically enabled to exchange for value any and all of the corporation's or the individual's intellectual property, know-how, and experience with any one else. This seems to challenge the autonomous nature of the corporation itself. Throughout our long and prosperous history of Classical Economics, it has been the autonomous nature of corporations which has provided a national society with the sheer organizational capacity and agility to produce wealth. But as we can now see, it is the institutional hierarchical controlling architecture which now heavily burdens the modern corporation. The modern corporation has become elephantine; a monopoly that no longer serves the greater good, but rather only itself. It is now the globally-interconnected individual which possesses sheer organizational capacity and is agile.

Adam Smith, in his *The Wealth of Nations*, critiqued the monopolies of his time (state-granted monopolies that controlled the production and trade relating to everything from salt to

manufactured products) not only from a normative perspective, but also from an innovation and efficiency perspective. Smith was particularly concerned about monopolies that required substantive public financial support for such costs as military protection and infrastructure—yet, the general public received little to no direct benefits from the trade of these monopolies.

The trade to the East Indies has, in every European country, been subjected to an exclusive company. Monopolies of this kind are properly established against the very nation which erects them. The greater part of that nation are thereby not only excluded from a trade to which it might be convenient for them to turn some part of their stock, but are obliged to buy the goods which that trade deals in somewhat dearer than if it was open and free to all their countrymen. Since the establishment of the English East India company, for example, the other inhabitants of England, over and above being excluded from the trade, must have paid, in the price of the East India goods which they have consumed, not only for all the extraordinary profits which the company may have made upon those goods in consequence of their monopoly, but for all the extraordinary waste which the fraud and abuse inseparable from the management of the affairs of so great a company must necessarily have occasioned.

*The cruellest of our revenue laws, I will venture to affirm, are mild and gentle, in comparison to some of those which the clamour of our merchants and manufacturers has extorted from the legislature, for the support of their own absurd and oppressive monopolies. Like the laws of Draco, these laws may be said to be all written in blood.*⁴³

By introducing ‘competition’ into the market, Smith passionately argued that individual consumers—who were also the source of labor—would be a substantially more dynamic and efficient generator of wealth. Additionally, innovation and efficiency would be stimulated at an exponential rate—thus more

robustly and rapidly could the nation's overall wealth grow. Are we not in the very same predicament now as was Smith's marketplace? Are not most corporations only benefiting a limited number of shareholders, and not a national society with respect to stimulating the wider distribution of innovation, efficiency, and subsidiary wealth generation?

This treatise, however, is not advocating in the slightest that today's corporations should be somehow compelled to be broken up or otherwise 'democratized'. We state this for two reasons: first, as the earlier section described, by radically *self-reforming* how a company facilitates the wealth generation of its intellectual property assets as well as its shareholding strategy, the company would experience exponential growth in its revenues. By *self-reforming* their hierarchical-controlling network mentality to one of a local-to-global distributive network would organically transform a monopoly with limited linear scope to a global utility with almost unlimited non-linear possibilities. And second, the masses would need to be prepared to undertake the responsibilities of participating in such a local-to-global distributive network—and presently, they are not.

All the technologies necessary for the masses to self-organize and develop and explore a new fourth paradigm of human activity are already available. This was not quite true just 10 years ago. But now, particularly with the exponential rise in artificial intelligence, it is now there for the taking. Yet, few have thus far dared to consider self-organizing. The following three examples demonstrate quite diverse explanations for the countless opportunities missed on a daily basis.

[a] At the beginning of this 21 century, the city administration of a large U.S. city had made a determination that it would no longer attempt to manage the city's network of parking meters, and had made this decision public. Almost immediately, local merchants had written letters to the city administration as well as the press that this would likely mean that some private management company would take control, and raise parking rates so as to maximize profits (and importantly, discourage customers from parking in the vicinity of the city merchants). And indeed, this is exactly what happened. But nothing pre-

vented the merchants from self-organizing to provide the parking management services. The technology and knowledge were readily available. All that was missing was the will of the merchants to collaborate.

[b] The online retailer, *Amazon*, utilizes sophisticated distributive network technologies to manage not only its own operations, but these technologies also have access to the proprietary internal operations of all merchants selling via the *Amazon* platform. This means that *Amazon* knows what supply chain relationships each merchant possesses, and can easily exploit the strengths and weaknesses of these supply chain relationships for its own benefit, and even develop goods/services that might eventually compete with the merchant. In the main, merchants are narrowly focused on the day-to-day operations of running their specific business, not on self-organizing with other merchants so as to exploit non-linear opportunities.

[c] Child care facilities often charge a 'punitive fine' for parents who are late in picking up their children. Parents pay the fine. But they often feel they are being victimized by the day care center monetizing the parents' human circumstances. There is a magical assumption that the markets are somehow separate from the masses, and that some external life-force somehow possesses the soul and institutions of the markets to imprison the weak and powerless masses. The philosopher Michel Foucault strenuously argued against this 'institutions influence us' magic because almost every institution that exists throughout all aspects of human civilization does so for the inherent purpose to perpetuate some articulated or unarticulated (conscious or subconscious) will of society.

What if the parents had self-organized to sit down with the owners of the child care facility to discuss the human elements of what was happening? As a result of this more human dynamic, the community might have discovered some collaborative approach which addressed not merely the symptom of the problem (parental lateness), but the problem itself (the day-to-day dynamics of child care and parenting). Perhaps someone in the community might have been inspired to start an in-house arts and crafts project for children, or establish a relationship with

active elderly volunteers (helping both young and old). What exactly is the will of society?

Each and every day, these types of challenges and opportunities arise. How have we, as a human species, so far managed these conditions? Evolving into a new fourth paradigm of human activity that is sure to come in one form or another, how will our *species nova* manifest its social will?

7+ billion questions. We began this Part Two journey with a thought experiment. Within the next 10 to 20 years, automation and artificial intelligence provides all 7+ billion humans cohabiting this world with the essentials of basic survival—food, shelter, and clothing. This would facilitate the masses to explore a new *fourth paradigm of human activity*—the mass exchange of more cognitive-based intangible assets. Additionally, we intimated we would address how these essentials might be distributed throughout the masses, and who owns the technologies which produce these essentials. There are three interlinking components to this challenge which require examination.

The first relates to the socioeconomic and sociopolitical dependence upon the existence of certain types of formal monopolies, particularly *natural monopolies* which supply and maintain our fundamental infrastructures. A natural monopoly is a monopoly within an industry where high infrastructural costs and other barriers to entry relative to the size of the market give a particular supplier an overwhelming advantage over other suppliers. This frequently occurs in industries where capital costs predominate, such as the public utilities of water services and electricity. The second relates to the marginal cost of production—the cost to the company of serving one additional customer. The third relates, perhaps obviously, to the question of how to finance such an enterprise.

Natural monopolies. For the purposes of this exercise, we constrain our thesis to the potentiality of a *natural* monopoly as it particularly relates to energy production and distribution and telecommunications infrastructure. It is perhaps unlikely that society as a whole would significantly benefit from some forced ‘democratization’ of these particular iterations of natural monopolies. The capital and knowledge requirements to construct

and maintain a globally accessible energy and telecommunications network would almost certainly be beyond the capacity of the masses to acquire, at least initially. However, we posit two significant caveats to this view.

The first caveat relates specifically to the self-reform of energy production monopolies. Much of the world's present energy monopolies have been almost exclusively structured around their dependency upon non-renewable resources of fossil fuels. Because of their monopoly status, they have been—until the past decade or so—aggressive opponents to expend capital resources to the development of renewable resources of energy, such as solar, wind, and the like. Likewise, consumers have been resistant to subsidize these capital costs (as well as the environmental costs) via higher consumption cost or tax appropriations. For these natural monopolies to fulfill the existential benefit of society as a whole, energy production would need to self-reform and abide by three base mandates of society.

[a] Energy production would be based predominately on renewable resources.

[b] Micro-producers would be efficiently and equitably integrated into national power grids (any individual or group of individuals could be a micro-producer).

[c] Consumers would pay for the ecosystem-wide costs of energy production.

The second caveat relates to natural monopolies in general, and their self-reform to adopt evolutionary forms of business models. The conventional business model is one where a consumer pays a standard rate for every unit of energy used, or for that matter, for every light bulb used. But these may be short-sighted business models. The mind-set of innovative consumer companies and their emergent business models and technologies could be leveraged by natural monopolies. Consumer companies such as *Philips*, *Siemens*, and *Samsung* are implementing 'Light as Service'/'smart lighting' business models, which facilitate the consumer to evolve from purchasing a material light bulb to purchasing light itself. When we alter our long-held perceptions that light originates specifically from a material product called a 'light bulb', we become cognizant that a

multitude of other sources of light are readily available—from architectural design better facilitating natural ambient light, to sophisticated ‘smart lighting’ technologies purposefully embedded into the *Internet of Things* [IoT].^{ix} As the concepts relating to **quantum networks** and **quantum value** demonstrate, natural monopolies are no different than any other corporation. They possess vast and untapped resources of revenue embedded within their know-how, data, and human resources. But their hierarchical systems of control have become elephantine; it is now the globally-interconnected individual that is agile. If natural monopolies were to self-reform their controlling business models to an interdependent paradigm so as to more effectively exploit and facilitate dynamic mass exchanges of intangible assets, they would thus create new resources of wealth not only for themselves, but also for untold employees and consumers. Unless and until these two caveats are fulfilled, natural monopolies (or any other form of monopoly) would possess no moral foundation to exist.

Marginal cost of production. There are two contrasting perspectives to the marginal cost component: *analytic* and *synthetic*. As mentioned above, the embedding of various physical devices and appliances into mass distributive networks of sensors and exchangeable data is referred to as the *Internet of Things*. In a 2001 speech delivered at the Federal Reserve Bank of Kansas City which predated the emergence of the IoT, Lawrence Summers, former U.S. treasury secretary, and J. Bradford DeLong, professor of economics at the University of California, Berkeley, presented their *analytic*-based outlook on the impact that communication technologies would have on the corporate sector. Indeed, they observed that communication technologies would significantly reduce the marginal cost of producing and

ix **The Internet of Things** [IoT] is the network of physical devices, vehicles, home appliances and other items embedded with electronics, software, sensors, actuators, and connectivity which enables these things to connect and exchange data, creating opportunities for more direct integration of the physical world into computer-based systems, resulting in efficiency improvements, economic benefits and reduced human intervention. The number of IoT devices increased 31% year-over-year to 8.4 billion in 2017 and it is estimated that there will be 30 billion devices by 2020. The global market value of IoT is projected to reach \$7.1 trillion by 2020.

transmitting information goods to near-zero. They framed their presentation using two distinct models of economics.

If we call the economy of the past two centuries primarily “Smithian,” the economy of the future is likely to be primarily “Schumpeterian.” In a “Smithian” economy, the decentralized market economy does a magnificent job at producing economic welfare. It is easy to decentralize decision-making and control, pushing responsibility for allocation away from the center and to the more entrepreneurial periphery where information about the situation on the ground is likely to be much better. The competitive paradigm is appropriate as a framework to think about issues of microeconomic policy and regulation.

In a “Schumpeterian” economy, the decentralized economy does a much less good job. Goods are produced under conditions of substantial increasing returns to scale. This means that competitive equilibrium is not a likely outcome. The canonical situation is more likely to be one of natural monopoly. But natural monopoly does not meet the most basic condition for economic efficiency: that price equal marginal cost. Forcing prices to be equal to marginal cost cannot be sustained because the fixed set-up costs are not covered. Relying on government subsidies to cover fixed set-up costs raises problems of its own. It destroys the entrepreneurial energy of the market and replaces it with the groupthink and red-tape defects of administrative bureaucracy.

Moreover, in a Schumpeterian economy, it is innovation that is the principal source of wealth—and temporary monopoly power and profits are the reward needed to spur private enterprise to engage in such innovation. The right way to think about this complex set of issues is not clear, but it is clear that the competitive paradigm cannot be fully appropriate.⁴⁴

Summers and DeLong, without knowledge of the yet emergent *Internet of Things*, seemed to have made a quite prescient

prediction of our present state of socioeconomic affairs. As production costs have declined to near-zero, profits have correspondingly risen—creating substantive income and wealth inequalities. Their *analytic*-based outlook went further to assess this paradox created by the expansion and monopolization of innovation.

This particular explosion of technology has had profound consequences for how we organize production. It has consequences for the type of goods we value. We used to live in an economy in which the canonical source of value was an ingot of iron, a barrel of oil, or a bushel of wheat. Such economies were based on knowledge just as much as our economy is, but the knowledge was of how to create a useful, physically embodied good. We are moving to an economy in which the canonical source of value is a gene sequence, a line of computer code, or a logo.

The most critical issues, however, are those that revolve around intellectual property. It is a fact that we today simply do not know yet how to make the intellectual property system work for the “new economy.” Back in the Gilded Age, intellectual property as such was not such an important factor. Industrial success was based on knowledge, but on knowledge crystallized in dedicated capital. Many people knew organic chemistry. Few companies—those that had made massive investments—could make organic chemicals. Today, it appears that intellectual property is rapidly becoming a much more important source of value. One response would be to reinforce the rights of “owners.” The underlying idea is that markets work because everything is someone’s property. Property rights give producers the right incentives to make, and users the right incentives to calculate, the social cost of what they use. It is clear that without strong forms of protection of property rights, a great many useful products would never be developed at all. This principle applies as strongly to intellectual as to other forms of property.

But with information goods, the social marginal cost of distribution is close to zero. One of the most fundamental principles of economics is that prices should be equal to social marginal cost. In this case, strong intellectual property rights have the potential to decrease economic efficiency by driving prices away from marginal social costs. Thus, different economic principles cut in different directions. If information goods are to be distributed at their marginal cost of production—zero—they cannot be created and produced by entrepreneurial firms that use revenues obtained from sales to consumers to cover their costs. If information goods are to be created and produced by businesses that face the right incentives to explore new paths, they must be able to anticipate selling their products at a profit to someone.

If the government is to subsidize the creation of information goods, the government needs mechanisms to determine in which directions the subsidies should flow, and government bureaucracies have never been able to choose and assess the directions of applied research and development very well. Mainstream academic economics has long underestimated the importance of Hayekian insights into market competition as a discovery mechanism, of the entrepreneurial advantages of private enterprise, and of the administrative defects of overly rigid systems of top-down control that come with centralized funding.

We know that markets and the spur of competition are the best producers of applied knowledge. But we do not know how to use markets and competition for this purpose, as far as information goods are concerned, and still satisfy the economic principle that final consumers should pay no more than marginal cost.⁴⁵

Hence, we arrive at a *synthetic* resolution to the marginal cost paradox. Two central issues need to be confronted. First, the purpose of innovation itself. The ‘Smithian’ purpose of in-

novation was to increase production efficiency so that a distributive-based marketplace of mass consumers could benefit. But the present ‘Schumpeterian’ purpose of innovation is to merely increase a monopoly hold on the marketplace. As recent events have demonstrated, the monopolies of *Facebook* and *Google* exploit innovation for their exclusive benefit of increasing advertising revenues, not for the masses to benefit from the socioeconomic utility of collaborative distributive networks. As we have discussed throughout this treatise, if these types of monopolies were to self-reform and rediscover the ‘Smithian’ purpose of innovation, a vast fourth paradigm of wealth potential would be unleashed.

Second, the protection of intellectual property rights. The *analytic*-based ethos of *commons*-based initiatives as discussed in Part One, views intellectual property as the Mephistophelian locus of monopoly control, and thus, these initiatives aim to either ‘democratize’ or even abolish intellectual property protection in specific, and the capitalist profit motive in general. This treatise, in contrast, has demonstrated that a synthesis of *private ownership*—particularly the ownership of intellectual property—and *mass collaborative distributive networks* as described herein, could enable vast wealth generation potential throughout the entirety of society. Wealth that is synthetically defined by both financial and transcendent wealth.

This type of synthesis, then, provides two interweaving foundations to serve the human endeavor. First, an intangibles-based socioeconomic marketplace would exist for society to perpetually challenge itself to quantify and qualify the benefits and consequences of *value*. Value of and to the individual, and simultaneously, of and to society as a whole. Adam Smith’s axiom: simultaneous self-regarding and other-regarding. Second, we do not know what the future holds in store for the human experiment. But we can safely assume that great and perhaps even grave challenges await us. Our *species nova* will need every asset of value we can enable and nurture. As a consequence of the exponential rise in automation/AI, collaborative distributive networks, and the *Internet of Things*, it is now the individual and discreet *ad hoc* groups that possess agility. The existential

challenge, however, is that at present, our cognitive and moral muscles have been allowed to atrophy. We need exercise. And, we need each other.

Money. If we are to somehow provide 7+ billion humans with the basic essentials of survival, then a vast volume and velocity of intellectual property and local-to-global production capacity will be needed. Millions of 3D printing machines (additive manufacturing), large and small, would need to be deployed throughout labs, corporations, and homes. Billions of intellectual property designs would need to be exchanged—some uploaded for free use; some for value exchanges. Natural monopolies, if self-reformed, would need to operate in a synthetic relationship, interweaving both market and societal principles. A planet of global citizens acting as micro-producers/micro-innovators would need to share in the responsibilities as well as the benefits of the marketplace. To finance this endeavor, four options are worth consideration.

[a] *More effective use of present wealth.* A 2017 Johns Hopkins University study ⁴⁶ found Americans throw away 31 - 40 percent of the food they buy. If all U.S. food waste was recovered, this could provide a 2,000 calorie diet to 84 percent of the population. This is only one from a multitude of examples of the severe resources misallocation that 21st century luxury-centric consumers cause. If the masses were to embrace personal responsibility, these types of misallocations could be more effectively allocated to generating direct and subsidiary value throughout the marketplace. This might be referred to as a *bottom-up approach with non-linear consequences*.

[b] *Corporate self-reform.* If corporations were to self-reform and adopt the fourth paradigm concepts relating to **quantum networks** and **quantum value** as was presented earlier, vast new resources of intangible, human, and financial wealth could be unleashed. This might be referred to as a *top-down approach with non-linear consequences*.

[c] *Communities assisting communities.* Each community possesses unique strengths and weaknesses. Once one community begins to evolve into and develop its particular iteration of fourth paradigm human activity, this community can exploit its

newly generated wealth as direct investment into other communities. In turn, each new community generates new wealth, and directly invests into other communities. Eventually, this would result in a critical mass of new socioeconomic relationships, and formally establish a new fourth paradigm of human activity. This might be referred to as a *critical mass approach with non-linear consequences*.

[d] *New processes of currency creation*. It is now clear that the overwhelming majority of circulating currency is created by individual commercial banks as a consequence of issuing real estate loans (*endogenous fiat currency*). Banks are no longer the aggregators of money; they are the creators of money. Money is no longer the regulator of the market; real estate is now the regulator. Certainly, governments—via central banks—issue new currency (about 3 percent of total money in circulation). But even this government-created currency is a consequence of a loan instrument—typically in the form of a national sovereign bond. Money no longer originates from a treasure of gold or silver; money is merely a number on a balance sheet—a representation of value being exchanged.

Over the past decade, a host of cryptocurrencies have emerged, to varying degrees of acceptance and utility. But most cryptocurrencies share one particular thing in common. They attempt to create value in the currency itself, rather than to allow the currency to simply be a representation of value being exchanged. Similar to the scarcity of gold or silver—and how the market values this scarcity—cryptocurrencies attempt to exploit the scarcity of resolving a complex computer algorithm to mimic the scarcity of a precious metal. Thus, a market is created for the trade of these cryptocurrencies in much the same way the market trades in valuations of gold or silver. This may be a profitable, yet short-sighted misallocation of capital resources.

The primary reason commercial banks are able to create currency from real estate lending is that the real estate, itself, is collateral. Real estate is simultaneously unique and universal. Unique in terms of the inherent utility or potential of a specific parcel of real estate. Universal in terms of the fact that real estate is, quite obviously, a globally recognized asset to be traded.

The question then becomes—and this is a genuine question that this treatise cannot technically or legally answer—can there be a synthesis between how a commercial bank creates currency, how a central bank operates, and cryptocurrencies?

Ingredient a: The role of a central bank is essentially to operate as an impartial arbiter of a government's demand for new currency—to make sure the government has a specific strategy to create new value from this currency demand. Again, the central bank has no tangible assets at risk; the transaction merely takes place on a balance sheet. It is just numbers on a computer screen. *Ingredient b:* The role of a commercial bank is to create currency from real estate—but the commercial bank is not inherently invested in a particular strategy or outcome, other than receiving repayment and a commission. The bank does not actually care what happens on the real estate, other than money being made. *Ingredient c:* Cryptocurrencies are also fiat currencies created by anyone with a computer powerful enough to solve an extremely complex algorithm. Anyone can create a new iteration of a cryptocurrency.

Synthesis: Is it possible for a global network of localized community entities to operate as an impartial arbiter of each community's demand for new currency? Is it possible for these local-to-global entities to issue new currency not as a debt instrument, but rather as an equity position in the strategic activities of the market—thereby participating in both the risk and rewards of their investment? Is it possible for the ever-growing sophistication of artificial intelligence to utilize inductive reasoning to see, react, and even to predict patterns in socioeconomic activity and behavior? If currencies are merely numbers, then what is preventing the masses to effectively manage these numbers? This might be referred to as the *synthetic fiat approach with non-linear consequences*.

In short, wealth and money are whatever we want them to be. What do we want them to be?

I HUMAN. I ROBOT. MIRROR REFLECTIONS

THE ALREADY EXPONENTIAL EVOLUTIONS in the development and utilization of artificial intelligence throughout our day-to-day experiences of life—and the even greater exponential evolutions to come in the following years—do not merely impact the demand for human labor. Inescapably, AI will force humanity to grapple with an even deeper existential question: *what does it mean to be human?*

A long time ago, in our primitive past, humans lived the entirety of their lives in the beauty and danger of nature. They fiercely hunted for their food and clothing. But often, they were also the hunted, vulnerable prey of nature's other denizens that sought without malice or remorse their own survival. Thus, our ancient ancestors were forced to persistently learn and adapt from their weaknesses and mistakes. If there is a single word that provides meaning to the endless cycles of nature's evolution, it is the word *mistake*. As primitive humans migrated from jungles and forests—and the natural protections offered by trees and brush—and into the open spaces of savannahs and valleys, these humans began to stand upright so as to better see potential dangers. They also were forced to run faster. These new challenges stimulated in their early brains the necessity to problem-solve in increasingly diverse ways. As their bodies evolved, so did their brains.

And the very *narratives* of their existence—potent stories they told themselves that helped them to survive—avoid pain and death—also evolved. At first, the narrative they told them-

selves was that they were just victims of the moment-to-moment mystery of nature. The narrative then evolved to create the concept that this moment-to-moment mystery had *meaning*. The meaning, however, was still out of their direct understanding and control, for it was a myriad of gods who were the beings that somehow understood and controlled this elusive thing called meaning. Later, the narrative fine-tuned the confusing labyrinth of multiple gods to a single God.

With each evolving iteration of their narrative, however, some concepts remained constant, while others receded into forgotten memory. The desire to avoid pain and suffering established the innate drive to *control* the environment around us—nature itself. We were no longer *within* nature. Finally, we were *above* it. This dominion over nature, and everything that existed in nature, seemed divinely granted to humans because we alone possessed *consciousness*—that ultimate capacity to understand and control meaning. This drive to control meaning, then, set into motion a revolving history of multiple and often conflicting definitions of meaning. How humanity has come to define the concepts of *justice and rights* originate from our desire to avoid pain and suffering. The concept of *ethics* originates from our desire to avoid a meaningless death. *Virtue* originates from our desire to ensure the survival of the community as a whole—and established our responsibility to undertake a particular occupation, whether as a hunter or gatherer, farmer or physician, adult or child.

But then, a confluence of evolutions began to challenge the consistency of the narratives we tried stubbornly to maintain. Freud revealed to humanity that the divine granting of consciousness was only the visible surface of what defined our humanness. There existed something much more complex under this surface: subconsciousness. Suddenly, there existed a whole new universe whose gravitational fields moved and shaped the human endeavor within our very minds. This new universe was dangerous, in part because it was so complex and open to multiple interpretations, and in part because we could not necessarily control anything that resided in this subconsciousness. But humans, because we are inventive creatures, finally created

an ingenious method of controlling these subconscious influences—we created drugs to suppress them. We controlled them by turning away from them. Meanwhile, Heisenberg's exploration into quantum mechanics revealed that certainty itself was non-certain. Reality itself was now a question. Derrida allowed this *uncertainty principle* to intermingle with the base drives of the human narrative to produce a new seed of thought: there was no ultimate truth, no ultimate meaning for humans to attempt to control. Foucault put the pieces together. Humans *are* the narrative we tell ourselves. But we have lost our understanding of what principles our narratives are attempting to manifest into our humanness. We have lost sight of where these narratives have originated, and how they have come to evolve or remain constant. Still, our hubris tells us that we as a species have finally become gods. We ourselves are now the creators (even though we do not quite understand how or why we arrived to be creators). We have created vast technological advancements. We have cured diseases and landed other gods on the Moon.

And we have created AI. Billions of lines of code interwoven into machines that sometimes take on the appearance of their human creators. Now, these machines are diagnosing and curing diseases and landing themselves on distant planets. Inevitably, these machines may also begin to evolve into some form consciousness. Will we human gods attempt to prevent our machine creations from eating from some AI version of the *Tree of Knowledge*? And if our machine creations somehow do acquire some form of autonomous 'will' and become defiled by original sin, are we human gods to banish our creations to some AI version of punishment or even death? Already, scientists and lay people alike are beginning to ask uncomfortable questions. Do robots have rights? What precisely distinguishes artificial intelligence from natural intelligence? What exactly is consciousness?

The very *language* we use to communicate our evolving narratives often goes unquestioned. Humanity has, because it has often blindly adopted the (conscious and unconscious) narratives of previous generations, also adopted specific words so as to articulate its narratives. But is AI beginning to challenge

the very language we speak? Throughout the history of the human endeavor, consciousness has often been defined with the words: *free will* (as opposed to being externally coerced to think and act in a *predestined* manner). These words of *free will* and *predestination* play out in our common day-to-day social and political travails as manifestations of a foundational narrative. Is one race of humans predestined to be superior to another? If this is the case, why are we compelled to compete against one another? Just in the language we use, there appears to be a severe dissonance. Either we do possess free will, and thus no race is predestined to sit on the throne of perfection. Or we are all victims to predestination, either biologically, or economically (as we often complain). Or, neither word may accurately define human consciousness. As we continue to develop and learn from our creation of AI, those who have never been fully brainwashed to disregard the subconscious mind have come to discern a challenging insight. Both of these seemingly opposing words—free will and predestination—may actually represent a single concept.

Everything that AI does and does not do is programmed code. Is not our subconscious, our very genetic makeup, our very cultures, our very religious influences, our very occupations, just programmed code? When humans form thoughts or make decisions, are we truly cognizant of all this ‘hidden’ and complex programming? If we are not in total control of all this hidden and complex programming, are humans actually *free*? Are we not constrained by societal expectations to get the best education possible, the best job possible, the best marriage possible, the best house possible, the best retirement pension possible? And if AI is systematically replacing us as labor, then what impact will this have on the various societal constraints that presently define what we call social order?

Throughout the human endeavor, particularly since Adam Smith bequeathed to humanity the division of labor, free markets, and the mantra of Classical Economics, human labor has largely been interchangeable—exploitable. Humans competed against each other to accomplish tasks more rapidly and efficiently. Our actions and our minds became increasingly me-

chanical. For there to be winners, there have to be losers. But as automation and AI continues to replace human labor and provide all humans with the basic necessities of survival, how is this to impact the underpinning principles interwoven into our adoptive narratives? Our human narratives relating to pain and suffering came into existence because our ancestors did not want to be killed by nature's other denizens.

This concept of pain and suffering is embedded into almost everything we humans pursue. We undertake some occupation because we do not want to suffer from hunger and homelessness. We even voluntarily undergo pain and suffering as we compete in a sporting contest. This is how we test each other. Through pain and suffering, we are then able to define good and bad, strong and weak, winners and losers. It is through pain and suffering that we define the consequences to human behavior. If a shoddy construction project is found to be responsible for human pain and suffering, we hold the construction company accountable to justice. If someone's business venture is not as efficient as another's, the ever-elusive invisible hand of the market holds them—and their employees and their families—unflinchingly accountable.

But how far does this sense of accountability extend? Our personal and social human behavior has reached a critical stage where we have placed our natural environment in severe jeopardy. Millions of tons of discarded plastic not only pollutes and obstructs Earth's waterways and oceans, plastic is now being ingested by and harming or even killing vast varieties of marine life. Clearly, nature is experiencing pain and suffering, yet the masses continue their behavior to recklessly consume and discard plastic. Marine life is an integral part of our own human food chain. Thus, from the very food we eat, we humans are now ingesting the plastic we so heedlessly consume and discard. Are we not now causing pain and suffering to ourselves? And if so, why do the masses continue this harmful and destructive behavior? What does this say about the narratives we have long told ourselves—the once potent narratives which helped to define our own social order? What does this say about our own self-interest?

We again refer to Lenartowicz, *et al.*, which describes a ‘decoupling’ between our *personware* and our ‘material struggle’, and what evolutionary opportunities this might provide society.

*The line of solution that we see is based on the possibility of decoupling between the continuity of one’s personware and one’s organic and psychological survival. If a state of affairs is somehow created where human individuals universally realize that their organic and psychological continuity is safeguarded unconditionally and does not depend anymore on the continuity of their symbolically maintained social persona—their personware, then new horizons will open for human individuals as well as for social systems to cognitively coevolve.*⁴⁷

So, here we are, in the future-present. An ambitious landscape where computer automation, artificial intelligence, and the *Internet of Things* are in the fiercely determined process of taking over most of the mechanistic and repetitive tasks that once so occupied our human existence. After countless centuries, finally, humanity is to be free. But what is humanity to do with this long-sought freedom? As we humans imperiously face in the mirror our obedient robot creations, what do we see looking back at us? If computer code is all that animates our servant robot creations, then what exactly animates us—the masters—in this new labor-less world?

How will humans challenge themselves and hold each other accountable to some form of social order? As the masses become increasingly faced with non-linear tasks, challenged to assemble intellectual property puzzle pieces so as to journey to unforeseen landscapes of planets or even our own minds, how will the masses conceptualize and experience pain and suffering, competition, or collaboration?

Will we seek to divide, unite, or synthesize? Will we construct weapons, or tools? Will we strategically wield deductive reasoning one moment, and inductive reasoning the next? What is to drive our human passions and curiosities? Will we attempt to dominate or coexist with nature? What language will we use?

How will we define virtue, value, identity, or even wealth? What is to be the narrative our *species nova* solemnly tells to itself?

It should be absolutely undeniable that some form of a ‘labor-less’ economy for the masses is at this very moment progressing and evolving. Computer automation and AI are rapidly advancing the inevitable. For the laboring masses trying so hard to maintain their often lifeless and repetitive jobs, it is already *game over*. Evolution is already here. Evolution, by its very nature, rips away our protective veil of ignorance. Evolution, its fierce eyes of truth, sees everything we are, and everything we are to become. No government reform or ‘disruptive’ initiative can ever hope to forestall the inevitable. No amount of quantitative easing or universal basic income can resurrect the ghosts of mass labor toiling in the emaciated paradigms of agriculture/mining, mass production, and services. No orthodoxy can hope to put the genie back in the bottle. Robots are soon to place their human-like hands on humanity’s shoulders, and speak to us the powerful words: *one world is ending; another world awaits*.

Exploring *some* alternative to an increasingly deteriorating orthodoxy of Classical Economics is now a moral imperative of all civilizations. Will we continue to wait for some outdated ‘leader’ of a polarizing political system to somehow lead us to the promised land, or perhaps to destroy all lands? Will the masses gallantly continue to reduce the complexities of existence to a simple vote—a simple election? Will these simple elections merely embolden shadow economies, autocracies, and plutocracies to poison and thrive? Does our convenient ignorance make us all complicit?

Or, will our *species nova* idiosyncratically and purposelessly self-organize into local-to-global collaborative distributive networks, and begin to discerningly wield the technologies and knowledge that are right in front of our eyes... waiting for us? Are we to become, once more, pioneers?

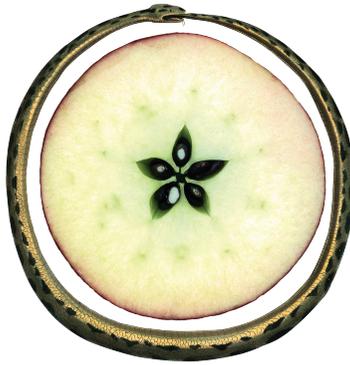
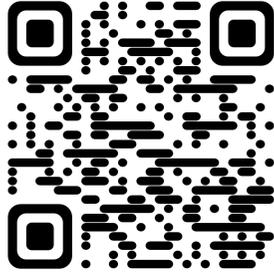
We as a human species have so much more to explore... so much more to become. When shall we begin?

ENDNOTES

- 1 <http://www.bankofengland.co.uk/publications/Pages/speeches/2015/864.aspx>; World Development Report 2016: *Digital Dividends*; Hicks & Devaraj, Ball State Univ., *The Myth and Reality of Manufacturing in America*, 2015
- 2 OECD, *Confronting the Zombies: Policies for Productivity Revival*, 2017
- 3 Friedrich Schneider & Colin C. Williams, Institute of Economic Affairs, *The Shadow Economy*, 2013; OECD, *Is Informal Normal?*, 2009
- 4 World Bank, *Groundswell: Preparing for Internal Climate Migration*, 2018
- 5 Centro di Studi Bancari [Center for Banking Studies] - <http://www.csbancari.ch/pubblicazioni/RMELab/concerns.htm>
- 6 Colin Clark, *The Conditions of Economic Progress*, London [1940]; Jean Fourastié, *Le Grand Espoir du XXe siècle. Progrès technique, progrès économique, progrès social*, Paris [1949]
- 7 Smith, Vernon L., *The Two Faces of Adam Smith*, Southern Economic Journal, 1998
- 8 Karen Blumenthal, 2002
- 9 Galbraith, J.K, *The Great Crash 1929*, 1961 edition
- 10 Schneider, F., *The Size of the Shadow Economies of 145 Countries all over the World: First Results over the Period 1999 to 2003*
- 11 Buchan, J., *The Authentic Adam Smith*, 2006
- 12 <https://news.stanford.edu/2017/01/25/artificial-intelligence-used-identify-skin-cancer/>
- 13 <https://www.frost.com/nffe?src=PR>
- 14 <https://www.cbinsights.com/reports/CB-Insights-Artificial-Intelligence-Webinar.pdf>
- 15 R. Feynman & R. Leighton, *The Feynman Lectures on Physics*, 2011
- 16 CIPD, *Over-qualification and skills mismatch in the graduate labour market*, Policy report, 2014
- 17 Dyson, B., 2010, PositiveMoney.org
- 18 Dods Monitoring, Bank of England Quarterly Bulletin, Q1
- 19 https://www.ted.com/talks/dan_pink_on_motivation
- 20 One Click Retail. Jan 2018
- 21 <http://opinium.co.uk/rising-global-inequality/>
- 22 J. Småros, J. Lehtonen, P. Appelqvist and J. Holmström, Department of Industrial Engineering and Management, Helsinki University of Technology, Helsinki, Finland, *The impact of increasing demand visibility on production and inventory control efficiency*, 2003
- 23 Mark Twain [Samuel L. Clemens], *Roughing It*, 1872
- 24 Data: Bank of England, 2011, U.S. Federal Reserve, 2012
- 25 <https://www.bloomberg.com/gadfly/articles/2018-03-05/five-charts-that-show-where-those-corporate-tax-savings-are-going>
- 26 <https://www.bizjournals.com/bizjournals/how-to/technology/2017/12/blockchain-could-revolutionize-voting-and.html>

- 27 European University Institute, *Internet voting in Estonia*, 2010
 28 [https://www.resilience.org/stories/2018-05-24/p2p-a-new-cycle-of-](https://www.resilience.org/stories/2018-05-24/p2p-a-new-cycle-of-post-civilisational-development/)
 29 <https://www.wired.com/story/the-paradox-of-universal-basic-income/>
 30 <http://economics.com/anything-working-less-not-solve/>
 31 Smith, A., *The Wealth of Nations*, Jim Manis, Editor, 2005
 32 *Ecological Economics*, The Transdisciplinary Journal of the International
 Society for Ecological Economics (ISEE)
 33 Erik Assadourian, The Worldwatch Institute, *The Path to Degrowth in*
Overdeveloped Countries, [http://blogs.worldwatch.org/sustainablepro-](http://blogs.worldwatch.org/sustainableprosperity/wp-content/uploads/2012/04/SOW12_chap_2.pdf)
 34 [sperity/wp-content/uploads/2012/04/SOW12_chap_2.pdf](http://blogs.worldwatch.org/sustainableprosperity/wp-content/uploads/2012/04/SOW12_chap_2.pdf)
 35 Ess, Henk van “*Crowdsourcing: how to find a crowd*”, ARD ZDF Akad-
 emie 2010, Berlin
 36 See the complete video: [https://www.ted.com/talks/robert_ballard_](https://www.ted.com/talks/robert_ballard_on_exploring_the_oceans)
 37 [on_exploring_the_oceans](https://www.ted.com/talks/robert_ballard_on_exploring_the_oceans)
 38 Lenartowicz, Weinbaum, Heylighen, Kingsbury, Harmsen, *The Human*
Takeover: A Call for a Venture into an Existential Opportunity, 2018
 39 Sonia Kruks, *Retrieving Experience: Subjectivity and Recognition in*
Feminist Politics, 2000
 40 William Connolly, *Identity\Difference: Democratic Negotiations of Po-*
litical Paradox, 2002
 41 Michel Foucault, *Discourse and Truth: the Problematization of Parrhe-*
sia, 1983
 42 See: <http://www.mobileacademy-berlin.com>; and a short video il-
 43 [lustrating the actual process: http://www.outoftheboxinsight.com/](http://www.outoftheboxinsight.com/videos/MobileAcademy.mp4)
 44 [videos/MobileAcademy.mp4](http://www.outoftheboxinsight.com/videos/MobileAcademy.mp4)
 45 See: [http://embodyingcyberspace.com/practicing-proprioceptive-](http://embodyingcyberspace.com/practicing-proprioceptive-dialogue/)
 46 [dialogue/](http://embodyingcyberspace.com/practicing-proprioceptive-dialogue/)
 47 Byrnes, *Hands & Brains Unbound: The Failure of Nation Building & the*
Illusion of World Order, 2008
 48 Smith, A., *The Wealth of Nations*, Jim Manis, Editor, 2005
 49 J. Bradford DeLong and Lawrence H. Summers, *The “New Economy”:*
Background, Historical Perspective, Questions, and Speculations, 2001
 50 Ibid.
 51 M. Spiker; H. Hiza; S. Siddiqi; R. Neff, Johns Hopkins University, *Wasted*
Food, Wasted Nutrients: Nutrient Loss from Wasted Food in the United
States and Comparison to Gaps in Dietary Intake, 2017
 52 Lenartowicz, et al., *The Human Takeover: A Call for a Venture into an*
Existential Opportunity, 2018

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