THE PAIRED APPENDIX AS THE SECOND MAJOR ITEM

Introduction

Line of Reasoning Continued

For the second paired appendix, as a major item on the guided tour, although it continues the line of reasoning developed in the trilogy, has its focus on presenting an array of interdisciplinary literature that backs up the reasoning presented in the major treatise of the timely trilogy, *American Democracy Endangered*.

The idea is to facilitate the motivated learner delving as deeply as desired to satisfy her critical thinking. This is especially important for two reasons. The first reason is that many people are being taken advantage in their use of social media with information that purports to be true, but that is designed to serve someone else's interests, not the recipient's, and may be somewhere between misstatements and complete falsehood. That disrespect for truth is cancerous to our society.

The second reason for facilitating the motivated learners delving deeper is that it facilitates making better choices, in the sense of producing desired outcomes. That process is heavily facilitated by the pursuit of a liberal education, one way or another. The traditional means of attending institutions of higher learning is very expensive. Motivated learners can get a substantial liberal education just by reading selectively, even if it is not part of a college course.

This website is available to institutions of higher learning, and those institutions may integrate the intellectual property owned by the Declaration Era Educational Press (DEEP) into their courses, for free. However, the website is designed to provide a substantial education, for free to individuals who are motivated to learn. All it takes the time and energy to delve deep enough to satisfy reasonable tests of critical thinking.

Next year, DEEP expects to add a wiki site as a branch of this website. It will come closer to providing a course structure, and will contain chat rooms. In the meantime, provision on deep is made for the motivated learner to present comments and questions, and DEEP will pursue developing vehicles to facilitate broader education of the public.

This appendix started as a presentation at ASPEC (Academy of Senior Professionals at Eckerd College), in an interest group called *Books and Ideas*. The major focus was on three books published in 2012. The format for this presentation has been modified from the appendix which is, as noted, part of BOOK THREE. As a preview, here are quotes from the three books.

"…America is coming apart at the seams - not seams of race or ethnicity, but of class." [p. 13, Murray]
"We are not skilled at balance anymore… …we have lost our gift for reasoning together." [p. 5, Dionne]
"…the inequality is cause and consequence of the failure of the political system, and it contributes to the instability of our economic system, which in turn contributes to increased inequality…"[p. xi, Stiglitz][1]

[1] The three books from which the quotes are taken are as follows: (1) *Coming Apart: The State of White America, 1960 - 2010* by Charles Murray; (2) *Our Divided Political Heart: The Battle for the American Idea in an Age of Discontent* by E.J .Dionne Jr.: and (3) *The Price of Inequality*: *How Today's Divided Society Endangers Our Future* by Joseph E. Stiglitz.

Moving Toward a Liberal Education

We are seeking to understand a societal evolution in order to make better choices for our own individual futures, and the future of society as a whole. The time has arrived for critical choices, with 2020 as an inflection point. However, the evolution is going to take time, and as a society we are going to need to self-organize, and/or reorganize the processes and structures in our democracy in order to advance the quality of our lives and the lives of others.

These two appendices were part of the seminal work for the timely trilogy, *American Democracy Endangered*, that has emerged as the centerpiece of this website. The first of the appendices is focused on a general statement of the goal. This appendix is looking to blend an array of disciplines for an interdisciplinary approach to dealing with a major complex adaptive system, the body as a whole; and the subsystems normally thought of as the diversity of disciplines.

As a preview, the first of the three books, *Coming Apart,* by Charles Murray, discusses the divergence in core values and behavior; it also includes social and civic disengagement in the lower class as compared to the upper class. All of this is in the context of social capital. The social capital concept is relevant to all three quotes and books, and is further discussed in the fourth book mentioned.

The second book, *Our Divided Political Heart* by Dionne, is subtitled *The Battle for the American Idea in an Age of Discontent.* It discusses and ongoing tension between two core values: our love for individualism and our reverence for community." This speaks to balancing values instead of focusing on only one. Consider the balance between liberty and law. The harsh laws of a dictatorship can provide stability, at least until the revolution. The absence of law, with only freedom, provides chaos.

The third, *The Price of Inequality* by Stiglitz, is subtitled *How Today's Divided Society Endangers Our Future.* Its three themes are: (1) Markets weren't doing what they were supposed to do, (2) the political system fell short of what it is supposed to do with markets, and (3) the resulting system is simply unfair.

Beyond the three books, here is a list of books mentioned in the appendix, organize according to academic disciplines, more or less.

Three major social science disciplines:

- Political Science - The *Great Disruption* by Francis Fukuyama;
- Economics - *The Origin of Wealth: The Radical Remaking of Economics and What it Means for Business and Society* by Eric D. Beinhocker;
- Sociology - *Sociology and Complexity Science: A New Field of Inquiry* by Brian Castellani and Frederic William Hafferty.

A variety of philosophical approaches:

- Complexity Science (applied to public policy) - *Harnessing Complexity: Organizational Implications of a Scientific Frontier* by Robert Axelrod and Michael D. Cohen;
- Biology (especially evolutionary biology) - *Consilience: The Unity of Knowledge* by Edward O. Wilson; &
  The Hedgehog, the Fox, and the Magister's Pox: Mending the Gap Between Science and the Humanities by Stephen Jay Gould;
- Network Science – *Six Degrees: The Science of a Connected Age* by Duncan Watts;
- Humanities - *Not for Profit: Why Democracy Needs the Humanities* by Martha C. Nussbaum.

Appendix B – Divisiveness in America

Divisiveness in America: The American Democracy on the Road to Dystopia

By Maury Seldin

"…America is coming apart at the seams - not seams of race or ethnicity, but of class." [p. 13, Murray]
"We are not skilled at balance anymore… …we have lost our gift for reasoning together." [p. 5, Dionne]
"…the inequality is cause and consequence of the failure of the political system, and it contributes to the instability of our economic system, which in turn contributes to increased inequality…"[p. xi, Stiglitz][i]

The Current Condition in a Dynamic System

The three books, from which the quotes are taken, although by authors of diverse political views, have a commonality. The path of American democracy is eroding the well being of our society. Although no civilization has achieved a utopian condition, America, as a great experiment, seemed to move in the right direction for the most part of its first two centuries. The authors make the point that we have in recent decades shifted to moving in the wrong direction.

The current condition is a snapshot of a dynamic system. It is best seen in the context of the historical trend, the prevailing approach for assessing a current condition. Where it is going is often thought of as an extrapolation of past trends. That misses turning points; but it is the turning points that as dramatic shifts may make a big difference in the quality of life for the vast majority of Americans.

Dramatic shifts are discontinuities that may be favorable or unfavorable. The Great Depression of the last century was a discontinuity that provided an erosion of quality of life as did the Great Recession of 2008. The victory in World War II was followed by a series of spikes in economic activity, partially related to some structural changes emanating from the Employment Act of 1946 that had the general goal of high levels of income, output, and employment. The legislation grew out of a fear of a return to the Great Depression.

The Post WWII Era had its ups and downs, but in general provided decades of prosperity leading to recent decades that led to the housing bubble, capital market freeze, and Great Recession. The aftermath of the recession, in the context of the divisiveness of the nation, is setting the stage for another shift, but it is uncertain as to whether it will be unfavorable or favorable. It could be that the recent condition, in the time of the so-called fiscal cliff, is a predecessor to further abstinence that would further erode the quality of life for the vast majority of Americans. Or, it could be that America will rise to the challenge and restructure the institutional arrangements to move back in the direction of liberty and justice for all rather than the few. That will take a wiser electorate as well as wiser legislators.

This essay is about influencing the outcomes from potential shifts to be favorable to the quality of life rather than unfavorable. That requires an understanding of the dynamics of the system and its changing structure as a complex adaptive system.[ii]

What We Think We Know

The commonality of the diverse views is that they all are dealing with some view of the structure of a complex adaptive system, the American political-economy built on a sociological structure of values and relationships. The differences in views are to varying extents in values and in understanding or misunderstanding of the operation of the system, especially markets; but, none of the three books set their discussion in the context of the nascent sciences of networks and complexity.

The sociological structure of values and relationships starts with diverse views of that key sentence in the Declaration of Independence, "We hold these Truths to be self-evident, that all Men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty, and the Pursuit of Happiness." That statement hedged the source of authority; "… these ***Truths to be self-evident***, that all Men are ***created equal***, that they are ***endowed by their Creator…"*** The authority may be reason - ***self-evident***; and/or divine - ***created equal… endowed by their Creator.***

The " Life, Liberty, and the Pursuit of Happiness" phrase is also subject to diverse views.[iii] The appropriate balance between some forms of liberty and its diminution by social contract or community obligation is part of these different perspectives. Additionally, "the Pursuit of Happiness" may be even more contentious in interpretation.

That Declaration of Independence was a product of the American Enlightenment in which some of the revolutionaries were the Radical Enlightenmentist category, looking only to secular authority arising from the governed. Most advocates in the Enlightenment era were in one of the two moderate Enlightenmentist sets, all of whom saw the political structure emanating from the rights of individuals, but some of whom still maintained the presence of a deity.[iv] That presence was also manifest in later America in the form of a civil religion with a structure of separation of church and state; but, with a set of moral standards that significantly influenced individual behavior, including the relationship to community.

The societal structure was composed of the then extant networks of colonies in which they made "The unanimous Declaration of the thirteen united [sic] States of America." The United States started as a network of individual states that later added to the network that has become comprised of fifty states. It also changed its relationship between the federal government to the states in terms of election of representation of the states to the United States Senate; a shift from state legislators doing the elections to direct election by the voting public.

Each of the states had its own sub-networks, with New England states having substantially different structures than the southern states. The differences were accommodated by a democratic process until it took a civil war to resolve substantial differences in engrained socio-economic preferences with the contentious set of rules and conditions that applied to all.

The restraints on behavior are provided by unwritten rules in a community as well as legislated rules in a society at various levels of government. These rules evolve over time and alter the structure of society. The three authors quoted focused on the changing structure of the last half century, but in the half century before that there was a significant change with the increase in the use of debt to finance consumption.[v] The increased use of debt to finance consumption changed the way people lived in more

ways than one, especially on acquisition of goods and services. Then, in the half century before that there was the Industrial Revolution that increased productivity, an economic development that led to a higher standard of living, and arguably to an age of discontent.

Part of the latest debacle triggered by the housing bubble was that consumption expenditures were outpacing incomes in part due to the ephemeral housing equity being used as an ATM. The boom in housing prices that was not sustainable and the loose lending policies combined to exacerbate the inevitable market correction. The list of villains is long, and it includes the borrowers as well as the lenders and a variety of institutional arrangements, especially lax regulation and unwanted side effects of legislation.

The first quoted book, *Coming Apart: The State of White America, 1960 – 2010,* by Charles Murray provides a discussion of the divergence in core values and behavior among societal classes. It includes social and civic disengagement in the lower class as compared to the upper class. All of this is in the context of social capital.

The social capital concept is relevant to all three quotes and books, all of which were first published in 2012. The commonality of the relevance of social capital is in the functioning of the economy as well as in the functioning of the political system, especially the process of election of representatives.

The second quoted book, *Our Divided Political Heart* by Dionne is subtitled *The Battle for the American Idea in an Age of Discontent.* It focuses on "…a view that American history is defined by an irrepressible and ongoing tension between two core values: our love for individualism and our reverence for community." This speaks to balancing values instead of focusing on only one. The balance of liberty and law is essential for a democracy. Where that balance resides may be dependent on the effectiveness of the rules of societies, including the unwritten rules in a community that restrains behavior, as well government regulation. Think of facemasks in 2020.

The third quoted book, *The Price of Inequality* by Stiglitz, is subtitled *How Today's Divided Society Endangers Our Future.* Its three themes are: (1) Markets weren't doing what they were supposed to do, (2) the political system fell short of what it is supposed to do with markets, and (3) the resulting system is simply unfair. The book "explains how the three themes are intimately interlinked: the inequality is cause and consequence of the failure of the political system, and it contributes to the instability of our economic system, which in turn contributes to increased inequality - a viscous downward spiral into which we have descended and from which we can emerge only through concerted policies that I describe below."

There are other factors in the process, especially genes and memes that influence individual behavior as part of the various networks in which individuals interact. Also, there are differences in strengths and numbers of connections. These, and the understanding of networks, are not necessarily accepted as common among the diverse views, but they are science based rather than value based.

<u>Understanding of Structure Based on Inclusion of Nascent Sciences</u>

Understanding the structure of the American democratic system goes beyond the traditional compartmentalization of disciplines, of which political science is one. Perspectives of other disciplines,

such as economics and sociology, provide a step in the right direction, but the structure is more than multi-disciplinary, it is interdisciplinary in that it is essential to seamlessly blending disciplines.

That blending of disciplines needs to include nascent disciplines relating to and including cognitive science, but especially network science and complexity economics.[vi] The process may provide a new lens through which to view American Democracy, its historic evolution, and its potential paths that have begun to unfold.

A fourth book dealing with the changing structure of American civilization includes some discussion of concepts espoused in the nascent disciplines. It does so with a step into complexity theory, although it doesn't call it that. It was published in 1999 which is almost a long time ago in these young disciplines, at least in terms of acceptance by mainstream disciplines as typically classified within our universities.

The fourth book is by Francis Fukuyama, arguably one of our leading authorities on democracy, an interdisciplinary concept. Fukuyama's education is rooted in political science. However, his book, *The Great Disruption,* draws on an interdisciplinary approach to shed light on the impact of the evolution of the economy on our societal structure; a structure under assault that is taking its toll in diminution of liberty and justice. The perspective is from a study of democracy rather that the study of economics using a complexity lens.[vii]

The theme is that there is a Great Reconstruction underway through weaving "…a new fabric of social and moral values appropriate to the changed realities of the post industrial world." [viii] In the eyes of complexity science, a system may undergo a dramatic change when it is at the edge of chaos. The disruptions in social values stemming from the transition from an industrial society to the information age may well be the foundation from which the Millennials[ix] will be the major implementers of the reconstruction.

The analyses presented use connections that were "…technological, economic, and social." [x] He discusses various forces, but key to our discussion is that "… the culture of intensive individualism, which in the marketplace and laboratory leads to innovation and growth, spilled over into the realm of social norms, where it corroded virtually all forms of authority and weakened the bonds holding families, neighborhoods, and nations together. **The complete story is much more complex than this** [emphasis added] and differs from one country to another …" [xi] The discussion continues and includes reference to Schumpeter's "creative destruction."

The explanation of the process is in terms of "…how order arises, not as the result of a top-down mandate by hierarchical authorities, whether political or religious, but as **the result of self-organization on the part of decentralized individuals, is one of the most interesting and important intellectual developments of our time.**." [Emphasis added.] [xii]

We will turn to a discussion of a book using the lens and the terminology of complexity economics, one of the nascent disciplines (or branch of a mainstream discipline). But first, it important to note where Fukuyama sees the driving forces for *the Reconstitution of Social Order.* One of the two forces is revealed in the subtitle of the book, The *Great Disruption: Human Nature and the Reconstitution of Social Order.* Human nature does change, but Fukuyama notes that evolutionary biology supports the idea that the sociability of people leads to some cooperative activities and the human mind enables

people to distinguish between those who cooperate and those who cheat.[xiii] So, one of the forces noted is the innate human capacity for reconstruction of a social order. Understanding the process for reconstruction of a social order is aided by understanding the self-organization process in complexity science.

The other force is closely related is reason, especially in generating rules. The rules are the building blocks of the societal structure. Consider them as the members, like 2x4s in the framework of a house. That structure shapes what will emerge, but maybe they are more like LEGOs that can be rearranged.

The study of economics using a lens built on complexity science is presented in the fifth book of this litany of perspectives. *The Origin of Wealth: The Radical Remaking of Economics and What it Means for Business and Society* by Eric D. Beinhocker makes five key points differentiating complexity economics from traditional economics. These five key points come into play as we explore the evolution of the economic system operated under a democratic structure. The exhibit that follows that follows is excerpted from the trilogy's first book, *Common Sense Revisited: America's Third Revolution*

Exhibit 1: The Five Distinguishing Ideas of Complexity Economics

	Traditional Economics	Complexity Economics
Dynamics	Static, linear, profit-maximizing equilibrium	Open, dynamic, non-linear, far from equilibrium
Agents	Modeled collectively – perfect information, no errors or biases, no learning or adaptation	Modeled individually – agents subject to errors and biases; they adapt and learn over time
Networks	Agents act indirectly through the market	Model interaction of agent; networks of relationships change over time
Emergence	Micro- and macroeconomics remain separate disciplines	No distinction between micro- and macroeconomics; macro patterns are emergent result of micro-level behaviors and interactions
Evolution	No mechanism for endogenously creating novelty, or growth in order and complexity	Evolutionary process of differentiation, selection, and amplification provides system with novelty and is responsible for its growth in order and complexity

Adapted from Beinhocker (2006, page 97)

First, the economy is ***dynamic*** and operates with non-linear relationships far from equilibrium. This is in contrast to the traditional models built on linear formulations generating forces towards equilibrium. The book was published in 2006, just prior to the Great Recession. It is relevant to understanding that our economy has a discontinuity characteristic of systems that move to the edge of chaos as complex adaptive systems do, rather than stable systems. The closest such a system can come to equilibrium is in the form of a dynamic equilibrium. The significance is that the dynamic character will take us to an evolutionary approach.

Second, modeling the system in traditional economics is built upon the assumption of rational men (***agents*** in the network system), with complete information not needing to learn or adapt. System modeling in complexity economics recognizes the existence of errors and biases, and is based on adaptations through learning over time. The significance is that supplementing the models with computational models that can reflect adaptations gets closer to reality in expected outcomes.

Third, traditional economics assumes participants in the markets operate through market mechanisms and looks to the extant market mechanisms. Complexity economics, by way of contrast, looks to interaction in the layers of networks that underlie the markets but create markets through emergence (producing characterizes in markets not present in the underlying networks). Furthermore, the relationships in the ***networks*** change over time and these changes alter outcomes in the markets. **The significance is that attention needs to be taken to deal with the forces that are changing the relationships.**

Fourth, traditional economics separates microeconomics and macroeconomics whereas complexity economics utilizes ***emergence***, the process whereby what happens at one level of a network generates characteristics at the level macro to the micro level. The system integrates micro and macro so that the macro level is tied to micro. **The significance is in the altering structure of the micro network affects the outcomes in the macro network.**

Fifth, traditional economics is not geared to providing a mechanism for "endogenously creating novelty, or growth in order and complexity." [See page 97.] Complexity economics, by way of contrast is built on the use of an "evolutionary process of differentiation, selection, and amplification [that] provides the system with novelty and is responsible for its growth in order and complexity." [See page 97.] The significance of this is in the understanding the evolution of a political-economy built upon a societal structure, the changing character of which is what the discussion in this essay has thus far been about.

Turning to the blending of some points in the Fukuyama and Beinhocker books, there are components in the evolutionary process. Fukuyama focuses on social capital (the shared values in a society), and contrasts it with "physical capital (land, buildings, machines) and human capital (the skills and knowledge we carry around in our heads)." He continues noting "…social capital produces wealth and is therefore of economic value to the national economy." [p. 14] Beinhocker, in focusing on wealth creation considers social technology as well as physical technology.

Social technologies as defined by Beinhocker are "methods and designs for organizing people in pursuit of a goal or goals." [p. 262.] It is related to the concept of *institutions* when institutions are defined as "the rules of the game in society," a definition by Douglass North. [p. 262.] The wealth in an economy, according to a study by William Easterly and Ross Levine, as referred to by Beinhocker, while related to "factors such as the existence of natural resources, the competence of government policies, and the relative sophistication of a country's Physical Technologies…all mattered to a degree, the most significant factor was the state of a country's Social Technology. The rule of law, the existence of property rights, a well organized banking system, economic transparency, a lack of corruption, and other social and institutional factors played a far greater role in determining national economic success than did any other category of factors." [P. 261.]

The social technologies may be viewed as part of a nation's social capital, its shared values, and part of the nation's institutional arrangements structured under its laws. It plays its evolutionary role with an interaction of *physical technologies*. Beinhocker defined "Physical technologies as methods and designs for transforming collections of matter, energy, and information from one state to another in pursuit of a goal or goals." [p. 262.] He also has a substantial discussion of evolution using a complexity science framework. Now, however, the discussion is switching to a book titled *Sociology and Complexity Science: A New Field of Inquiry.*

We are now at the sixth book of this litany of perspectives, *Sociology and Complexity Science* by Brian Castellani and Frederic William Hafferty. It is part of a series of publications by Springer on understanding complex systems; systems that "are complex in both their composition - typically many different kinds of components interacting simultaneously and nonlinearly with each other and their environments on multiple levels - and in the rich diversity of behavior of which they are capable. [This is from the prefatory comment by J.A. Scott Kelso.]"

The Castellani/Hafferty book is intended to introduce sociologists to the nascent discipline of complexity science, although some sociologists were among the first from mainstream social science disciplines to begin integrating the nonlinearity analyses. Additionally, the book has assembled a toolkit for modeling social systems. It consists of a theoretical framework, a procedural algorithm, plus methods and techniques for analyses. And finally, it demonstrates utility by applying the toolkit. Thus, it is a framework for sociologist to integrate complexity science into their research.

Aspirations to Alter the Structure of a Divided Society

We now shift from discussion of works branching from the traditional disciplines of political science, economics, and sociology to a book by two academics focused on public policy. They are Robert Axelrod and Michael D. Cohen and the book is *Harnessing Complexity: Organizational Implications of a Scientific Frontier.* The basic concept of harnessing complexity is described as "…deliberately changing the structure of a system in order to increase some measure of performance, and to do so by exploiting an understanding that the system itself is complex. [p. 9]" The index lists fourteen ways to influence complexity including dealing with variety, slack in the system, affecting types in the system, and leadership. The whole of it is that complex systems are not amenable to solely relying on the linearity analyses that are used to run a hierarchical structure, but need to include efforts to channel "…the complexity of a social system into desirable change, just as a harness focuses the energy of a horse into the useful motion of a wagon or a plow. [P. 9.]"

> An alternative to component intervention is a holistic approach, as discussed by John H. Holland in his book Signals and Boundaries: Building Blocks for Complex Adaptive Systems. This was not discussed in the original essay. What follows is excerpted from Unity Counts:
>
> > As a start we look at intervention of the system using the lens of complexity. It could apply the approach discussed in the book *Harnessing Complexity: Organizational Implications of a Scientific Frontier,* by Robert Axelrod and Michael Cohen. It focuses on generating emergent properties to intervene in components of the system. The next step would take a somewhat more complex view using a holistic approach, somewhat

along the lines discussed by John H. Holland in his book, *Signals and Boundaries: Building Blocks for Complex Adaptive Systems.* That might potentially be designed to reflect what is alluded to in the second paragraph of the third overview essay, Great Danger Emerges: Democracy Challenged. It is as follows: "Systemic awareness, with self-correcting systems, is by far the most cost-effective approach. Human biology, with *homeostasis* as its self-correcting system, provides the model that is more cost-effective than conventional curing. It is a process providing a tendency to move toward stability in the face of changing conditions."

There is a vast and growing literature on complexity, much of it from diverse disciplines. The translational research necessary to adapt it to particular issues such as the evolving American democracy is substantial. The greatest problem most readers will have is in the lens through which the system is viewed. The development of science over the past few centuries has accustomed most of us to traditional views and we make the leap to the consilience concept espoused by Edward O. Wilson in his book *Consilience: The Unity of Knowledge*, in which a hierarchical structure of the sciences and transferability of principles from among disciplines is accepted. However, we need to consider the criticism by his intellectual rival, Stephen Jay Gould in his book *The Hedgehog, the Fox, and the Magister's Pox: Mending the Gap Between Science and the Humanities.* In it Gould identifies two problems in his discussion of consilience. One is *contingency.* The other is *emergence.*

The concept of *contingency* relates to the non-predictability arising out of historical accidents. There are some elements of randomness, chaos theory, or just plain chance that adversely affect predictability. This does not mean to assert that there are not other instances that are not predictable. The criticism of reductionism is that it asserts that all is predictable from the reduction to the constituent parts. It is this reduction to constituent parts that we call analyses that turns out to be useful. The merit of reduction is that some things are predictable because they are divisible into parts and the consistency between the relationships among the parts provides the foundation of predictability. This form of analytical process may be very useful, but it is a valid criticism to say that it is not necessarily the only way of predicting outcomes because relationships do change and then the predictions need to deal with uncertainty.

This brings to the second point, *emergence.* Gould writes of *emergence* as "…the entry of novel explanatory rules in complex systems, laws arising from 'nonlinear' or 'nonadditive' interactions among constituent parts that therefore, in principle cannot be discovered from the properties of parts considered separately (their status in the 'basic' sciences that provide the fundamental explanation in classically reductionist models). [P. 202].

Consider the point made by Duncan Watts referring to the discussion of the science of networks, "While knowing the rules that govern the behavior of individuals does not necessarily help us to predict the behavior of the mob, we *may* be able to predict the very same mob behavior without knowing very much at all about the unique personalities and characteristics of the individuals that make it up." [P. 26.] My reading of Watts did not reveal reference to Gould, and my reading of Gould did not reveal reference to Watts. Yet, yet they both made the critical point that the group behavior is not simply an aggregation of individual behaviors. There is an interaction of the parts that makes for outcomes that

may be different from aggregating individual behavior. This does not mean that it is not useful to understand individual behavior; rather it needs to be understood as part of a network and emergence.

What We Should Do

The flyleaf on Gould's book notes that Gould "…offers a surprising and nuanced study of the complex relationship between our two great ways of knowing: science and the humanities, twin realms of knowledge that have been divided against each other for far too long." In the preface, Gould wrote "I use the fox and the hedgehog as my model for how the sciences and humanities should interact because I believe that neither pure strategy can work, but that a fruitful union of these seemingly polar opposites can, with goodwill and significant self-restraint on both sides, be conjoined into a diverse but common enterprise of unity and power. The way of the hedgehog cannot suffice because the sciences and humanities, by the basic logic of their disparate enterprises do different things, each equally essential to human wholeness. [P. 5]"

An integration of the discussion of the humanities for present purposes is best done here by including Martha C. Nussbaum's book *Not for Profit: Why Democracy Needs the Humanities.* Nussbaum opens her narrative with "We are in the midst of a crisis of massive proportions and grave global significance. No, I do not mean the global economic crisis that began in 2008… I mean a crisis that goes largely unnoticed, like a cancer; a crisis that is likely to be, in the long run, far more damaging to the nature of democratic self- government: a world- wide crisis in education…¶ Radical changes are occurring in what democratic societies teach their young, and these changes have not been well thought through. Thirsty for national profit, nations, and their systems of education, are heedlessly discarding skills that are needed to keep democracies alive…The future of the world's democracies hangs in balance.[pages 1-2]"

The chapter continues beyond noting the problem of national policy as reflected in the 2006 Department of Education's commission report on chartering the future of higher education that basically ignored the humanities, the arts, and critical thinking in favor of focusing entirely on education for national economic gain. It concerned itself with perceived deficiencies in science, technology, and engineering - not basic research in these areas, but only highly applied learning, learning that can quickly generate profit making strategies. [p. 3] The chapter also discusses education preceding higher education, both at home as well in the schools and with peer pressure.

The thrust is to provide education on the art of living in a democracy that has a diversity of cultures and individuals with respect for differences. It requires developing capabilities for critical thinking. People "…need to grow up to be participants in a form of government in which people inform themselves about crucial issues they will address as voters and, sometimes, as elected or appointed officials. [p.9]"

Apparently, there is a great deal of misunderstanding by the electorate of what makes for successful evolution of a democratic society both as to economic development and to quality of life. The books discussed in great brevity, when taken together, but with the exception of the possible optimism of Fukuyama, indicate that the current direction of the American democracy is towards a dystopia.

The misunderstanding of the *invisible hand* and the characteristics of markets most useful for a vibrant democracy that balances *liberty and justice for all* is part of problem.[xiv] It is exacerbated by the *hedgehogs* that see only a single myopic view of markets. It contributes to the difficulties of finding a

median band in the balance of individual rights and community responsibilities, as do those at the other extreme of views that fail to recognize the necessities of incentives for economic process. Much of the discussion has been about the sciences, especially the social sciences and the nascent disciplines that have drawn from the natural sciences. But, the balance needs to include the humanities because of the influence on the individual's choices on how to live.

The last Enlightenment fell apart because of reliance on a general will rather than reason[xv] and was succeeded by a brief period of romanticism. That period, the latter part of the 18th century and the early part of the 19th century, focused on the humanities. It contrasted with the *Industrial Revolution* in that its focus was art, literature, and intellectual pursuits rather than technological changes that enhanced productivity. For some, the opportunity cost of the Industrial Revolution two centuries ago was too high with some similarity to the current view; in the early 21st century the opportunity cost of an education focused on the job market at the expense of the humanities (essential for a vibrant democracy) is also too high.

Farmers know that eating the seed necessary for planting the next crop is a road to disaster. The presence of a balance is essential to an evolutionary process where the resources necessary for the next cycle need to be provided. The split that is dividing the American political-economy and sociological structure may be viewed from different perspectives. It may be viewed as (1) an increasing division of America into classes that is destroying upward mobility, or (2) a loss of the reasoning together to accommodate reasonable differences in opinion in arriving at a balance essential for a fruitful democracy, or (3) an unreasonable distribution of income and wealth impeding liberty and justice for all. One or more of these perspectives, if correct, means that if the split continues on its present path our nation will move closer to becoming a dystopia.

Failed states are not new, nor is the decline and fall of civilizations. The future of American democracy is not optimistic in the hands of the myopic that fail to understand the nature of evolution of democracy as a complex adaptive system in which the participants change their decisions based on changing environment and upon their understanding of the reality of the system. The current evidence is that too many people in the voting public have been acting on an erroneous understanding of what it takes to for a democratic society to flourish and, for there to be liberty and justice for all, not just a very small percentage of the population. Revolutions are bred on the growth of injustice and so are depressions.

The key of what to do in complex adaptive systems is in influencing structure through information and energy that leads to desirable change. Some more on this is in the summary and conclusion section of this essay.

Summary and Conclusion

The first three authors share a commonality; America has been experiencing in the last half century an increase in divisiveness on various dimensions. The Murray book discussed the divergence in core values and behavior. The Dionne book discussed tension between the core values of individualism and community. The Stiglitz book focused on economic inequality as cause and consequence of the failure of the political system and malfunctioning of the economic system.

The divisiveness in various dimensions may be seen in the context of the *great disruption* discussed by Fukuyama in the fourth book. The phrase "Reconstitution of Social Order" in the subtitle of that book, *The Great Disruption: Human Nature and the Reconstitution of Social Order*, indicated the hopes that a rebuilding of social capital is taking shape. The key forces he discusses are the hard wiring of human nature and the use of reason.

The wealth of the nation, most often thought of in economic terms, is also in its social capital. That social capital has been eroding, but Fukuyama, with political science roots is offering hope with an interdisciplinary approach. Beinhocker, in the fifth book in the discussion, focuses on the economic dimensions in an interdisciplinary approach that explicitly discusses complexity science. It is that nascent science that when blended with the other disciplines may lead America away from the dystopian path of recent decades.

But, the traditional disciplines of political science and economics, even blended with complexity theory as in complexity economics is not enough. The discipline of sociology comes into play, not only because of the area of activity, but it brought in complexity science earlier than political science or economics, unless you want to consider Adam Smith's *invisible hand* which in modern terminology is an emergent process.

The sixth book, *Sociology and Complexity Science: A New Field of Inquiry,* provides a theoretical framework for social practice. That theoretical framework is built on complexity science. This brings us to the task at hand, rebuilding social capital that will facilitate the pluralism that will foster reaching a balance point between the values of individualism and community and that will harness the complexity of an American version of democracy.

Tocqueville was impressed by the community engagement of the Americans. The scale of community was smaller and the informal accountability was stronger than it is today. However, the concept of community is still applicable. What it now takes is the new social technologies to facilitate the process.

Facebook and Twitter have changed the communication patterns, but face-to-face contact is still better that the electronic versions, even Skype. These communication devices are best considered as supplements to the in-person contacts. When used in that fashion, the networks that can be established and utilized gain great power.

The power in the networks as they generate emergence in the complex adaptive system is in the information and the energy of the communication. Not all individuals in the network have the same number of contacts or strength of relationships or even the same creativity by virtue of ideas, but the diversity and interaction produces selections that get amplified to enhance productivity. This is the social technology that enables innovation and change.

As an example of the process, consider the idea of an interfaith group banding together to provide some form of social action. A well established program such as that of the *Children's Defense Fund* with their *Freedom Schools* program " provides summer and after-school enrichment that helps children fall in love with reading, increases their self-esteem, and generates more positive attitudes toward learning. Children are taught using a model curriculum that supports children and families around five essential components: high quality academic enrichment; parent and family involvement; civic engagement and

social action; intergenerational leadership development; and nutrition, health and mental health." The local volunteers involved form a network and build relationships.

There are smaller scale social action options at the local level. Whatever the scale, the concept is the same; build contacts from diverse groups. The concept is also applicable to political action at the local level as with local governmental regulation and provision of services. There are many such groups already in existence, so where is the innovation?

The innovation is creating a network of networks. Key people in the various networks may join together to form a network macro to the micro networks of the individual projects. This will have a natural diversity of the community residents, but it requires a favorable selection of leadership. It is this leadership that can leverage the enlightenment that builds social capital.

---

[i] The three books from which the quotes are taken are as follows: (1) *Coming Apart: The State of White America, 1960 - 2010* by Charles Murray; (2) *Our Divided Political Heart: The Battle for the American Idea in an Age of Discontent* by E.J .Dionne Jr.: and (3) *The Price of Inequality*: *How Today's Divided Society Endangers Our Future* by Joseph E. Stiglitz.

[ii] Robert Axelrod and Richard D. Cohen in *Harnessing Complexity* wrote "When a system contains agents or populations that *seek* to adapt, we will use the term **Complex Adaptive System."** [p.7] Later, on page 16, there is discussion of a number of definitions, about which they wrote "If there will be a consensus on a precise definition on complexity, it lies well in the future." For our purposes, the important characteristics are that people and organizations adjust their strategies as conditions change and that the result of a changed environment influences the decisions of others and that the dynamic process produces an evolutionary result at succeeding stages. Furthermore, decisions made at a network level cause emergent properties at a level macro to the network - properties not present at the micro level. Think housing finance, housing prices, housing bubble, capital market freeze, Great Recession.

[iii] The "Life, Liberty, and Pursuit of Happiness" phrase appears to be a takeoff on a statement in John Locke's *The Second Treatise of Civil Government*, published in 1690. The phrase "pursuit of happiness" was not in the John Locke statement, although "property" was. We may speculate why "pursuit of happiness" was used by the Founding Fathers rather than property.

[iv] See *Democratic Enlightenment: Philosophy, Revolution, and Human Rights* by Jonathan I. Israel, page 12. America was in the Lockonian-Newtian variety; not surprising considering the key phrase from the Declaration of Independence.

[v] See *Financing the American Dream: A Cultural History of Consumer Credit* by Lendol Calder

[vi] These sciences are critical to understanding the dynamic nature of America in which nonlinear relationships make forecasting outcomes based on linear cause and effect problematical.

[vii] A reference for the study of economics using a complexity lens is the Eric D. Beinhocker book, *The Origin of Wealth.*

[viii] See the flyleaf.

[ix] The term Millennials refers to those born in the last decade of the 20th century and those born in the first decade of the 21st century.

[x] Fukuyama, page 5.

[xi] Fukuyama, page 6.

[xii] Fukuyama, page 6.

[xiii] See page 162

[xiv] The *invisible hand* is an emergent process in markets. The properties generated by the market are contingent on the character of the markets. Monopolies, oligopolies and other non-level playing fields produce outcomes different from those of fair markets.

[xv] Wilson wrote eloquently of this on page 15 of *Consilience.*