

The Collective Mind¹

By Maury Seldin²

Science was the engine of progress of Western civilization over the last three centuries. Freedom was the fuel. Intolerance was the sand in the engine.

The progress of the Enlightenment, also known as the Age of Reason, came about because Western minds were freed from the domination of church and royalty and were able to capitalize on science with innovation that dramatically altered the quality of life. America rose to the top in some measure because it had more than tolerance; it had pluralism.

This is not to say that all dimensions of quality of life improved, nor that tolerance was ubiquitous in America or that everyone bought into pluralism. Rather, it is to say that better decisions were made because more reason was applied than in the earlier era. The decisions were better because the outcomes of alternative actions were seen with greater clarity with the application of reason than through reliance on such alternatives as myths, dogma, and to a degree emotion, which dominated before the rise of reason that prevailed with a newfound freedom.

The human mind developed habits of searching out information and processing it so it was able to make better forecasts. Different minds developed different habits, but scientific approaches came to dominate the patterns, especially in academia. The social scientists attempted to follow the lead of the natural scientists, but segmented the disciplines so as to sharpen focus. That segmentation led to myopic views of interdisciplinary problems. Better forecasts of outcomes may be achieved by an integration of relevant disciplines. Most of society's problems are interdisciplinary and the most difficult advancements are in blending the disciplines.

Habits of the mind have come to dominate decisions, although habits of the heart still wield their influence. These habits of the heart go to the roots of feeling; they are value-laden. These underlying values also influence habits of the mind, but in the latter case they are developed out of reason rather than emotion.

The Collective Mind of Academia

An indictment of the social sciences is provided by Edward O. Wilson in the beginning of Chapter 9 of *Consilience: The Unity of Knowledge*. Those two paragraphs are as follows:

¹ This is an adaptation of material from a book in progress, *Improving Decisions: Toward a New Age of Enlightenment*. Information on that work is available by e-mail to mseldin@tampabay.rr.com. All rights reserved on the article and the book.

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“People expect from the social sciences – anthropology, sociology, economics, and political science – the knowledge to understand their lives and control their future. They want the power to predict, not the preordained unfolding events, which does not exist, but what will happen if society selects one course of action over another.

“Political life and the economy are already pivoted upon the presumed existence of such predictive capacity. The social sciences are striving to achieve it, and to do so largely without linkage to the natural sciences. How well they are doing on their own? Not very well, considering their track record in comparison with the resources placed at their command.” [Page 197.]

Wilson compares the advancement of the social sciences with advancements in medicine. He concludes that the difference is medicine’s use of consilience and social sciences’ aversion to it:

“Social scientists by and large spurn the idea of the hierarchical ordering of knowledge that unites and drives the natural sciences. Split into independent cadres, they stress precision in words within their specialty, but seldom speak the same technical language from one specialty to the next.” [Page 198.]

As social scientists, we are interested in predictive ability. With our specialization in real estate we need to draw on many disciplines, especially understanding human nature. Wilson also writes that these academics are “easily shackled by tribal loyalty.” [Page 199] Later, he writes,

“As a rule they ignore the findings of scientific psychology and biology. That is part of the reason ... why social scientists overestimated the strength of communist rule and underestimated the strength of ethnic hostility. They were genuinely startled when the Soviet empire collapsed, popping the cap off the superpower pressure cooker, and were surprised again when the result of this release of energies was the breakout of ethnic strife and nationalistic wars in the sphere of diminished Russian influence. The theorists have consistently misjudged Muslim fundamentalism, which is religion inflamed by ethnicity... In short, social sciences ... have paid little attention to the foundations of human nature, and have almost no interest in its deep origins.” [Pages 199-200]

As noted, much of this essay is drawn from the book in progress which focuses on both real estate strategy and the strategy for dealing with terrorism. In both cases the problems are highly interdisciplinary. But, the academic structures we work in are typically departmentalized by discipline; with interdisciplinary programs the exception rather than the typical arrangements. The whole system in academia is based on a discipline focus.

The relevance in all of this is in dealing with major issues of today. If we define issues by restricting ourselves to one discipline, then the outcome is in that context. However, if the problem is interdisciplinary, then the analytical system needs cognizance of the different perspectives; different perspectives of cultures as well as disciplines.

Some Progress in Finance and Economics. The search for human nature is, in essence, a search for understanding human behavior. That understanding is necessary for predictive ability, which is important for making choices. An area in which one of the social sciences, economics, has reached back into the hierarchy of the sciences is in the arena of behavioral economics.

Economics has traditionally made some unrealistic assumptions in its theoretical constructs of man's economic behavior. Wilson's criticism of economics includes the statement,

“The result of such stringency [creating models of wide application with abstractions representing little more than exercises in applied mathematics] is a body of theory that is internally consistent but little else. Although economics, in my opinion, is headed in the right direction and provides the wedge behind which social theory will wisely follow, it is still mostly irrelevant.” [Page 220.]

Hersh Shefrin, in his book, *Beyond Greed and Fear: Understanding Behavioral Finance and the Psychology of Investing*, writes “People are imperfect processors of information and are frequently subject to bias, error, and perceptual illusions.” [Page x.] He further writes, “...I think that most investors are overconfident about their vulnerability to psychologically induced errors, and although intelligent, not as intelligent as they believe themselves to be.” [Page xii.] The now classic example is the technology heavy NASDAQ bubble of the past few years. It was a case of irrational exuberance. Shefrin writes that individual investors suffer from an extrapolation bias by naively extrapolating recent trends, and that “Institutional investors suffer from gambler's fallacy, and are overly prone to predicting reversals. Gambler's fallacy arises out of a misinterpretation of the law of large numbers.” [Page xv.]

The principle here is that different players in the market make different errors in reasoning. To better understand the market in order to predict outcomes, one needs to disaggregate. The fundamental law for consilience is that in order to understand the system, it needs to be broken down into its parts. The point is that irrational behavior will cause predicting outcomes based on reason to be in error when others are not applying the reason we see as appropriate. They are not thinking as we would think and so behave differently. We can develop strategies for dealing with the situation and we can apply the principles from the strategy in one area to other areas

A System Overview

Paradigms. The framework for this integration is the paradigm within which the information is considered, which influences the forecast of outcomes. People see things differently depending upon the culture in which they developed, among other factors. The ability to see things is, in some measure, dependent upon how well the neural connections have been developed.

The Essence of the Process. The essence of the process of choice is that the mind, by using the brain, processes selective information in the ways it has learned through

biological development and culture (nature and nurture). This process is in a paradigm based on values, also learned through biological development and culture (nature and nurture). However one chooses to classify emotions as related to reason, the intelligence of the mind deals with both the forces of tightly or loosely reasoned logic melded with emotional force. The blends may be different for different people and circumstances, and errors in reasoning do occur, but reason alone is not as good an indicator for understanding or forecasting behavior as is a combination of reason and emotion. But, both reason and emotion are rooted in the values. Thus, the big issue is to identify the values and the way in which the individuals or groups deal with the information.

The discipline of cognitive science is defined in *A World of Ideas* as "...an inquiry into the nature of thought, reasoning, belief, and knowledge, that encompasses linguistics, computer science, neuroscience, and philosophy as well as psychology." [Page 68.] The opening paragraph of Paul Thagard's preface to his book, *Mind: Introduction to Cognitive Science*, is as follows:

"Cognitive science is the interdisciplinary study of mind and intelligence, embracing philosophy, psychology, artificial intelligence, neuroscience, linguistics, and anthropology. Its intellectual origins are in the mid-1950s when researchers ... began to develop theories of mind based on complex representations and computational procedures. Its organizational origins are in the mid-1970s when the Cognitive Science Society was formed and the *Journal of Cognitive Science* began."

The Science of Networks. The science of networks is even younger than cognitive science. It deals with the commonalities of systemic structure of the linkages that form networks. Networks are composed of nodes that are connected. Until 40 years ago, mathematicians assumed that the distribution of the frequency of connections between nodes in a system was random "...with nodes distributed like a normal curve, dominated by averages." [Joe Podolsky's review of the book authored by Barabasi, *Linked: The New Science of Networks*, appearing in *The IT Journal*, Third Quarter, 2002.]

The significance of the discovery that there are differences in the strength of ties not randomly distributed is in the predictability of the behavior of the system. This predictability is attributable to some underlying principles in the order of the system. To begin, there are interdependencies within the network. Thus, aggregate behavior is a reflection of the interaction of the individual behaviors that are influenced by each other. In other words, group behavior may be different from the summation of predicted individual behavior because the individual behavior is being influenced by the behavior of other individuals. Thus dynamics comes into the equation.

Duncan J. Watts, in his book, *Six Degrees: The Science of a Connected Age*, writes:

"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." [Page 26.]

Cascading. This behavior of the mob, or any series of nodes, is an important element in strategy involving aggregate behavior. Of particular importance is the concept of cascading. Watts discusses the 1996 blackout that started with the failure of a transmission line in Oregon and cascaded to Washington, Idaho, Utah, Colorado, Arizona, New Mexico, Nevada, and California. It interrupted service to 7.5 million people. He develops the idea that understanding the relationship of group behavior to individual behavior is a science, as is understanding group behavior itself, which may differ from simply aggregating individual behavior.

Watts continues with a discussion that points out that different disciplines may need to be brought to bear in order to better understand the science of networks. He writes,

“Physicists and mathematicians have at their disposal mind-blowing analytical and computational skills, but typically they don’t spend a whole lot of time thinking about individual behavior, institutional incentives, or cultural norms. Sociologists, psychologists, and anthropologists, on the other hand do. And in the past half century or so they have thought more deeply and carefully about the relationship between networks and society than anyone else – thinking that is now turning out to be relevant to a surprising range of problems from biology to engineering. But, lacking the glittering tools of their cousins in the mathematical sciences, the social scientists have been more or less stalled on their grand project for decades.” [Page 29.]

Reductionism Revisited. Reductionism has some merits. It is the problems that need attention. Stephen Jay Gould, in his last book, *The Hedgehog, the Fox, and the Magister’s Pox: Mending the Gap Between Science and Humanities*, 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 relationship among the parts provides the 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.

This brings us 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 ... 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).” [Page 202.]

Consider the point made by Watts, cited earlier under “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.” [Page 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 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. Does this sound familiar in terms of behavioral economics and behavioral finance?

The scientific method uses some of the precepts of reductionism. The criticism goes back decades and takes a variety of forms. [See Rohmann, page 338.] One is of the view of consilience. Using the concept that understanding is enhanced by analysis that breaks something into its parts certainly is useful. But, we need to go further, and we do.

Real Estate as a Social Science Example

Real estate may be a discipline or an area of study, depending on one’s point of view. The consensus, if there is one, may be to view it as an interdisciplinary area of study taking on the caste of the particular perspective from which the question is asked. So, real estate administration is a discipline, but many of the questions involved are answered by applying the methodologies of another discipline or disciplines.

Some Real Estate Analyses. As an illustration of the applicability of the ideas on consilience and networks, the discussion that follows outlines a series of analyses that may be involved in the development of a real estate investment strategy focusing on REITs as a major component of an investment portfolio.

An Ariadne’s thread approach [see discussion in Chapter 5, side heading of “Values and Policy Choices”] to the selection of a particular REIT for inclusion in a portfolio would assess risk and return of the particular REIT and consider it in the context of the portfolio’s other assets and strategy. That analysis would consider short-term market changes expected as reflections of stock market movements resulting from capital flows. It would also consider the long-term ability of the REIT to continue to pay dividends based upon the income-producing ability of its current real estate portfolio and the assessment of management’s ability to continue to build the portfolio. That assessment flows back to the analysis of the real estate in the REIT’s portfolio and the market in which it sells the use of space and/or the market in which it would sell the ownership of the real estate. While the former market is much more local than the latter market, both are heavily dependent on the local economy in which the real estate resides.

Any local economy can be viewed as part of a network of cities. As noted earlier, nodes are not randomly distributed and do not have a random number of connections resulting in different sizes. The literature on the scale of cities focuses on the different functions provided by the different sizes. See for example a summary of the seminal work of

Walter Christaller by Pragya Agarwal from the web site
<http://www.csiss.org/classics/content/67> in the box that follows.

Walter Christaller: Hierarchical Patterns of Urbanization
By Pragya Agarwal

The size distribution of urban locations has been a significant question in urban science. Walter Christaller, a German geographer, originally proposed the Central Place Theory (CPT) in 1933 (trans. 1966). Christaller was studying the urban settlements in Southern Germany and advanced this theory as a means of understanding how urban settlements evolve and are spaced out in relation to each other. The question Christaller posed in his landmark book was 'Are there rules that determine the size, number and distribution of towns?' He attempted to answer this question through a theory of central places that incorporated nodes and links in an idealistic situation.

The model in CPT is explained using geometric shapes, such as hexagons and triangles. Similar to other location theories by Weber and Von Thunen, the locations are assumed to be located in a Euclidean, isotropic plane with similar purchasing power in all directions. The assumption of universality in the transport network was also established and all parts of the plain were served by the central place. A Central Place is a settlement or a nodal point that serves the area around with goods and services (Mayhew, 1997). Christaller's model also was based on the premise that all goods and services were purchased by consumers from the nearest central place, that the demands placed on all central places in the plain were similar, and that none of the central places made any excessive profit.

Christaller's work was expanded on by his contemporary August Losch, who saw similarities from zoology and biology. The drawing from other disciplines is not new.

The other way of looking at the size is to focus on the individual city, consider its function, and forecast its growth based upon its economic base.

Homer Hoyt developed the approach of economic base analyses that divides employment into that which produces product or service for export (sometimes called basic industries) and that which produces product or service for consumption. By establishing the ratio of export employment to total employment and forecasting the growth of export employment, one could forecast the growth of the city.

There are more sophisticated methods for forecasting the employment and population growth, but the concept of networks comes into play in that the exported goods and services are an activity of the nodes of cities. Thus, an analysis of the growth of these export activities for the system as a whole is a start to understanding the changes in the growth of particular cities.

Individual cities change their productive capability over time with the emergence of new basic industries. A network type of analysis would need to factor in the location of the emergence of new industries and the flexibility of locales to adjust. It would be an interesting way to look at the growth of cities, or really metro areas. Regional science has some approaches that move in that direction.

Many institutional investors are enthralled with diversification and so would prefer to simply invest in an array of cities resulting in a diversification of the local economies in which they would hold real estate investments. The relevance of network science to that approach is in the stability of the entire system.

Within the city or metropolitan area there is a series of space markets. These may be categorized by type of space, industrial, office, retail and residential. The clusters of space may be thought of as nodes with links to suppliers and customers. Geographic information systems may be used as a tool in the analysis of locations, essentially looking

at the competitive position within the system for any particular location. A Hoyt funded project by Morton O'Kelly did that in the network analyses of retail locations. The network science approach to analyses of real estate markets seems worth pursuing and may be placed on the to-do list for Hoyt Institute funding. However, the Hoyt Institute has embarked upon what may be considered to be a form of network analyses in its program for the study of the flow of funds in the capital market. The salient interest is the flow of funds to REITs.

Flow of Funds and Capital Markets. The flow of funds program of the Homer Hoyt Institute was started before I had read Watts' book. Nevertheless, it may still be a good example of an interdisciplinary approach to a problem utilizing a network paradigm. The network paradigm is best illustrated by flow of funds figure available on the website, www.hoyt.org, from the Homer Hoyt Institute's "Capital Market Research Program: Interim Report."

Think Networks. Albert-Laszlo Barabasi, in the introductory chapter of *Linked: The New Science of Networks*, writes "This book has a simple aim: to get you to think networks. It is about how networks emerge, what they look like, and how they evolve." [Page 7.] Earlier, Barabasi explains that there is a strict architecture in complex systems found in various disciplines and that events that occur are connected in ways described in the science of networks which is discovering the laws of self organization. He concludes the introduction as follows:

"Networks are present everywhere... You will come to appreciate how the Internet, often viewed as an entirely human creation, has become more akin to an organism or an ecosystem, demonstrating the power of the basic laws that govern all networks. You will see how the emergence of terrorism is also ruled by the laws of network formation and how these deadly webs take advantage of the fundamental robustness of nature's webs. You'll wonder at the amazing similarities among such diverse systems as the economy, the cell, the Internet, using one to grasp the other. This will be an eye opening trip across disciplines that I hope will challenge you to step out of the box of reductionism and explore, link by link, the next scientific revolution: the new science of networks."

A critical aspect of networks is that they are dynamic rather than static. This requires viewing the process of change as a force in developing the structure in which nodes are linked to become a network. Linkages are critical in the production of income by real estate and the forces affecting that income production are subject to the vicissitudes of the economy and ecology, and the political environment as well as subject matter of a wide variety of other disciplines.

A Discipline Perspective

My perspective of a discipline is as an area of study that has a group of problems with substantial commonalities and methods of analyses that give it its own paradigm. This specialization enables one to get a better understanding of the detail of the system.

The biggest difficulty in forecasting outcomes arrives not from lack of knowledge within the system, but rather because exogenous forces in related disciplines have not

adequately been dealt with because the systems have not been adequately integrated. The difficulty in such integration is that it takes a broader cognitive spectrum, such as was typical of an ancient era, to effectively deal with multiple disciplines. As social scientists, our schemas have been trained to sharpen focus so that we may be rigorous in our research and analyses rather than having been trained to see the issues from a variety of perspectives and develop enough different perspectives to be able to take a truly interdisciplinary view.

Interdisciplinary efforts combine disciplines. In some cases, all that one really needs to do is to extract the relevant principles from the related discipline and incorporate them into the paradigm. Such paradigms expand and it may be more difficult to get a sharp focus on the micro aspects. The key is in phasing the frameworks so that the assumptions in the sharply focused analyses are realistic. If that is not practicable because of the lack of data for a rigorous model, then if one wants reasonably reliable forecasts of outcomes one better develop a good feel for the bigger picture. Over time, one may be in a better position to tie together the paradigms as an integrated system, as alluded to in the city as a system [See the boxed insert at the beginning of Chapter 2 of the monograph, *The Challenge to Our Thought Leaders*. That contains a quote from the discussion of the *City Model of the Environmental Laboratory* book.]

There is a great deal that needs to be done on our university campuses to improve our ability to forecast outcomes from applications in the social sciences. That is part of the motivation for this book. Another part relates to finding better methods of solving problems. For a discussion of that effort as it relates to a real estate investment strategy, visit the working draft of the book in progress on the ACSE site, <http://www.spicequest.com/acse/index.htm>. Click on “Improving Strategic Decisions” and then “Part II: What Were They Thinking?” See Chapter 6.

That chapter also considers principles and values in the system to see some policy guidelines applicable to another area. That area is our national security – for we must defend our freedom even though it may not be used as wisely as some of us think it should be. But, as social scientists, we can help in using the freedom with greater wisdom to improve the quality of life for ourselves and others.