

# POST GLOBALIZATION: ECONOMY, SYSTEMS SCIENCE & ACADEMY

**Jon Li**

Institute for Public Science & Art

1075 Olive Drive #4, Davis CA USA, 530-753-0352, jli@cal.net

May 30, 2011

## ABSTRACT

1. The global Internet means turning everything around so that you are the center of the universe, and it does revolve around you. The future poses many questions about our sustainability. Now what do you do?
2. Post Globalization, chaotic unpredictable economy, with escalating data pollution.
3. Pre-Globalization businesses and institutions are structured as rigid bureaucracies that focus on retaining the status quo over adapting to a changing environment.
4. A scientific tool, called the Viable System Model, lays out an empirically derived map of the communication/information/decision flows that are necessary and sufficient for sustainability, whether a person, a machine, a work group, an organization, or an economy. The closest similarity in the history of science is what the “cell” became as the basic unit for biology (Robert Hooke, 1665), VSM is for social science. The VSM was invented by Stafford Beer in England in the 1950s to identify communication problems in a steel mill. The VSM model of ONE single layer of a bureaucracy allows you to identify distinctions in relation to that layer’s metasystem and its subsystems. Several different layers’ communication conflicts can then be identified, and the structure redesigned so that some of the communication conflicts can be dissolved. We can now turn to a concept of management that has the power to manage, that is to say, it may do something now so that the future will be different from the future that would otherwise have been.
5. To be sustainable in the 21<sup>st</sup> century, organizations must become more flexible and adaptive in new ways that the global internet encourages to the point of necessity not only for sustainability, but increasingly for survival at all.

The word that dominated the 20<sup>th</sup> century was “growth”, and it has brought us to the point of global concern about the future. The word that encapsulates that concern for the future is “**sustainability**” which is broadly defined as the capacity to endure - elastic in the short run, resilient over time; in ecology, how biological systems remain diverse and productive over time; for humans, improving the quality of life while living within the carrying capacity of supporting eco-systems; human organizational sustainability is defined in terms of viability.

In *Cradle to Cradle: Remaking how we make things* architect William McDonough advocates changing how we design and build everything so that it is either biodegradable or technically recycleable – redesign how we make EVERYTHING. In too many areas, the only solution is to do a much better quality job with a much smaller quantity of resources and effort.

## Post Globalization: Economy, Systems Science & Academy

Old Standards are Crumbling: The global economy suffered a meltdown September 2008 that has been masked by the US TARP bailout. All of the major countries in the Euro are running an accumulating deficit, ranging from Greece's 130% of the country's annual gross domestic product, and Italy's 130%, to Spain's 72%, France's 92%, and Germany's 80%, and all are growing worse. The Euro depends on Germany, but support is fading: according to a recent German poll, 20% thought the Greek rescue was right, and 47% opposed it. When Germany shifts back to the Mark, the Euro will disappear.

The US dollar has been growing trade deficit since 1993, and is held up with debt to the Chinese. The Chinese economy focuses on quantity at the expense of quality. China is poisoned by political repression and environmental tragedy: Of China's 1.3 billion people, at least 400 million breathe heavily polluted air, and over 300 million have no safe water supply. According to official statistics, about 30% of China's rivers are so dirty they aren't fit for even industrial or agricultural uses, let alone human consumption. More than 75% of the water in rivers flowing through China's urban areas is unsuitable for drinking or fishing. Sixty million people have difficulty getting access to water, and almost three times that number drink contaminated water daily.

The modern Chinese economic miracle of sustained growth, at per capita GDP increase of 7% per year for the entire 1978-2005, is the most sustained period of rapid economic growth in human history. But "Growth must be sustainable to deliver its benefits" and China has not figured that one out at all. According to a 2000 report by the U.S. Embassy in Beijing, pollution costs the Chinese economy anywhere from 3 to 8 percent of GDP each year. In addition, ecological damage potentially costs another 5 to 14 percent. Even at the low end of these estimates, environmental damage is roughly equivalent to annual economic growth, meaning that the economy is producing no net national wealth at tremendous long term social and ecological expense.

The Viable System Model is a lens for looking at effective communication, especially between humans. At this time in history, most human organizations have poor communication channels, especially about adapting to the future. The VSM is a filter to help identify what would be useful, from now on. The mission of VSM is to identify an improved state of well-being, what Aristotle labeled "eudemony" and Thomas Jefferson called "the pursuit of happiness".

As important as political democracy is, it is meaningless if we don't have economic democracy as well. As a working definition, "economic democracy" is a structured information environment where economic resource decisions are publicly transparent, so that a decision reflects who benefits as well as who pays, and individuals are held accountable for the consequences of group actions.

This is a discussion about re-conceptualizing our information world – so that the social systems work. About turning the economic information system inside out, so that instead of it being difficult for everyone, make it so intuitively useful that it is commonly practical and easy to obtain whatever information you need. Anatomically, a fig fruit is surrounded by its skin, all covered; if you invert it, and expose the fruit with the skin at the bottom, it is a strawberry. This idea is to invert the global economic information

## Post Globalization: Economy, Systems Science & Academy

system so that it is easy to use. For everybody. Turn the global economic information system from a mystery that you spend your life losing out to (the “fig” that you cannot see into) into a transparent information structure that is designed for the user (the “strawberry” that you can see all the good parts whenever you need them).

WikiLife/WikiEconomy: a computer information idea for creating a global grassroots economy. Basically it is a dynamic information catalogue for all the parts of a woman's life: income, food, housing, health care, transportation, clothing, education, media, entertainment, taxes, managing the economy, public services, infrastructure, utilities. That information matrix has components that scale up physically/geographically: family, 10; neighborhood, 100; village, 1,000; community, 10,000; district, 100,000; and region, 1,000,000. Matrilineal?

Let's face it: 3000+ years of patriarchy has failed. Socially, ecologically and evolutionarily.

The main purpose of this model is for the INDIVIDUAL to be able to have a standard grid for her to put all of the important information in her life in an organized way. It needs to be supportive of different scales of data, for unique people, to help her organize her way out of her problems and challenges, social, organizational, and economic – both as a consumer and as a producer.

Most of the global economy is hidden, and in a lot of trouble. This is a mechanism to turn the global economy inside out, so that most of it is transparent, and manageable. WikiLife/WikiEconomy is like the strawberry: you can see everything you want to look for. It is an information structure that allows many people to fill in the beginning of cells of a decentralized economy at the neighborhood, village & community levels locally, while other people will discover what is actually happening in the larger economy at the regional, state, national, continental and global levels. It would need to focus on the local community that makes up the environment of an individual and their extended family. Recognize tribal connections without allowing cultural traditions to prevent self-determination by every woman and her children. And it would need to be able to take into account the national/international economy.

Praxis: Consolidate California State Master Plan for Higher Education: One board/administration/budget: University of California (10 campuses), California State University (19 campuses), Community Colleges (108 campuses); coordinate regionally, cut administration in half.

Praxis: The University of California at Davis is the premier agricultural research institution with a recognized mission of global responsibility. This is a proposal to apply the Viable System Model to bring the campus of 30,000 students, 1900 faculty and 15,000 staff to a real time information system in two weeks, Design and Implementation. Outcomes: build a Viable System Model of the Planet for multi-species sustainability as the campus mission (“external”); build a Viable System Model of the University of California at Davis decision flow (“internal”); be able to measure 12 indicators daily

## Post Globalization: Economy, Systems Science & Academy

(each made up of 10 indices) for both mission and decision process; total of 264 daily measures.

Subexperiences: the first VSM models of the Planet and of UCD will be like black and white Polaroid pictures from the 1950s, probably a dozen layers - that is what it looks like on the web site at the beginning of Design Week. By the end of Design Week, the web model is like Polaroids that have been painted over with water colors. Monday 8 am Implementation Week, part of it is iMovies, and part of it is Garage Band. By the end of Implementation Week, most UCD administrative staff should experience the web site as the coolest thing that Steve Jobs and James Cameron ("Avatar") didn't think of first. Faculty, students, researchers, prospective students and their parents, the public and elected officials should feel like they are inside.

Praxis: Every community on the planet is now in an economic survival mode. This is a proposal to build a model of our (Davis's) economy, and the Tahrir Square Egyptian economy, and for a different set of challenging reasons, the economy/ecology of Northern Japan, with the idea being to build out of the rubble of the current information chaos towards a more sustainable future. The better you can understand the reality of the current situation, the more likely you can have a useful discussion about improvements and a course of mutually agreed future action. Too much of current decision taking is based on long obsolete data being presented as useful information.

Since the first of the year, a lot has changed in the world as the Middle East has taken on new meaning.

Tahrir Square was an anonymous car roadway and parking lot that squatters turned into many things:

- foremost, it is a real world symbol for the aspirations of the Egyptian people;
- Tahrir means freedom, so it is also a state of mind;
- History was earned there with courageous people sacrificing for the future;
- It can become a metaphor - for a respected place, in the tradition of the Greek Agora, a place where community is manifest;
- A safe area within a school, sometimes the whole school grounds, defined by the users.

To the question of quality, Stafford Beer's answer is discovery, personal and social.

Key words: post globalization, computa, WikiLife, WikiEconomy, Viable System Model, eudemony

### **Introduction: 20<sup>th</sup> century: data pollution; 21<sup>st</sup> Century Systems Science: sustainability**

20<sup>th</sup> Century institutions just don't pencil out any more. Our social institutions were designed when a year was considered a short time, and a month almost instantaneous. Our dominant economic structures have emphasized growth and expansion without regard to potential cumulative social and environmental consequences. Financial and governmental monsters are dominating the economy, while masking danger signals by pushing debt obligations further into the future.

## Post Globalization: Economy, Systems Science & Academy

Reductionary science has created a variety of technological miracles, but greedy economic rewards have encouraged escalating social instability and cancerous environmental pollution. Climate change and the increasing chaos of the global economy are signs that the human species has lost control of the future consequences of national and corporate actions, motivated with a goal of private financial profit.

The evolution of social science in the 20<sup>th</sup> century was dominated by personal whim, criticism and confusion. The very question of what is science became something that was dominated by the alleged rational power of quantification of the physicists, just as the physicists became enamored with Heisenberg's uncertainty principle.

Water and air pollution are problems everywhere, Honolulu, Mt. Everest, the North Pole. What will the global environmental and weather conditions be in a century? Species survival to the 22<sup>nd</sup> century is in doubt.

Economics became addicted to the growth model, with an obsession to increases in financial numbers. No other criteria matched the question of profit during the most recent quarter. US academy became defined by the country's perception that it is the only world superpower, and its citizens deserve to be treated with respect and even revered.

Sociology, social psychology, and psychology developed in relation to each other, competing for rhetorical turf. Psychology was based on trying to describe and explain abnormal behavior by individuals, and society's efforts to control deviant actions and otherwise inappropriate social behavior – the tail end of the Bell shaped curves of social activity. Sociology emerged with the growth of the corporate and governmental bureaucratic institutional economy. Social Psychology tried to find its way somewhere in between the two, to describe group dynamics and how mass media impacted social behavior, from traditional print media like newspapers, books and magazines, to emergent radio, movies and then television, to the Internet, social media and global communication.

20<sup>th</sup> century academy was infatuated with intellectual self-indulgence, basically justifying why your particular ideas should be so valuable that you are rewarded for developing them and passing them on to others as reality. And then rewarding people for how well they mimic you and your ideas. Most topics of study are so obscure that the way to discount something as irrelevant to today's every-day-real-world is to say: "that is academic".

In economics, traditionally the focus is on large scale – the firm, the industry, the labor force, the country's gross domestic product, the country's trade balance. Those measures are no longer helpful in managing the economy at any level. Economics stepped off an intellectual cliff during the Meltdown of September 2008, and it cannot seem to recover. The section which follows is an analysis of the dominant currencies of the global economy, the Euro, the Dollar, and the Chinese economy, and how much trouble they are really in: the awkward politics of the Euro, the fragile chaos of the dollar as a global currency, and the unstable social and environmental foundation of the Chinese economy

## **Post Globalization: Economy, Systems Science & Academy**

dominated by the repressive Communist Party. This is a systems' analysis of the inadequacy of economic policy tools to effectively keep the economy within defined social controls and environmental limits. 20<sup>th</sup> century Economic Thought presumed that Economics ignores social and environmental consequences, labeling them “neighborhood effects” and therefore irrelevant to the discussion of benefit/cost analysis.

Post World War II, new intellectual traditions have emerged within academy to reconceptualize social analysis. Based in the subjective-objective paradox (rather than assuming it away), anthropology offered a grounding for General Systems Theory to build a social analysis which includes the observer. This shift in focus completely changes some of the social sciences' methodological assumptions (even exposing presumptions), allowing for an opening into reconsideration of how our world works, putting the emphasis on how the observer is using the information.

This paper lays out questions for dealing with a fast-changing global economic environment: an analysis of the shifting to real time management, introducing the Viable System Model as a tool for identifying where decisions and information flows need to be for homeostasis and stability in the short run and adaptation and sustainability over time; developing a new academy interested in an economic systems analysis of a larger perspective than just finances, looking at the challenge for an economic information system to quantify relative values for resource management for future generations. An expansion of these ideas leads to a proposal for software for a global, decentralized economic information service, called computa. These ideas are used to present a preliminary analysis for a major public university campus facing budget challenges.

Like 1500, 1776, and 1900, now is a period of institutional transformation. The under 30 crowd is leading. New ideas and new technologies have brought the world instantaneous communication, accelerating social change, exemplified by the Arab Spring in Tunisia and Egypt. A new information system is emerging. And a new world. Ultimately, what held the class system together was the ruling class' control of information, and now the social media transcends the official media.

New American Way of Life: One of the fascinating things about the US culture is how much it changes every decade. Four months before the assault on the World Trade Center in New York City in 2001, then-US Vice President Dick Cheney said that “conservation may be a sign of personal virtue, but it is not a sufficient basis for a sound comprehensive energy policy”. Cheney is wrong. Energy and other non-renewable resources are finite, and his high consumption lifestyle cannot go on forever.

This is a discussion about re-conceptualizing the world – so that the social systems work. About turning the economic information system inside out, so that instead of it being difficult for everyone, make it so intuitively useful that it is commonly practical and easy to obtain whatever information you need. Anatomically, a fig fruit is surrounded by its skin, all covered; if you invert it, and expose the fruit with the skin at the bottom, it is a strawberry. This idea is to invert the global economic information system so that it is easy to use. For everybody. Turn the global economic information system from a

## Post Globalization: Economy, Systems Science & Academy

mystery that you spend your life losing out to (the “fig” that you cannot see into) into a transparent information structure that is designed for the user (the “strawberry” that you can see all the good parts).

As important as political democracy is, it is meaningless if we don't have economic democracy as well. As a working definition, “economic democracy” is a structured information environment where economic resource decisions are publicly transparent, so that a decision reflects who benefits as well as who pays, and individuals are held accountable for the consequences of group actions.

Recently, the Chinese have become the workshop of the world, and their trade surplus dominates global economic thinking. But what are the Chinese gaining? Rigid single party political domination, social repression, and carcinogenic environmental devastation. China's emergence raises new sets of criteria for defining excellence, and even reality. What if the television-media defined as reality after World War II is no longer true? Then what is? What should the academy be teaching and doing advanced research on? What should our finest minds be exploring? An emergent question is: What is quality?

The next social science challenge is to identify how to improve quality, described on a personal level by Thomas Michael Power in *The Economic Pursuit of Quality* (1988), “Even in the commercial sector of the economy, what we really purchase is quality, not quantity. Beyond a rather low level of income we do not spend our money mainly for pounds or calories of food, but for taste, nourishment, and variety. Our clothing budget is not spent on homogeneous body covering, but for qualitatively distinctive and stylish clothes. Many important qualities are supplied outside the commercial economy, such as clean air, scenic beauty, safety and a sense of community. It is the sum of commercial and noncommercial qualities that accounts for total economic welfare. These qualities are not independent of physical dimensions, but neither can they be reduced to physical dimensions alone. Economic development is the increase in the sum of marketed and nonmarketed qualities available to individuals in the local community”.

The word that dominated the 20<sup>th</sup> century was “growth”, and it has brought us to the point of global concern about the future. The word that encapsulates that concern for the future is “**sustainability**” which is broadly defined as the capacity to endure - elastic in the short run, resilient over time; in ecology, how biological systems remain diverse and productive over time; for humans, improving the quality of life while living within the carrying capacity of supporting eco-systems.

If the 21<sup>st</sup> century academic mission emphasizes “sustainability”, then the criteria and standards evolve around questions of **viability**, and what is valued is what is most pragmatic. It would mean that science is redefined in terms of helping make life in the economy practical enough to be sustainable. Is it possible that anything could be more important than the monetary system?

## Post Globalization: Economy, Systems Science & Academy

### The Future of the Euro and the Dollar bank on China

Questioning the fate of the Euro and the Dollar begs the question:

Won't the Dollar ALWAYS be the global currency?

What if Germany stops underwriting the Euro?

The Euro was invented, like the European Union, to build economic heft to compete with the U.S. population of over 300 million and a gross domestic product of \$14 trillion. Combined, the 27 EU countries have a total population of 500 million people and a total GDP in 2010 of the equivalent of \$15 trillion; the 17 EU/Euro area countries have a population of 327 million people (65% of the EU).

In EU/Euro: Germany, France, Spain, Greece, Estonia, Italy, Portugal, Austria, Belgium, Cyprus, Finland, Ireland, Luxembourg, Malta, the Netherlands, Slovakia, Slovenia

In EU but not in Euro: United Kingdom, Poland, Czech Republic, Sweden, Denmark, Hungary, Romania, Bulgaria, Latvia, Lithuania

European but not in the EU: Iceland, Norway, Switzerland

But the Euro as a monetary union is severely limited because it is not even an economic or a fiscal union; and then, the Euro is a subset of a fragmented political group, the EU, which is without cohesion, consistency, enforcement or responsibility for the consequences of its decisions - which all too frequently don't ever even lead to action, or change in behavior.

The structural problem with the EU is that it is an economic trade association - each member has political autonomy, and no central accountability. It is a lot like the former US colonies were during the Articles of Confederation (1776-1789). By comparison, the EU is a bunch of wild animals going in different economic directions. The EU's political disunity is exemplified by its headquarters: Belgium recently passed a record time without being able to have any government, a coalition government, anything. They stumble along with a caretaker. Pretty shaky political foundation to build a currency.

For the 17 countries that have become part of the Euro, it was an initial success, especially for the weaker economies, the Iberian Peninsula, Spain and Portugal, and Greece. The main advantage of the Euro was the initial macro-economic stability and an increased level of trade within the zone due in part to lower transaction costs, price parity and eliminated exchange rate risks. But countries do have a personality (Australians are laid back but not lazy), and too many of the poor business/work habits of the southern half of the EU could not stay hidden for long.

Once in the EU, countries are not held accountable to maintain any fiscal restraint within the public sector - they have standards but no one is respecting them. And there is no ultimate threat of being kicked out. The founding EU treaty doesn't even have a provision for a country being able to leave; it is literally without precedent. So there is only lip service to fiscal discipline, as every country operates in deficit spending, particularly after the economic meltdown of September 2008. The business cycle disappeared over a decade ago, so history is no guide for the future.



## Post Globalization: Economy, Systems Science & Academy

But since 1980, EVERYBODY has always known that the center, the heart and soul of the IDEA of a strong, healthy, vitally productive, accountable European economy relies on one country: Germany. Its economy battled Japan in the 1980s for global dominance, and even though it took a tremendous hit when it absorbed irresponsible East Germany in 1989, and it has been absorbing the rest of Europe ever since, it remains one of the strongest economies in the world.

Post-World War II the US Marshall Plan economic stimulus of the 1950s built up European industrial advantage. During the past ten years, Europe has lost its competitive advantage to the emerging Asian productivity machine.

Even so, Germany is still the country the world relies on for precision technology. Traditional German perseverance has maintained a strong national export trade balance, unlike the rest of Europe.

Germany's social service delivery system (worker compensation, national health care, and social security) was invented by Bismarck in the 1870s (to delegitimize the labor movement). Germany's health and social service programs have survived humiliating defeat of both world wars. After being improved by the Scandinavians, these social programs were poorly copied by the US and battered by the selfish Republicans. Germans take satisfaction that their outstanding quality of life is due to their hard work, industry, initiative and foresight, as well as their excellent social support system and necessary vacation program so that workers maximize productivity when they are on the job.

Each time a Euro country with spendthrift ways comes to the Euro with hat in hand for a bailout, it is Germany who must support all the rest, serving as the reluctant paymaster. First Greece, then Ireland, now Portugal, and Spain is not far off and much bigger as a burden on the Euro.

As the Economist weekly newspaper stated April 16th, "if the Euro zone were an old-fashioned family, Germany would be the stern father telling his wayward children to go to bed early and not to spend all their pocket money at once."

But even Germany is running a national budget deficit, just not as extreme as some of the rest of the EU, with a debt burden having already accumulated to 80% of its annual gross domestic product. Every country is overspending today, mortgaging the future. Greece, Spain, Italy, even France and UK/Britain are little better off than Romania. All of the European countries' economies are so interlinked that they are stuck to each other.

The same Economist article: "Calculations by the Bank of England on losses that would arise from haircuts to Greek, Irish, Portuguese and Spanish debt ("haircuts": investors take the loss rather than taxpayers) suggests that a 50% haircut would wipe out 70% of the equity in Greek banks, almost half of it in Portuguese and Spanish banks and about 10% of the equity in German and French banks." The point of the article is that

## Post Globalization: Economy, Systems Science & Academy

vulnerable German banks are exposed throughout the Euro zone. In a recent German poll, 20% thought the Greek rescue was right, 47% said it was wrong.

The fear of the breakup of the Euro is that it would cause financial chaos - no, that is where we are now, especially since the September 2008 financial meltdown. If (When) Germany drops support of the Euro, all the other countries will have to revert back to their old currencies, and within three months there will be economic stability through flexible exchange rates. Several northern European currencies will then be comfortably tied to the deutsche mark, the way that many currencies have been tied to the dollar.

The discrepancy between the relatively low yield on a German bund and the much higher potential yield of the bonds of Greece, Ireland and Portugal reflects investors' lack of confidence that their respective governments will be around to make good on the payment when it is due, without debt restructuring which cuts the value of the bonds ("haircuts"). Each time one of the bailout countries starts a bond sale, there is less confidence that it can complete the sale, reflecting the imbalance and potential explosion within the Euro "domestic" economy.

The disappearance of the Euro will take certain distinct stages: 1) now, disappearing confidence in the stability of the Euro, due to Greece, Ireland, Portugal, Spain and Italy in particular – Standard and Poor just lowered their Italian credit outlook from stable to negative, 2) request for bailout by Spain or Italy, 3) Germany refuses to double its share of the bailout fund, 4) IMF, World Bank, UN and US each say they can't contribute another dollar, 5) Germany has second, third, fourth, fifth thoughts publicly, 6) German Greens and Nationalist parties gain because they advocate Germany leaving the Euro, 7) France asks for help, 8) by then, the future of the Euro is so in doubt that every single national central bank, and the European Central Bank, have down to a "T" what they do if Germany leaves the Euro, 9) German Bundestag decides to leave the Euro with Chancellor Angela Merkel's blessing, 10) the next day, every single country in the Euro declares a bank holiday of three working days, and 11) the fifth working day after the decision by Germany, every country in the Euro is open for business, has its own currency, and it is well enough balanced with the national bond rates that there are only minor adjustments even the first day of new business, 12) property values of all types deflate, forcing extreme drop in total bank paper value reflecting mark to market, and most EU area banks are so over-extended that they calmly close thirty days later.

Which leads to thinking about the future of the dollar. The idea of a reliant global currency is the foundation of international trade. Having a common medium of exchange within a growth mentality means increased potential all around: it is a "growth" homeostasis with all boats rising that a western social system is supposed to strive for. Essentially, it is the upper half of the business cycle; Keynesian economics was supposed to have eliminated the risk of the down side.

This growth model has been building for the past six centuries. In the late Middle Ages, as the allure of spices drove European traders, letters of credit put a lot of financial risk on the limited resources of individuals, and led to groups making an investment in a

## Post Globalization: Economy, Systems Science & Academy

ship's goods, with successful passage enormously profitable. In the 1400s, Amsterdam replaced Venice as the center of European trade, giving the guilder the power of exchange in foreign ports. With the discovery of the New World, the Spanish pursuit of gold and silver was so bountiful that it filled the King's purse, which financed such a large navy that Spain controlled the shipping lanes of the Atlantic Ocean, and the Spanish doubloon defined currency in foreign lands.

Until the British defeat of the Spanish Armada in 1588. Britain then controlled the sea lanes, and their concepts of Free Trade and Open Markets benefited British merchants and enshrined the power of the pound, which was as important to the British Empire as the Royal Navy. World War I took so much out of Britain that it could no longer control its territories: the Empire became the Commonwealth. The once-proud pound was overwhelmed by the US dollar with the enormous purchasing power potential of the American consumer, as well as the US's seemingly unlimited industrial capacity.

The establishment of the Federal Reserve (1913) and the national income tax both built stability into the US economy. The Edison-driven electricity revolution of labor saving devices led to so much conspicuous consumption that the US domestic market became the export target of just about every other national economy in the world.

The explosion of US industrial capacity in the 1920s exceeded demand by so much that it fed the economic collapse of 1929. Industrial capacity languished during the 1930s, finally being stimulated in 1938-9 by Lend Lease: converting idle factories to build tanks for Britain. Post World War II, the US in the 1950s used industrial capacity to rebuild industrial Europe. That market served as a profitable outlet for American goods through the 1960s. But Europe wasn't just looking for the pre-war status quo; European industrial capacity continued to expand beyond self-sufficiency to compete in the global export market.

1973 was the last year that the US was a net exporter of goods. US technical and financial expertise was still so superior that international "services" added so much benefit to other countries that the US had a net balance of "goods plus services" until 1993. Bill Clinton may have been successful in balancing the federal budget to an annual surplus, but it was on the back of an economy that had grown addicted to international subsidy.

Since 1993, the US trade balance has been terrible and growing worse. Between the US budget deficit and the trade deficit, the US is now in worse shape than Japan, France, the UK, Italy, Spain, Portugal, Ireland, and even Greece. What is holding up the US dollar? Roughly, one-quarter is owed to US interests, one-quarter to Japanese interests, one-quarter to European interests, and almost one-quarter to Chinese interests. The US subsidy addiction remains out of control, especially due to imported oil for the high energy consumption, automobile-based suburban lifestyle. The US, Japanese and European economies are pretty stagnant, so the US must rely on the greed of the Chinese for its continuous need for more handouts to maintain its decadent consumption reflected by the annual US trade deficit.

## Post Globalization: Economy, Systems Science & Academy

Only China has the short term capacity to match the US insatiable appetite for inexpensive goods. But China has the shortest future time horizon of all: they only see more growth in their future. Their Politiburo is dominated with members who pride themselves in their Ph.D.s in Engineering - and they are so focused inside the greed/ego box that they are oblivious to the social costs and ecological tragedies they are accumulating:

Inconsistent Quality Control: Perhaps the biggest problem of Mao's legacy on the Chinese consciousness was the reliance on the Party to define quality, especially the naïve Red Guard during the Cultural Revolution, in defiance of expertise and long term practical experience. Now, as can be seen in health care, education, transportation and energy, with the impatient rush to the market economy, the emphasis is on quantity at the expense of quality. While quality usually adds to the cost of production, its neglect creates greater problems in the long run.

Economic Inequity: During the Mao years, the economic emphasis was on equality. Most people who lived in the cities had a modest job, which tied them to “the iron rice bowl”, with housing, health care, and a pension. The rural 80% shared in the common struggle for survival. The new economic reality in China has brought greater opportunity for a privileged few relatives of the Communist Party powerful who have benefited much more than others. And that is only the obvious tip of the iceberg of economic inequality. Economist Barry Naughton describes a measure for relative comparison:

“The Gini coefficient is a summary measure of income distribution, ranging in a value between 0 and 1. Zero would signify that income is perfectly equally distributed, and one would indicate that all income is concentrated in the hands of a single individual. Examples of relatively equal economies include Sweden, 0.25, Japan, 0.25, and Germany, 0.28. Examples of high inequality include Brazil, 0.59, and Mexico, 0.55. In 1983, China's Gini index was 0.28, but by 2001, it had increased to 0.45, surpassing the U.S.'s 0.41.”

Transportation: the primary symbol of the growing middle class is the ownership of a private automobile. China's number of registered cars, buses, vans, and trucks on the road reached 62 million in 2009, and is expected to exceed 200 million by 2020. China started closing Beijing's streets to bicycles to make way for cars in 1998, and is engaged in a massive highway-building program. They are designing an exclusively auto based transportation system with highways and little public transit. It plans enormous shifts of population from rural areas to cities and manufacturing and business, and shifts from rail, bicycle and pedestrian travel to roads for motor vehicles on rubber tires - a colossal transformation in the wrong direction. This arrow is in the direction of increasing problems for the Chinese, in terms of greater congestion, less efficient use of petroleum, minimized plans for public transit, and more danger to pedestrians and bicyclists.

Energy: China uses 7 times as much energy as Japan per unit of production, 3.5 times as much as the US, so it also has problems in terms of how it uses what energy it has. China

## Post Globalization: Economy, Systems Science & Academy

relies on poor quality coal for 62% of its energy consumption, which causes tremendous and growing air quality problems. The government's strategic goal is to build 32 nuclear power plants by 2020, and 300 more by 2050, with little regard to the long term responsibilities for nuclear waste and its environmental consequences.

Exploding Environmental Problems: Of China's 1.3 billion people, at least 400 million breathe heavily polluted air, and over 300 million have no safe water supply. According to official statistics, about 30% of China's rivers are so dirty they aren't fit for even industrial or agricultural uses, let alone human consumption. Only 15% of China's land is productive for growing food. For centuries, China has mined its productive land, abusing it as a resource, as though it is somehow automatically renewable. Fertilizer salt Air Pollution is so bad that the winds pick it up in China, carry it across the Pacific Ocean and drop it in the Rockies.

According to Elizabeth Economy, the Director of Asian Studies at the Council on Foreign Relations, "More than 75% of the water in rivers flowing through China's urban areas is unsuitable for drinking or fishing. Sixty million people have difficulty getting access to water, and almost three times that number drink contaminated water daily. Desertification, which affects one-quarter of China's land, is forcing tens of thousands of people to migrate every year and now threatens to envelop Beijing. In terms of air pollution, in 2000, China's State Environmental Protection Administration tested the air quality in more than 300 Chinese cities and found that almost two-thirds failed to achieve standards set by the World Health Organization for acceptable levels of total suspended particulates, which are the primary culprit in respiratory and pulmonary disease."

Environmental Price for Economic Expansion: After Mao died, Deng Xiaoping declared "To get rich is glorious". Deng aggressively opened the window of China to the outside economic world to drive the modern Chinese economic miracle of sustained growth, which Barry Naughton puts at per capita GDP increase of 7% per year for the entire 1978-2005 period - the most sustained period of rapid economic growth in human history. But Naughton later adds: "Growth must be sustainable to deliver its benefits" and China has not figured that one out at all. According to a 2000 report by the U.S. Embassy in Beijing, pollution costs the Chinese economy anywhere from 3 to 8 percent of GDP each year. In addition, ecological damage potentially costs another 5 to 14 percent. Even at the low end of these estimates, environmental damage is roughly equivalent to annual economic growth, meaning that the economy is producing no net national wealth at tremendous long term social and ecological expense.

AND, China's social repression by the Communist Party will keep China in an industrial mindset for the next several time periods/epochs of social media, as the rest of the world explores potential ways to move large populations of people towards long term sustainability through improved communication tools.

To manage its currency, China is relying on the obsolete conventional wisdom of a century of western banking experience with Keynesian government intervention as fiscal policy and Milton Friedman monetary intervention with adjusted rates, as though the

## Post Globalization: Economy, Systems Science & Academy

government spending and manipulation of the supply of money could improve any part of the global economy. The Chinese economy is co-dependent with the US economy and outside of any previous time in history.

Given Japan's permanent zero rates, it seems questionable that the US will have much potential use for rate adjustment at any time in the near future. The “lesson” that the large corporations learned from the September 2008 Economic Meltdown was to perceive it as a liquidity crisis: they had made long term expenditure commitments based on the assumption of continued short term credit, which dried up. So now large corporations (and banks) are absorbing as much cash as they can, making it difficult for small businesses to actually get a loan. The talk about fearing inflation is only an attempt by the Federal Reserve to distract the public from the Fed’s lack of control of the current unprecedented financial situation.

Any expectation of a business cycle with potential for recovery is looking backwards. This is a whole new dynamic with major changes occurring in days that used to take years. For example, Standard & Poor (S&P)'s announcement that they are considering lowering the US's top rating. Actually lowering the SP’s US rating one notch would mean BILLIONS in additional US financing costs for maintaining the current deficit; that was a threat that was intended to and will play a role in the Congressional debate about raising the federal debt limit. There are a variety of economic, monetary and fiscal parameters that are inter-dependent and are increasingly uncertain. Congressional authorization to expand the federal debt ceiling is the battleground for one of those limits.

As the growth model has become institutionalized in the stock market computer models, the total volume of the GDP increased due to leveraging of stocks (similar to bank leveraging money in 1929). Especially the new creative financial instruments that were designed to invent lucrative profits for financial middle people: derivatives; particularly that bankrupt moral concept, the credit default swap. As the GDP grew, there was a decline in US manufacturing, steady in services and agriculture, and expansion in Finance as a share of total GDP. Financially invented wealth has been substituted for value.

Another problem with this growth model is the general tendency to feed forward an expanding debt for short term gratification. Paul Krugman is correct when he says that public sector Keynesian spending helped the US recovery in 1940, but that doesn't mean more deficit spending now will save obsolete jobs, or that it should. The economy now is facing a unique set of issues - communication that took days during World War II now happens in minutes. Every level of government is over-committed, over-extended, and unable to perform what is expected of them. The 20th century just doesn't pencil out in the 21st century.

Back in 1985, John Kenneth Galbraith lamented, “Keynesian support to the economy has come to involve heavy spending for arms. This, we've seen, is blessed as sound while spending for welfare and the poor is always thought dangerous. With time, too, it has become evident that Keynesian progress can be an uneven thing: many automobiles, too

## **Post Globalization: Economy, Systems Science & Academy**

few houses; many cigarettes, too little health care. The great cities are in trouble. As these problems have continued, the confident years have come to an end. The Age of Keynes was for a time but not for all time.” This, from “the Crown Prince of Keynesism.”

Currency was initially something that individual traders did as a personal letter of credit. Isn't it marvelous that you can write a check, sign your name, and your bank will back it up if you present it as currency to complete a transaction of exchange? It is the basis of the entire international/national mindset founded on the banks.

The rapid changes of the Internet have overwhelmed both the economic and political structures. The economic meltdown of September 2008 calls into question the need for most of the constraints that tradition has brought to the banking industry, raising the question of the benefit of banks as we know them. What kind of economic services would be “necessary and sufficient” in a post-globalization internet economy?

What the Sermon on the Mount and the Beatitudes was about is: the meek realize that the world is so bountiful that they already live in paradise and if you respect it you will be rewarded, with a spectacular view, or a new combination of flavors, or a new friend making discoveries with an old friend. Maybe the Calvinists forgot from the Catholics that there are some things in the world that you cannot afford to put a price on. Aristotle and Stafford Beer labeled it “eudemony” or well-being.

In the farmin' part of our community (UCD being the ag campus of the University of California with over 50 commercial crops in the state), if someone says “She's a handshake farmer,” then they mean she is pretty good at keeping her word. But if one is not as well respected, someone will say, “get it in writing” so that you can hold her to it in the future. Best is just keeping your word, which in this fast changing world is hard to do.

### **Theory: Redefining Academy**

Academy is the social institution responsible for passing on the established culture, so it is the way the status quo defines itself. It is enormously resistant to institutional change, re-designed by the Roman Catholics during the Counter-Reformation to adapt to criticism without really changing.

Academy in the 20<sup>th</sup> century was about turf warfare to expand territory: intellectual and budgetary. The academic division of labor has evolved since World War II, from traditional subjects like anatomy, chemistry, biology, economics, sociology, psychology and political science, to greater levels of integration, like American studies, ecology, and nutrition, to recent expansion to a more comprehensive approach like Cognitive Science and Neurobiology, Physiology & Behavior.

Subject matter in Academy after World War II took a liberal social slant, but within the context of the aspiring corporate middle class establishment. Mass media in the popular

## Post Globalization: Economy, Systems Science & Academy

culture reinforced the desire to be wealthy and have power. Wealth was reflected in ostentatious material goods, fast cars, fancy houses, the jet set lifestyle.

The economics of the 20th century have not carried over - the big numbers don't pencil out any more. The shrinking middle class includes lots of people who make between \$50,000 and \$200,000 a year who are struggling, but the middle class is disappearing as a reality regardless of level of income. The American economy is imploding. The US economy is going sideways in so many different directions that growth has become a confusing idea. And, China is duplicating western industrial mistakes of social manipulation, resource depletion and pollution - as fast as they can.

The land grant college mission was set up for mass structured learning for participation in the industrial society. The post-industrial world of today is oversaturated with educated people, in terms of the design of the economic structure. Has the UC educational paper chase lost its potential for future usefulness? Maybe the academic drill, old school, the Oxford Cambridge Ivy League educational tradition is obsolete along with 20th century industrial pollution. We have too many Ph.Ds. We need teachers. That is not the same thing at all. What happens when the labor force is flooded with BAs? We are long beyond that point. BAs of various quality are a dime a dozen.

How should the academic arena respond to the changing needs in the market place? Particularly in light of the internet's glut of data and information (of various levels of credibility), there are new questions about the potential as well as the appropriateness of academic research and instruction. The future needs teachers and leaders, but academy is locked in a 20th century bureaucratic structure of majors and degrees that have little to do with the needs of the future.

The University of California was established 150 years ago. Its motto, "Let there be light" reflects the amorphous attitude of personal research: look where I happen to think it is important enough to point towards. UC's three identified areas of responsibility are: research, teaching and public service, and most UC faculty too often would put research as the first of their career priorities. The way to get ahead in your field is to publish. That is the intellectual property that has so much value to society that it must be passed on to future generations immediately.

The academic jobs cycle has become backed up at every position along the way: good professors last 30 years, and it takes 7 years of grad school on average to earn a Ph.D. and then you are waiting for someone to retire. There are long lines for grad students, with no jobs down the road.

What do UC graduating seniors have in common with the people under 30 who are leading the Egyptian revolution in Tahrir Square in Cairo?

Pathetic job prospects.

No future.

Same with new lawyers, new Ph.D.s, new MBAs.



## Post Globalization: Economy, Systems Science & Academy

There and here.

There is increasing personal frustration in the rising economic uncertainty.

This fiscal crisis is not temporary; it is a sign that the environment has made a major change.

The budget crisis necessitates a new reality.

The academic exercise is to ask questions that help define reality. But to what end? To what purpose? Howard Gardner, Harvard Developmental Psychologist, developed the concept in the 1980s of multiple intelligences, that IQ tests only measure logical-mathematical, and tend to ignore other human attributes, such as: musical, kinesthetic, spatial, linguistic, sensitivity to nature, interpersonal, intrapersonal, and personal knowledge/efficacy.

After debating his ideas for 20 years, Gardner wrote *Five Minds for the Future* to identify the modern needs for educational leadership. Gardner's five minds are: discipline, synthesis, creativity, ethics and morality. Discipline is an area of study, which Gardner puts at ten years actually doing experiences in the real world, like nursing or being an architect, to have mastered the basics of the profession, business or area of endeavor. Synthesis is the ability to see the different parts of a puzzle and put them together in your mind, which is what most of content teaching is – helping the student see the picture, then the picture's context, then even going from the specific example to the general lesson. Creativity is thinking outside the conventions of the time. Ethics is how you behave yourself. Morality is how you relate to others. The main argument of Gardner's book is that teachers focus on the content of a particular discipline, and they emphasize synthesis in their daily work; teachers model ethical and moral behavior; but, you cannot teach creativity. Creativity is that thing inside each human that is unique. A teacher's greatest reward is to witness a student learning, which is the student rediscovering their own ability to take a new step, learn something else and go to a new level where they are self-taught. As Stafford Beer liked to say, "education is a word coming from the Latin: e-ducere, "to lead out".

What should teachers be focusing on? The question that drove Phaedrus in *Zen & the Art of Motorcycle Maintenance* was: "How do you teach quality?"

Pirsig discovered "A real understanding of Quality doesn't just serve the System, or even beat it or even escape it. A real understanding of Quality captures the System, tames it, and puts it to work for one's own personal use, while leaving one completely free to fulfill their inner destiny."

To what results? Abraham Maslow, the Psychologist who invented the term "self-actualization", in *Toward a Psychology of Being*, describes creativity:

"I soon discovered that I had, like most other people, been thinking of creativeness in terms of products, and secondly, I had unconsciously confined creativeness to certain conventional areas only of human endeavor, unconsciously assuming that any painter, any composer was leading a creative life. Theorists, artists, scientists, inventors, writers

## Post Globalization: Economy, Systems Science & Academy

could be creative. Nobody else could be. Unconsciously I had assumed that creativeness was the prerogative solely of certain professionals.

“But these expectations were broken up by various of my subjects. For instance, one woman, uneducated, poor, a full-time housewife and mother, did none of these conventionally creative things and yet was a marvelous cook, mother, wife and homemaker. With little money, her home was somehow always beautiful. She was a perfect hostess. Her meals were banquets. Her taste in linens, silver, glass, crockery and furniture was impeccable. She was in all these areas original, novel, ingenious, unexpected, inventive. I just had to call her creative. I learned from her and others like her that a first-rate soup is more creative than a second-rate painting, and that, generally, cooking or parenthood or making a home could be creative while poetry need not be; it could be uncreative.”

Learning is one of the most incredible things about being human. At the large cultural end of the intellectual continuum, you have scholar/politician Daniel Patrick Moynihan: “The central conservative truth is that it is culture, not politics, that determines the success of a society. The central liberal truth is that politics can change a culture and save it from itself.” It is through political dialogue that a society learns and then changes.

At the more personal level of learning, one distillation of Stafford Beer is: humans sometimes learn from reflection after mistakes, and adapt (sometimes successfully) eventually (after how many iterations?)

The purpose of this discussion is to develop the language to describe what is happening in the global economy, because what is taught in college economics departments cannot explain it. They don't have the concepts or the vocabulary. They are locked in a fantasy business cycle that disappeared during the Bush/Clinton transition (disintermediation - the personal computer's elimination of most middle class data jobs). They always hope for a recovery, usually six months in the future. They are in permanent time lag.

This is in real time: a shift from a "growth" mode to sustainability, which has units of measurement around empirical definitions of viability.

At this point in history, the future of the academy is in doubt. The state of the California budget is so troublesome that faculty are talking about the University of California going private. There is now a species-wide question of concern: sustainability. The remainder of this paper is about how the academy could be exploring the questions of a global sustainable economy.

**Viable System Model: sustainability =  $\Sigma$  viability [stability (now) + adaptation (future)]**

The word that dominated the 20<sup>th</sup> century was “growth”, and it has brought us to the point of global concern about the future. The word that encapsulates that concern for the future is “**sustainability**” which is broadly defined as the capacity to endure - elastic in the short run, resilient over time; in ecology, how biological systems remain diverse and productive over time; for humans, improving the quality of life while living within the

## Post Globalization: Economy, Systems Science & Academy

carrying capacity of supporting eco-systems; human organizational sustainability is defined in terms of viability.

In a rapidly changing, threatening environment, a need for reality-based real time information becomes imperative for responsive decisions, in order to survive, sustain, and potentially thrive.

The science of management is “cybernetics” which looks at questions about communication and control of information. With state of the art internet networks, organizations can be redesigned to evolve into real time information organisms. Centuries ago, management operated in real time, observing the outcomes of decisions, and adapting. Now, time lags between an event and its consequences being detected narrows limits for potential response options, increasing the likelihood of maintaining status quo trends for even greater trouble. Real time management allows timely intervention to change potential future outcomes.

The scientific management tool for describing any organization and designing effective organizations is the “Viable System Model”. Stafford Beer’s VSM is about optimal organization, about principles that are invariant across social and technical systems:

**Viable System Model: sustainability =  $\Sigma$  viability [stability (now) + adaptation (future)]**

**stability (now):** Identify information bottle necks & repair them in a way that improves decision processes by cutting down communication confusion (“efficient”);

**adaptation (future):** responding to a changing environment, adjusting existing or designing new information structures that include necessary & sufficient conditions for emerging situation (“effective”).

With VSM, the analyst focuses on looking at what is actually happening, identifying key areas for action, and then trying to determine if the intervention had the intended impact on the environment – not based on partisan rhetoric, but on pragmatic results. Every living system has sub-systems that are surviving in a natural environment. The subsystems must be coordinated and their resources balanced, and the system must be able to adapt to a changing environment to be sustainable, over time.

The Viable System Model provides a context for evaluating/deciding what to change and how to move in that direction. With an institution as complex as a country or a university, the VSM model would have about ten to twelve levels, to identify all the institutional relationships and how they communicate, then identify problems and weaknesses in the information flows. The end product of a VSM design is an administratively effective communication pattern for adaptive decision taking in a changing environment.

Students and “other ages and stages” can refer to Allenna Leonard's web site for “Personal VSM” on how to apply the viable system model in one's life. Then view Jon Walker's VSM web site and Allenna's “An Organization in Crisis” for a thorough look at how to apply VSM to most any organization.

## Post Globalization: Economy, Systems Science & Academy

The real world test of this idea was in 1972-3, in Chile. Stafford was recruited by the economists in Salvador Allende's administration to apply the Viable System Model to what became 75% of the country's economy. Each of the major sectors of the economy was mapped, and their production flows monitored on a daily basis, with the information given to the manager, supervising foremen, and workers, for review and discussion about improvement. During the six week Chilean truck strike, with only 20% of the trucks available, using real time information and just in time scheduling and coordinating, essential resources were successfully distributed to meet basic needs throughout the society. The Viable System Model is designed to identify reality, rather than confirm theory.

Ultimately, what an organization measures becomes the goals it manages by. By changing the rationale for management numbers, an organization shifts the direction of its rewarded activities and its structure responds to accommodate new pressures.

### **Viable System Model: What it is**

Institutions that run our lives have notoriously poor information flow. We label inefficient and unresponsive organizations "bureaucracy," implying incompetency is the standard.

"A System IS what it DOES".....as opposed to what it "claims" it does in its promotional media, or its bylaws, or what it once did but no longer actually does enough of to justify keeping its past identity, or things are changing so fast that it is not clear what the organization CAN be doing, or deciding what it SHOULD be doing, especially from now on.

The Viable System Model defines a viable system as an entity that maintains its identity in a dynamic environment. The closest similarity in the history of science is what the "cell" became as the basic unit for biology (Robert Hooke, 1665), VSM is for social science.

The problem with the 20<sup>th</sup> Century Management Structure is that it has become so complicated that it has become a product of its own uncontrollable oscillations. The mindset of the dominant management thinking is that the solution to complexity is greater regulation, which is increasing the likelihood of accelerated random complications. The only improved situation would be to create a more sophisticated regulatory/communication system with fewer layers, as Viable System Model is specifically designed to facilitate.

The Viable System Model offers a way to see through some of these organizational complications. Basically, the Viable System Model creates a graphic distinction of how an organization communicates and decides. The most obvious conclusion is that most organizations focus on their day-to-day operations and tend to neglect communication about how their environment is changing, and disregard how the future might be different than expected.

## Post Globalization: Economy, Systems Science & Academy

For the "System in Focus," identify several things it does in the world, each of which is represented in the model by a circle. For each circle, the VSM requires 5 management systems as necessary and sufficient for the circle to maintain its viability: System 1: the day to day operations of the circle; System 2: the ongoing coordination of the circles; System 3: the long range resource bargaining with the larger organization and between the circles ("inside and now"); System 4: exploring the changing environment and anticipating future potentialities ("outside and future"); System 5 is the visionary mediation between 3 (the present) & 4 (the future).

The problem is that most organization's management behavior focuses on the 1-2-3 relationship and ignores the 3-4-5 communication. Too often, organizations focus on getting better and better at what they do, and ignore the always-changing environment, often until it is too late. This is called "collapsing the 3-4-5," and it is the most common reason why organizations fail – they don't see the need to adapt to a changing environment.

The VSM analysis allows one to step outside the box limited to traditional thinking about particular inter-relationships. One of the basic concepts of VSM is recursion: that viable systems are nested in viable systems. What is dynamic at one level of analysis is static at the next level up, and perhaps irrelevant at the next level down. So we can pick and choose within the model what variables should be measured, managed and evaluated at that particular level of organization.

Bottom Line on VSM:

- identify 8-12 sensitive indicator limits which are defined
- measure the key indicators frequently (daily, weekly, monthly?)
- if they go outside of an acceptable range, they become the focus of improvement
- maximize local autonomy for each worker
- manipulate the model of the system, trying different options, then actually try the one that seems the best, and monitor to see if the outcomes are what you expected, do they validate the model (of course not completely), and what new things does the data inspire you to try on the model next?

From Allenna Leonard's 2009 ISSS Presidential incoming speech, "Advancing Viable Governance":

"I would suggest that the Viable System Model could again be applied to monitor and report on the management of critical variables in the social economy and the natural environment. We might ask what measures would be analogous to temperature and blood pressure in the human body that would provide requisite variety? Such a VSM would not arrive full-blown, but it could be outlined and made widely available even at an early stage of development. A planning process that's designed to bring requisite variety to bear on a question could set the stage.

"It might well be possible to put up qualitative if not quantitative flow charts to identify indices to populate a basic Viable System Model for each community at several levels of recursion. People or groups could be invited to fill in the blanks describing the

## **Post Globalization: Economy, Systems Science & Academy**

current state of affairs as they know them. Members of the public could contribute their local knowledge, ask questions, identify anomalies – or simply add their perspectives.

“Since the VSM typically identifies around ten indices per recursion, the design requires hard thinking but running it is easier. A key is to think in real time”.

Before Stafford Beer: Organizations thought of in terms of static organization charts with hierarchical bureaucracies, many layers of administration, TOP down decision taking, with built-in confusions of communication and control that lead to built-in conflicts.

Stafford Beer: All organizations that continue to survive have a part that does something in the world, and a second part that looks at how the environment is changing and what the organization should do in the future. The Viable System Model identifies the necessary and sufficient information flow that an organization needs to adapt over time; the model can be used to help an existing organization identify areas where communication is breaking down, and design new communication structures to accomplish new goals; all workers share access to manager’s reports, which are designed in a way that empowers all to participate in debate about what the numbers mean, what the policy options are, and what direction the organization should point new efforts towards. It shifts the focus of organizational power down from “the Boss” to the operations level, with the emphasis of management shifted to being in service to operations.

### **From “How to Run a Country”, by Stafford Beer**

“By using the same model, the same regulatory language, and the same information technology across the board, it becomes easier to synthesize a view of what is really happening throughout the nation [or organization]. Second, because the recursions are richly interconnected, inside each other, models of the higher-order recursion can rapidly be integrated once the basic systems have been mapped. In managerial cybernetics, the VSM is passing to-and-fro among the encapsulating recursions not merely numbers, but Gestalten – whole and integrated patterns – of viability.

“We expect a VSM-like version of the organization at each level of recursion. And if that organization has weaknesses (and which organization has not?) we expect that the modeling process will generate a succinct list of them. Because the VSM sets out to give a necessary and sufficient account of the laws of any viable system, it is a tool of intense diagnostic power. (Note: if the VSM language is used loosely and merely descriptively, then of course its power is lost.) So we expect some prescriptive suggestions too. After all, the management is itself implicated in these studies – and so are the workforce representatives whose members will doubtless bear the brunt of any substantive operational change.

“Measurement in real time: It is a crucial question as to how frequently these measurements should be made. In the inherited system they are made on an epochal basis: each month, quarter, year. It is central to the cybernetic thesis here advanced that they ought to be measured continuously. Then the advocacy turns out to say: measure daily. For although a day is itself an epoch, it is sufficiently small as to generate time series that approximate a continuum. We are effectively in real time.

“Critics often argue that government does not need such rapid information input, and if it had such a thing it would over-react. The first complaint is basically a statement

## Post Globalization: Economy, Systems Science & Academy

of stereotype: ‘everyone knows’ that such instant input is not needed because no-one has it, nor can they see how to get it – officially, bureaucratically, that is. On the other hand, everyone knows (without quotation marks) that government is driven, as before a storm, by instant information channeled through the mass media, and often generated by them. This makes nonsense of authenticity. The official bureaucratic information system spends its effort in trying to keep pace, to justify its masters, to excuse the mistakes that may not even have been made. The situation is chaotic. The complaint as to likely over-reaction is merely risible in this context. A properly designed cybernetic system does not over-react, because it has properly calculated feedback functions that smooth irregularities and impose delays that are systematically appropriate. The present instant-response system, which has not been properly designed (nor designed at all), is as over-reactive as could possibly be.

“What is the true case for real-time management? Consider the monthly epoch. Managers are proud if they have last month’s figures by the second Tuesday of this month. It is far too late to do anything about any of that, except to learn. We learn from our mistakes, and resolve to avoid those particular errors in the future. We learn from our successes, too. But nothing has actually changed. If, however, we operate today on yesterday’s figures (approximating today’s, and close to real time), the situation is quite different. It remains the case that we cannot change what happened yesterday. But what we can learn concerns something: recognition of incipient instability.

“If what happened yesterday, and is probably happening still now, is not so much a triumph or a disaster but a rocking-of-the-boat, and if we can detect that at once, then we may be able to restore the equilibrium. The disaster may never happen. The success may be assured.

“We can now turn to a concept of management that has the power to manage, that is to say, it may do something now so that the future will be different from the future that would otherwise have been. This is the definition of planning, which is not a matter of toying with scenarios (a support function) but of taking decisions – so that the future may be different. It is easy to see how this holds for the future that ought one day to be, which is the topic of normative planning. It really holds too for the future that could be (if we work hard) fairly soon, whose topic is strategic planning. But the future that will be almost immediately, which is supposedly the subject of tactical planning, is foisted upon us – because our information is so lagged. This ‘future’ has already happened by the time that its likelihood is signaled, simply because the signal itself is still getting through the works.

“We may ‘return’ to the power to manage in the short-term: ‘return’ is proposed because it was once possible to observe activities under command, dislike the outcomes, and issue new orders instantly. In this way, managers quelled incipient instabilities. The inability to do this today is an artifact of our immensely cluttered, bureaucratic and inept systems – computerized though they may be. Consider the absurdity of a government’s employing an army of econometricians in order to forecast (from lagged data) where we already are. It is what happens. And because the forecasts are often wrong, we decide our plans as proceeding from an initial position that we never occupied in the first place.

“For each point identified and measured, the teams established a normative (should be) and a strategic (could be) target. What the tactical result (will be) actually is arrives virtually as it occurs.

## **Post Globalization: Economy, Systems Science & Academy**

“Take one index, newly calculated, and set it into its own time series. The program uses a technique to estimate four probabilities. How likely is it that this point is merely a chance variation? How likely is it to be a transient bit of noise in the system? How likely is it to be contributing to a change of slope? And how likely is it to represent a step function? Chance variations or transients are of no importance to a manager, and s/he is not told about them. But if a slope change or a step change seems likely, then this may signify incipient instability. It goes straight to the manager’s desktop computer screen. Because of the rules of local autonomy built into the VSM, no-one but the responsible manager has access to this message. If the trend is not corrected within the agreed time, a signal goes to the next recursion upward. After appropriate delay, it is passed on to the next level, until matters are in order.”

### **VSM Mission: Jefferson’s Pursuit of Happiness? Aristotle’s Eudemony (Well-Being)**

Thomas Jefferson was not what most would consider a happy fellow. He didn’t care much for other people. He did not hold cabinet meetings. He was not an orator, nor did he relish the spotlight. President Kennedy famously welcomed 6 Nobel Laureates into the White House by saying it was the most brainpower there since Jefferson had breakfast alone – the point being that Jefferson always had all of his meals alone. As President, he would ride his big white horse every afternoon, alone.

Jefferson’s most famous line of “life, liberty and the pursuit of happiness” was no guarantee for the country’s lucky future inhabitants. It is this sense of future hope that is still the country’s most powerful image around the world.

Stafford Beer learned that Aristotle thought the human spirit responds to a sense of well-being, which he called “eudemony”. Prosperity is a big part of it, but more from the standpoint of liberty and self-determination than possessions and economic power. Eudemony measures some highest good, some subjective sense of quality. Eudemony is the higher standard for evaluating the VSM; does it feel right?

In Stafford’s introduction of eudemony in *Platform for Change*, he says “Money is terribly important, both to those paying and to those paid. But money is nonetheless an epiphenomenon of a system which actually runs on eudemony. It is for this reason that I have come to see money as a constraint on the behavior of eudemonic systems, rather than to see eudemony as a by-product of monetary systems.”

### **Innovative Technology: computa, WikiLife, WikiEconomy Building a decentralized global economy**

We have a problem of too much data, too much noise. Too much junk. Global Data Pollution.

Teilhard de Chardin wrote about the noosphere, the collective consciousness of the planet, a humming web of communication surrounding the planet along with the biosphere and the atmosphere.



## Post Globalization: Economy, Systems Science & Academy

The idea of computa is to create a central nervous system for the planet economy and political system that is decentralized. We have a physical Internet infrastructure, slow at times but rarely longer than a second or two. We need a social information structure for the global economy. It needs to be neutral/positive, gender rich, culturally respectful, scalar at many political levels, and be a practical useful tool for everyday economic practices for a broad range of economic and social organizations and networks.

WikiLife: what it looks like from the individual perspective

WikiEconomy: what it looks like from the big picture

computa: the insides of the WikiLife/WikiEconomy information network

The main purpose of this model is for the INDIVIDUAL to be able to have a standard grid for her to put all of the important information in her life in an organized way. It needs to be supportive of different scales of data, for unique people, to help her organize her way out of her problems and challenges, social, organizational, and economic – both as a consumer and as a producer.

This model was first presented in the 1980 Society for General Systems Research proceedings (San Francisco). SGSR became the International Society for Systems Sciences in 1984.

The basic concept of the Interpersonal Model is a boundary between the individual and the world. Inside the boundary (your skin) are certain realities, and outside the personal boundary are all kinds of walls, barriers, social hurdles, challenges and confusions. Some are physical and biological. Most are social. Most of the problems humans have now are organizational.

The purposes of the model:

- provide a historical data grid for accumulating personal information, in a way that is protective of personal privacy, useful, effective and efficient, and confidence inducing;
- be the banking systems' interface with each individual;
- be the documentation manager for all economic transactions;
- be a reliable public record;
- provide a blind database for social policy implementation by the government, as well as public research, analysis, and program evaluation.

### Model for Individualized Community Information

This is a model for a computer grid of a person's local economy. It should be user friendly and provide linkage of the information structure between an individual and the larger economy, decentralization in a global context.

The idea is that the model should be useful to individuals and families, and all business people as well as municipal bureaucrats and citizens investigating the government.

WikiEconomy: a computer information idea for creating a global grassroots economy. Basically it is a dynamic information catalogue for all the parts of a woman's life:

## Post Globalization: Economy, Systems Science & Academy

income, food, housing, health care, transportation, clothing, education, media, entertainment, taxes, managing the economy, public services, infrastructure, utilities. That information matrix has components that scale up physically/geographically: family, 10; neighborhood, 100; village, 1,000; community, 10,000; district, 100,000; and region, 1,000,000. Unlike counties, these can be compared.

Most current policy emphasizes district-region-state-nation. This model shifts the focus to the village and the community, so that neighborhoods and families get their needs met.

Inputs for the model include: information, money, food, energy, people with talents and potentials, and outputs that include economic goods and services (public and private), waste, pollution, and a changing culture as people evolve, leave and pass away.

This computer model does not exist yet. It still needs to be built. Needed features include: a model for today's city, real time and up to date, called "CityData," to be interactive and user friendly, with numbers easily converging for analysis; plus "CityFuture" which focuses on the future, identifying options and even assessing the probability of their outcome.

### WikiLife/WikiEconomy: decentralized economic information system: built up from the individual

Most of the global economy is hidden, and in a lot of trouble. This is a mechanism to turn the global economy inside out, so that most of it is transparent, and manageable. Anatomically, a fig fruit has all of its fruit inside the skin; turn it inside out, and it looks like a strawberry. WikiLife is like the strawberry: you can see everything you want to look for. It is an information structure that allows many people to fill in the beginning of cells of a decentralized economy at the neighborhood, village & community levels locally, while other people will discover what is actually happening in the larger economy at the regional, state, national, continental and global levels.

This is a few orders of magnitude more complex than Linux or Wikipedia, but it is organized to evolve in a similar fashion. Each cell of the economy will be governed by people who participate in it. Cells at each level will have similar information challenges, and common approaches will emerge when they succeed. The idea is to build a grass roots global economy.

### Current Information Chaos

"The average citizen typically has multiple identity cards, including a voter ID, a tax ID, a ration card, passport, driving license and others. Yet there is no central database, which has created "phantoms" on voter lists and welfare schemes." That is a description of India, but it could be any country.

What would be the design characteristics of a global information system that would serve as the administrative support for the global economy? The past 20 years has been about converting data from the current complicated disconnected systems which aggressively

## Post Globalization: Economy, Systems Science & Academy

retained the redundant complexity various paper accounting methods require but may be confusing rather than helpful.

If it is as complex as possible now, what would be the simplest?

What would be the most effective, the most efficient, least complicated? And easiest to control the security of, in terms of documenting any potential violation: identity, prosecution, punishment. As practical as possible. Should emphasize customer service, and historical archives so that short run mistakes are caught over time. It needs to include a Facebook type social network set of features, plus all of the tools and information management to control your own life.

The end product of this paper is a web site home page for computa, called WikiLife/WikiEconomy.

Rather than aggregate information by country, or business, this information system is based on the individual, and then aggregated upward to whatever level matters. Altogether the aggregate makes up the reality of the existing dynamic that makes up an economy. Concerns about violation of information privacy are legitimate, and decades late: our personal information security is violated all the time. We need to invent/design an information system that minimizes the opportunity to encroach on an individual's privacy.

### A Real World Example

From what I understand, the Danes have an excellent prototype in use as their national information system now. To the extent this is not true of the Danes, this is what I envision:

One computer information network unifies the entire country. Each person in the society has an ongoing account, and it includes all of their personal, business, social and commercial activities.

A primary job of people who work in the government is to assist people in accessing their individual computer information; if there is some kind of bureaucratic complication preventing someone from doing what they want, to assist them in clearing up the problem. Since this account includes all of the individual's banking data, when a person is making a business or commercial proposal, there is no question as to the source of the information, and the quality can be determined.

How it would feel physically:

You custom design your own web page. It includes a portal to your business accounts, which are firewalled. Complete audit trail of anyone who goes in and what they do. You buy a bicycle; it is documented. Included is the annual public fee, which will continue to be charged as long as you own the bike. When you get rid of the bike, you make a data change as documentation, the fee stops, and changes are reflected in other parts of your web sites, and the relevant community statistics about number of bikes owned.

## Post Globalization: Economy, Systems Science & Academy

If something is improper, you go to a local official, who you have spoken with before and built some trust, and the official helps you through your difficulty. Public officials who do inappropriate things will be identified and handled, and prevented. Most people will see the information system for what it is, a valuable public service that allows them to get on with their lives, get their needs met, and have control of their personal economy.

### Public Policy Analysis/Academic/Scientific Research

The aggregate data becomes the fuel to drive the public policy debate. Part of the debate always remains about protecting individuals from data diving for manipulative commercial purposes. Within the ground rules for data use, it becomes an ongoing census and the basis for public policy debate, decision taking, and ongoing societal evaluation. Social scientists can focus more on population behavior instead of needing to worry about methodological nightmares.

### Some Parameters:

Unique global universal identifying number: 13 digits: 10 for a person, 3 for their country  
In the US, it is your Social Security Number + 2 digits for state

Identity theft is a serious problem now, and confidentiality can too easily be violated, so the security system must be much better.

Protect individuality, family, neighborhood, even community, from data mining

Start with the individual; aggregate to the country, not the other way around.

### Matrilineal?

Let's face it: 3000+ years of patriarchy has failed. Socially, ecologically and evolutionarily. The pursuit of material wealth and power has led us to a downward spiral of decay, social and environmental damage. How can we break out of it?

This is a proposal to design and develop a global decentralized public/private information network that has so much personal integrity that a majority of the people on the planet/of a country/of a community are willing to be part of it, knowing that their participation increases its potential power.

For that to happen, the integrity standard needs to be so high that older women are willing to recommend participation to younger women.

Men by and large are more interested in their individual wants, where women are more likely to see other people's needs as well as wants – on top of their own. This is in no small part because women birth the children, nurture them through their youth, resolve family disputes through their lives, and care for them as they die. For women, those awarenesses are normal; a man with those positive experiences is considered un-usual. Women find men difficult to trust; men find women confusing; this proposal works to reverse cultural stereotype. This information system is specifically designed to meet a woman's information needs, while coincidentally also meeting a man's far simpler information demands.

## Post Globalization: Economy, Systems Science & Academy

### Governance

Proposed decentralized evolution like Linux, as decentralized as possible, like ARPANET, the precursor for the Internet. A tool whose power is that it is completely in service.

### Depth & Breadth of Information

The model needs to include as complete a picture of each community as possible, including:

- geography: land contour, flooding and drainage problem areas, soil classifications, land uses, roads and their status, sewers, wells, water sources as well as quality;
- climatology: seasonal changes, amount of rain, heat in summer, seasonal energy conservation programs;
- demography: population age distribution, aging over time, births and deaths;
- energy grids: telephone, energy, utilities, ability to have wireless computer connection (current cutting edge criteria for technology-available community), cable tv, potentials for green energy and community self-reliance;
- economy: resources, people with skills and credentials, cash flow, incremental growth, dynamic equilibrium, taxes and public finance, commercial/residential/industrial/agricultural/open space uses, infrastructure, privacy protection of personal health and financial records, schools, libraries, child care, senior services, public programs, input/output for local, region, state, national and international;
- city and community government: legal constraints, budgets and accounting systems, jawboning, special relationships with other levels of government.

The computer model needs to have a dynamic, interactive, democratic evolution, with feedback and internal controls, privacy controls and protections, and at least be compatible with MacIntosh and IBM PC Windows Intel.

The focus is to provide a combination of services as a basic package that can replace the current paperflow/banking economy. Such a dynamic interactive program would need to: identify an individual person, record her business transactions, document her contact with the government, give her personal control of her own health and financial records, allow controlled electronic funds transfers, and have up to date information about all government services, and just about anything else that she might want to know.

Now this may all seem pretty sterile. Focusing on a particular community can make it a lot more real, as you fill in the pieces in a particular puzzle.

The global economy is crumbling around us. We need to build new sustainable communities. By identifying where help is needed, jobs are created. The WikiEconomy model offers space for creating the democratic management of the global economy.

To begin to develop your community wiki information, email [contact@localwiki.org](mailto:contact@localwiki.org).

## Post Globalization: Economy, Systems Science & Academy

Start a chapter of a club: the Liet Kynes club for a sustainable future. Liet Kynes was the planetary ecologist in *Dune* by Frank Herbert: think globally, act locally.

Young children can build a three dimensional map of the area around their school and their homes, and then the route connecting their home and their school, then the entire school population area, the ways people travel, where their food comes from, special places they go, and where their parents go during the day. That is a practical education that builds a tool that will help the older people as well. It will empower the students to gain greater understanding and control of their immediate reality.

4th - 6th graders can build profiles of their shared community, especially in terms of food, transportation, housing, entertainment and recreation, and jobs. Which means beginning to build a profile of the district and region in that policy area. Here the model shows synergy, and the wiki robustness. A group in Los Angeles starts to look at transportation in the entire county (8 regions). Then 8 groups emerge that start filling in their respective district boxes of their region, like the patches of the google map filling in as they are loaded.

6th graders who have just completed their unit on Ancient Egypt can take the leadership on building the model/information for Modern Egypt and Future Egypt. Another group can build a physical model of Northern Japan, and then start identifying key indicators of concern. The problems of Egypt and Northern Japan are very different from each other, but they are suddenly among the most unstable and uncertain places on the planet, and would benefit from identifying incipient instability before it becomes a real problem.

High school and college students can look at different parts of the matrix in their community, and fill in gaps and look for directions for future prosperity. Most adults are worn out fighting in the mainstream economy, trying to get ahead of the greed game. A sustainable economy is based on a completely different mindset. Western civilization is so out of touch with reality that the junior high school students are in the best position to talk about reality, and what people's needs are. Most adults have had their reality defined by advertising. As Stafford Beer said, "Theory (Advertising) is the only reality countenanced by our culture." Western civilization has devolved to the point where we are choking in our accumulating waste. In too many areas, the only solution is to do a much better quality job with a much smaller quantity of resources and effort.

A local area should be evaluated in three areas: quality of life, cost of living and standard of living. Together, these three commonly recognizable terms add up towards what Stafford Beer calls eudemony, or well-being. They are a first draft at creating a quantifiable measure of "optimal community." Quality of life includes air and water quality, long term health indicators, and intangibles of the natural environment. Cost of living focuses on a market basket index of basic goods. Standard of living includes measures of percent self-sufficiency, as well as the upper strata for the more high stepping. Communities can compare their statistics with other areas, and gradually come up with standards, by decentralized agreement. People looking for a new place to live

## **Post Globalization: Economy, Systems Science & Academy**

will compare different communities' statistics. Long time residents will understand their own community's unique idiosyncrasies. And people will try to improve their numbers.

WikiEconomy is a tool for public policy and social science, but most of all, it is a useful tool for the individual, in helping her manage and control all the data in her life.

### **Action:**

#### **Consolidate California State Master Plan for Higher Education:**

##### **One board/administration/budget: UC, CSU, Community Colleges**

Integrate the California state master plan for higher education into a single governing structure for the University of California, the California State University and College system, and the Community College system, eventually consolidating decision making, administration, governance and financing, with UC being forced to give up some of its privilege, to better distribute resources by giving more to Community Colleges, which have the most direct local contact.

CSU-Sonoma Robert Hutchins professor Debora Hammond responds: "I had some ideas along these lines, as the new master plan was being drawn up. Would make much more sense to organize the educational system around a regional network model, with the research universities serving as resources for the state university and community college system, instead of a tiered structure (that puts the leadership of the CSU, for example, in Long Beach, which means I have to travel south if I want to be a part of system-wide initiatives). Far more logical would be to have the UCs as resources for the region - networked with the State University and Community College, and even more fully with the public school system, which would allow for the coordination of various service learning/community-based research projects across the educational levels."

Cut administration by at least 50% to begin with; consolidate & reorganize.  
We need to break down the silos of separate educational institutions.

#### **Transforming UCD into a 21st century organism**

The shrinking state budget is forcing the University of California to dramatically reconfigure. That means more than belt tightening - it means evolutionary, even revolutionary action within the academic and research arenas. UC can use the necessity of austerity to rethink the academic mission and create new directions based on interdisciplinary collaboration. If what has been the University of California is no longer going to work, what form should higher education take - what is the academic mission in a post-globalization society?

UC Davis is the foremost center of global knowledge about nature. Most universities have 25% science students; UC Davis has 60% in many biological sciences, and the hard sciences and engineers on top of that. The handwriting on the wall for UCD is to re-assess, decide what are the new essentials, and then design a new organizational information structure that can respond to future needs rather than attempting to resist change and fight adaptation.

## Post Globalization: Economy, Systems Science & Academy

The Patwin Indian word for farmer is “person who does a thousand things.” It is the agricultural roots of UCD that have value in gaining a broad view of the future. Humanity needs to learn to live within the laws of nature, rather than trying to use physics and power to defy biology. We need green institutions. Green systems. Based on biology.

2001, UCD initiated their campaign to build West Village with a talk by William McDonough, an innovative architect who begs the question of how to build a sustainable economy. His book, *Cradle to Cradle: Remaking how we make things* advocates changing how we design and build everything so that it is either biodegradable or technically recycleable - everything.

It means turning the entire intellectual experience into a new discovery. 21st century academy needs to direct its focus onto sustainability, which means finding ways to be in balance in the web of life. It means transitioning to a whole new model of how society functions, and the role of science as well as technology is part of the ongoing discussion. UCD is ideally suited to provide leadership in how humankind can evolve to become more sustainable.

The Australians have been more focused on these issues, since they have been living on a continent that has had a 5 million year drought. The University of Queensland has developed a program in sustainability: in thinking, in society, in designing systems, in communities modern and traditional, in food production and distribution, in engineering, in markets, and in infrastructure and resource use.

UC Davis could transform in that direction. The academic mission can be reconsidered in light of real problems that did not exist a hundred years ago. The 20th century was an experiment in technological expansion, and now we need to pay the price and create ways to address our escalating climate and ecological as well as our economic and social problems.

### UCD real time focus on planetary & organizational sustainability

The best way for UCD to thrive into the future is to build on its natural strengths and redesign the campus administrative structure, using VSM. This is a three week process. The first week is design, the second week is implementation, and the third week is evaluation. It is overseen by the Chancellor and the Executive Vice Chancellor, managed on a daily basis by the Vice Chancellors and the Deans, with a 10 am meeting, and the results of decision taking announced at 1 pm on the process web site. Participants and Observers then have until 10 am the next day to do their work and respond for the next workday's round of decisions by the Vice Chancellors and Deans.

Outcomes: build a Viable System Model of the Planet for multi-species sustainability as the campus mission; build a Viable System Model of the University of California at Davis decision flow; be able to measure 12 indicators daily (each made up of 10 indices) for both mission and decision process; total of 264 daily measures.



## Post Globalization: Economy, Systems Science & Academy

Participation: limited to three current streams: UCD faculty, students, and employed administrative staff; expected participation: daily review web site new instructions after 1 pm, and respond for at least 1 hour before 10 am the next day. May spend up to 40 hours per week on the process.

Observers: different streams of running commentary is the primary ongoing feedforward mechanism for continuous evaluation: faculty, UCD students, UCD staff, UCD alumni, UCD former staff, UCD former faculty, someone with any previous UCD experience or association, general public. There will be plenty of opportunity for communication and commentary, and continuous re-evaluation about what is happening as it unfolds. Humans, right? Able to adapt to new information. Isn't that our competitive advantage?

Note: the non-mission discussion is NOT about building a new organizational structure, it is about the channels of communication for a viable system. The organization chart only gets in the way of talking about what needs to be happening as consistent organizational behavior and decision taking processes. This process is very similar to the UCD 1993 Phase III budget cuts process, only that was just before the web, so it took a year.

Subexperiences: the first VSM models of the Planet and of UCD will be like black and white Polaroid pictures from the 1950s - that is what it looks like on the web site at the beginning of Design Week. By the end of Design Week, the web model is like a Polaroid that has been painted over with water colors. Monday 8 am Implementation Week, part of it is iMovies, and part of it is Garage Band. By the end of Implementation Week, most UCD administrative staff should experience the web site as the coolest thing that Steve Jobs and James Cameron ("Avatar") didn't think of first.

By the beginning of Evaluation Week, the interactive 3rd order cybernetics should have such efficient communication that the 2 dimensional computer screen gives the viewer a 3 dimensional experience of information flow and decision taking - of the planet and the UCD administration, from their unique perspective. It is designed to work well for 1) students, 2) faculty, 3) staff, 4) prospective students, faculty, staff and visiting scholars, 5) legislators and other public officials, and the general public.

VSM: UCD as the System in Focus:

System 1s: schools & colleges: agriculture, environmental science, engineering, veterinary medicine, human medicine, nursing, law, letters and science, and, 60% of the student body: biological sciences.

Environment: every child in California, California taxpayers, 12.5% of the high school graduates in the state, students at community colleges and state colleges, anyone on the planet who might be impacted by discovery or policy developed by people associated with this campus.

current UC students, faculty, researchers, faculty on other campuses

Davis Joint Unified School District, every school district in the Sacramento region, every school district in Northern California, every school district in Southern California.

## Post Globalization: Economy, Systems Science & Academy

UC Office of the President (UCOP), Regents of the University of California, state legislature, California Department of Finance, California Department of Food & Agriculture, California Postsecondary Education Commission (which administers the state Master Plan for Higher Education)

rest of the University of California, California State Colleges & Universities, Community Colleges, private colleges in California, land grant colleges in the U.S., institutions of learning around the world

businesses with a research agenda, agricultural industry, US Department of Agriculture, national and international agricultural economic networks - like IRRI, the International Rice Research Institute which is headquartered in the Philippines and has more associations with UCD than any other campus; US Department of Interior, Defense, Transportation, HHS, the entire medical system

City of Davis, Yolo County, Sacramento Area Council of Governments - all cities and counties in the region, municipalities and special districts, especially within the State of California

Putah Creek/Sacramento River watershed, Pacific weather system

### **Conclusion: Importance of System 4: Creating your own Tahrir Square**

“People the world over have always been more impressed by the power of our example than by the example of our power.”

-- Former U.S. President Bill Clinton

Every community on the planet is now in an economic survival mode. This is a proposal to build a model of our (Davis's) economy, and the Tahrir Square Egyptian economy, and for a different set of challenging reasons, the economy/ecology of Northern Japan, with the idea being to build out of the rubble of the current information chaos towards a more sustainable future. The better you can understand the reality of the current situation, the more likely you can have a useful discussion about improvements and a course of mutually agreed future action. Too much of current decision taking is based on long obsolete data being presented as useful information.

Since the first of the year, a lot has changed in the world as the Middle East has taken on new meaning.

Tahrir Square was an anonymous car roadway and parking lot that squatters turned into many things:

- foremost, it is a real world symbol for the aspirations of the Egyptian people;
- Tahrir means freedom, so it is also a state of mind;
- History was earned there with courageous people sacrificing for the future;
- It can become a metaphor - for a respected place, in the tradition of the Greek Agora, a place where community is manifest;
- A safe area within a school, sometimes the whole school grounds, defined by the users.

## Post Globalization: Economy, Systems Science & Academy

### Who was Muhammad Bouazizi?

Muhammad Bouazizi was the young man in Tunisia whose self-immolation sparked the uprising that brought down the regime of Zineel-Abidine Ben Ali, which triggered the Arab Jasmine Spring democracy movement in Tunisia, Egypt and around the world.

### What was it like?

Bouazizi contemporary Jake Lippincott reported in late January: “I’m a 23 year old recent US college graduate. Like many recent college graduates, I am only able to get shitty jobs that didn’t require a college degree or pay me a living wage. I have very few family connections, and I wrote my college thesis on Iraqi sectarian politics, so I decided to get certified as an English teacher and move to the Middle East.

“My first job offer was in Tunisia, so I came here. Tunisia was an extremely boring place for the first eight months I was here. It’s a very closed society, and this is in large part because of how tyrannical the government was. The Interior Ministry was brutal in crushing any perceived dissent. I have heard many stories of people disappearing after complaining in a cafe about the economic situation, or even for going to the mosque too diligently (the regime was rabidly anti-Islamist).....

“By Saturday, the army had told the general population to arm themselves, build barricades in the streets, and look for terrorists loyal to the former regime.

“I had stayed completely out of the drama until then, but when I learned that men with automatic weapons were driving around killing people in my neighborhood, I decided I had to help stop them. This last weekend has been the most intense, terrifying, inspiring, and exciting experience of my life. I have also made some very good friends.....”

### Syria is now the front line

Tom Friedman reported, May 21, “There is a story making the rounds among Lebanese Facebook users about a Syrian democracy activist who was stopped at a Syrian Army checkpoint the other day. He reportedly had a laptop and a thumb drive on the seat next to him. The Syrian soldier examined them and then asked the driver: “Do you have a Facebook?” “No,” the man said, so the soldier let him pass.

“You have to feel sorry for that Syrian soldier looking for a Facebook on the front seat, but it’s that kind of regime. Syria really doesn’t know what’s hit it — how the tightest police state in the region could lose control over its population, armed only with cellphone cameras and, yes, access to Facebook and YouTube.

“You can see how it happened from just one example: Several Syrian dissidents have banded together and from scratch created SNN — Shaam News Network — a Web site that is posting the cellphone pictures and Twitter feeds coming in from protests all over Syria. Many global TV networks, all of which are banned from Syria, are now picking up SNN’s hourly footage. My bet is that SNN cost no more than a few thousand dollars to start, and it’s become the go-to site for video from the Syrian uprising. Just like that — a regime that controlled all the news now can’t anymore.

“I don’t see how Syria’s president, Bashar al-Assad, can last — not because of Facebook, which his regime would love to confiscate, if it could only find the darn thing — but because of something hiding in plain sight: Many, many Syrian people have lost

## Post Globalization: Economy, Systems Science & Academy

their fear. On Friday alone, the regime killed at least 26 more of its people in protests across the country.

“This is a fight to the death now — and it’s the biggest show on earth, for one very simple reason: Libya implodes, Tunisia implodes, Egypt implodes, Yemen implodes, Bahrain implodes — Syria explodes. The emergence of democracy in all these other Arab countries would change their governments and have long-term regional implications. But democracy or breakdown in Syria would change the whole Middle East overnight.

“A collapse or democratization of the Syrian regime would have huge ramifications for Lebanon, a country Syria has controlled since the mid-1970s; for Israel, which has counted on Syria to keep the peace on the Golan Heights since 1967; for Iran, since Syria is Iran’s main platform for exporting revolution into the Arab world; for the Lebanese Shiite militia Hezbollah, which gets rockets from Iran via Syria; for Turkey, which abuts Syria and shares many of its ethnic communities, particularly Kurds, Alawites and Sunnis; for Iraq, which suffered from Syria serving as a conduit for jihadist suicide bombers; and for Hamas, whose leader sits in Damascus.

“More than in any other Arab country today, the democracy protestors in Syria know that when they walk out the door to peacefully demand freedom they are facing a regime that has no hesitancy about gunning them down. Lebanese have been surprised by their sheer bravery.

“Of course, the million-dollar question hanging over the Syrian rebellion, and all the Arab rebellions, is: Can the people really come together and write a social contract to live together as equal citizens — not as rival sects — once the iron fist of the regimes is removed?”

Stafford Beer, in “Designing Freedom”, in a Canadian national radio broadcast:

“For me, this is what freedom is all about. I am tired of being told that the computer threatens our freedom, that cybernetics is a tool of the devil, that real time governmental regulators are too dangerous to employ. The reason is that I reckon our existing liberty to be largely illusory: we are fooling ourselves. There is a new chance, now, to get our freedom back, even for us to bestow freedom on those who are following in our disastrous paths.

“Please look at it this way. We all know that a majority of people on this planet are enslaved. I mean this in the straightforwardly physical sense. Most people alive do not have enough to eat, and must live under regimes that tell them what to do. The fact remains that our own relationship with our environment is governed by bank upon bank of variety attenuators, conveniently reducing a world of increasing variety to the requisite variety of our brains. We have completely lost control of the processes by which this occurs.

“One example is education. Every pupil is a high-variety organism, and the process of education essentially constrains variety. In other words, the pupil is capable of generating many responses to a question: what is six multiplied by seven; the educator will seek to attenuate this potential variety to the single answer: forty-two. But if we take a different kind of example, we may find ourselves saying something significantly different. The pupil is capable of generating many responses to the question: how should a national health service be organized? This time, however, we may hope that the

## Post Globalization: Economy, Systems Science & Academy

educator will not attenuate potential variety to a single answer: like THIS. No, we say; education is a word coming from the Latin: e-ducere, “to lead out”. It does not mean “to push in”.

Thank God way up in Heaven for what ever it was worth  
Thought he'd have a big old party  
Thought he'd call it Planet Earth  
- Grateful Dead, One More Saturday Nite

For more about the decentralized global information network, see:  
“decentralization: Exploring the Prospects for a Consumer-Oriented Economic System,”  
in the 1980 proceedings of the Society for General Systems Research, San Francisco,  
California, USA  
“The Computerized Community: Can we Measure Optimal Community?,” 1995  
proceedings of ISSS, Amsterdam, The Netherlands  
“Evolving to Sustainability,” 2008 proceedings of ISSS, Madison, Wisconsin, USA  
“Surviving the Economy,” 2009 proceedings of ISSS, Brisbane, Queensland, Australia

### REFERENCES

- Beer, Stafford (1972, 1994), *Brain of the Firm*, John Wiley, Chichester  
Beer, Stafford (1974), *Designing Freedom*, Canadian Broadcasting Corporation, Toronto  
Beer, Stafford (1975, 1994), *Platform for Change*, reader's guide by Jon Li, John Wiley,  
Chichester  
Beer, Stafford (1979, 1994), *The Heart of Enterprise*, John Wiley, Chichester  
Beer, Stafford (1985), *Diagnosing the System: for Organizations*, John Wiley, Chichester  
Beer, Stafford (1989), “Disseminated Regulation in Real Time, or How to Run a  
Country”, in *The Viable System Model: Interpretations and Applications*, edited  
by Raul Espejo and Roger Harnden  
Beer, Stafford (1994), *Initiates an Audience into the World of Systems and Managerial  
Cybernetics*, Liverpool Business School, John Moores University, Liverpool, UK  
Breed, Warren, (1971), *The Self-Guiding Society*, Free Press, NY, NY  
Brooks, David, (2011), *The Social Animal: The Hidden Sources of Love, Character and  
Achievement*, Random House, NY, NY  
Callenbach, Ernest (1975), *Ecotopia*, Banyan Tree, Berkeley  
Chernow, Ron (2004), *Alexander Hamilton*, Penguin Press, London  
Christopher, William (2007), *Holistic Management: Managing What Matters for Company Success*,  
John Wiley, Hoboken, New Jersey  
Clark, Glen (2002), *A Human Effort* (A fifty part poem of history up to now), self-published  
Daly, Herman, Cobb, John Jr. (1994), *For the Common Good: Redirecting the Economy  
toward Community, the Environment and a Sustainable Future*, Beacon Press,  
Boston  
De Chardin, Teilhard, (1955), *The Phenomenon of Man*, Harper, NY, NY  
De Grazia, Alfred (1973), *Politics for Better or Worse*, Scott, Foresman, Glenview,  
Illinois

## Post Globalization: Economy, Systems Science & Academy

- De Grazia, Alfred (1975), *Eight Goods – Eight Bads: The American Contradictions*, Anchor Doubleday, Garden City, NY
- Diamond, Jared (2005), *Collapse: How Societies Choose to Fail or Succeed*, Viking, NY, NY
- Doyle, Michael, Straus, David, (1976), *How to Make Meetings Work*, Dove, NY, NY
- Ferguson, Niall (2003), *Empire: The Rise and Demise of the British World Order and the Lessons for Global Power*. New York: Basic Books
- Ferguson, Niall (2004), *Colossus: The Price of American Empire*, Penguin Press, NY, NY
- Ferguson, Niall (2008), *The Ascent of Money*, Penguin Press, NY, NY
- Friedman, Milton, Schwartz, Anna (2008), *The Great Contraction, 1929-1933*, Princeton University Press, Princeton, New Jersey
- Friedman, Thomas (2008), *Hot, Flat & Crowded*, Farrar, Straus & Giroux, NY, NY
- Fromkin, David (1989), *A Peace to End all Peace: The Fall of the Ottoman Empire and the Creation of the Modern Middle East*, Avon, NY, NY
- Galbraith, John Kenneth (1977), *The Age of Uncertainty: A History of Economic Ideas & their Consequences*, Houghton Mifflin, Boston, MA
- Gardner, Howard, (2007), *5 Minds for the Future*, Harvard Business Press, Cambridge, MA
- Hardin, Garrett (1968), “The Tragedy of the Commons”, in *Science*, vol 162, no 3859, pp 1243-1248
- Herbert, Frank, (1965), *Dune*, Berkley, NY, NY
- Hourani, Albert (1991), *A History of the Arab Peoples*, Warner, NY, NY
- Illich, Ivan (1973), *Tools for Conviviality*, Harper & Row, NY, NY
- Illich, Ivan (1974), *Energy and Equity*, Harper & Row, NY, NY
- Jacobs, Jane (1961), *The Death and Life of Great American Cities*, Random House, NY, NY
- Jacobs, Jane (1969), *The Economy of Cities*, Random House, NY, NY
- Jacobs, Jane (1984), *Cities and the Wealth of Nations*, Random House, NY, NY
- Jacobs, Jane (1992), *Systems of Survival*, Vintage, NY, NY
- Jacobs, Jane (2000), *The Nature of Economies*, Modern Library, NY, NY
- Kinsley, Michael J. (1997), *Economic Renewal Guide: Collaborative Process for Sustainable Community Development*, Rocky Mountain Institute, Snowmass Colorado
- Kuhn, Thomas (1970), *The Structure of Scientific Revolutions*, University of Chicago Press, Chicago
- Lakoff, George (2008), *The Political Mind: Why You Can't Understand 21st-Century American Politics with an 18th-Century Brain*, Viking, NY, NY
- Leonard, Allenna (1999), *A Viable System Model: Consideration of Knowledge Management*, Journal of Knowledge Management Practice
- Leonard, Allenna, *The VSM Applied to Complex Organizations in Crisis*, Address to the 2nd Cwarel Isaf Institute Conference, Internet
- Lewis, Bernard (2002), *What Went Wrong? Western Impact and Middle Eastern Response*, Oxford Press, NY
- Lewis, Bernard (2003), *The Crisis of Islam: Holy War and Unholy Terror*, Modern Library, NY, NY
- Lewis, Michael, (2010), *The Big Short: Inside the Doomsday Machine*, Norton, NY, NY
- Magnuson, Joel, *Mindful Economics: How the U.S. Economy Works, Why it Matters, and How it Could Be Different*, 2008, Seven Stories Press, NY, NY

## Post Globalization: Economy, Systems Science & Academy

- Maslow, Abraham, (1966), *The Psychology of Science: A Reconnaissance*, Henry Regnery, Chicago
- Maslow, Abraham, (1968), *Toward a Psychology of Being*, Van Nostrand Reinhold, NY, NY
- Maslow, Abraham, (1970), *Motivation and Personality*, Harper & Row, NY, NY
- McDonough, William, Braungart, Michael, (2002), *Cradle to Cradle: Remaking the Way We Make Things*, North Point Press, NY, NY
- Meadows, Donella, Meadows, Dennis, Randers, Jorgen (1992), *Beyond the Limits*, Chelsea Green Publishers, Mills Vermont
- Medina, Eden (2006), *Designing Freedom, Regulating a Nation: Socialist Cybernetics in Allende's Chile*, Journal of Latin American Studies 38, 571-606, Cambridge University Press
- Muir, John, (1973), *The Velvet Monkey Wrench*, John Muir Publications, Santa Fe, New Mexico
- Mumford, Lewis (1934), *Technics and Civilization*, Harcourt, Brace, NY, NY
- Mumford, Lewis (1961), *The City in History*, Harcourt, Brace, NY, NY
- Naughton, Barry, (2007), *The Chinese Economy: Transitions and Growth*, MIT Press, Cambridge, MA
- Obama, Barack, (1995), *Dreams From My Father*, Three Rivers Press, NY, NY
- Obama, Barack, (2006), *Audacity of Hope*, Three Rivers Press, NY, NY
- Odum, Howard, Odum, Elisabeth (2001), *A Prosperous Way Down*, U. of Colorado Press, Boulder
- Pirsig, Robert, (1974), *Zen and the Art of Motorcycle Maintenance: An Inquiry into Values*, Quill William Morrow, NY, NY
- Pirsig, Robert, (1991), *Lila: An Inquiry into Morals*, Bantam, NY, NY
- Pollan, Michael (2006), *The Omnivore's Dilemma: A Natural History of Four Meals*, Penguin, NY
- Pollan, Michael, Author's Talk, Campus Community Book Project, Mondavi Center, University of California – Davis, 11/29/06, transcribed by Jon Li
- Register, Richard (2006), *Ecocities: Building Cities in Balance with Nature*, Berkeley Hills, Berkeley
- Rogan, Eugene, (2009), *The Arabs: A History*, Basic Books, NY, NY
- Saviano, Roberto (2007), *Gomorra: A Personal Journey into the Violent International Empire of Naples' Organized Crime System*, Picador – Farrar, Straus & Giroux, NY, NY
- Snow, C.P. (1959), *The Two Cultures and the Scientific Revolution*, Cambridge, NY
- Taylor, Graeme (2008), *Evolution's Edge: The Coming Collapse and Transformation of Our World*, New Society, BC, Canada
- Tolle, Eckhart, (2005), *A New Earth: Awakening to Your Life's Purpose*, Plume, NY, NY
- Walker, Jon (2006), *Viable System Model Guide*, on the Internet
- Weisman, Alan (2007), *The World Without Us*, St. Martin's, NY
- Wood, Gordon, (2009), *Republic of Liberty: A History of the Early Republic, 1789-1815*, Oxford History of the United States, Oxford Press USA, NY, NY