



Health Comes First !!!

Linking human health and natural resource protection-Proprietary and Confidential
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The “Food-Energy-Health Nexus...” Delivering the Techno-Agrarian Renaissance (a Work in Progress - May 31, 2010)

I. Forward – Notes to the Reader:

Seeking Quantitative Inputs: This article is a work in progress. It has been written to date from an overall qualitative analysis framework. There are several places in the text which could benefit from more quantitative research and/or examples of economic supply and demand as well as financial investment models. I am currently seeking such input to further the reach of this text. If you are interested in helping to develop these quantitative economic and/or financial examples, please contact me at sgmontgomery@bellsouth.net. The text also could benefit from more integration between concepts at the national economy and international economy levels.

Borrowing from Project Management Concepts: Since 2002, I have been a certified Project Management Professional (PMP) from the Project Management Institute. My certification is valid through 2012. Many of the ideas for this article are informed by my training as a PMP. In particular, this includes Risk Management, Systems-Based and/or Process-Based Measurement, Lessons Learned and Stakeholder Management. Perhaps the biggest challenge associated with this work is engaging Stakeholders. In general in the economy today, the provision of systems-based measurements is still more of an after-thought than a fore-thought. The challenge is to engage Stakeholders at the national and international levels in the early development of these measurements.

The Impetus for This Article: The idea for this article dates back to 1988/1989 when my father Ed Grider, who was an ordained Presbyterian minister, was working on his second book about the impact to community of the multinational economy. This book was a work in progress when he died of prostate cancer in May of 1989.

Over the last twenty years, I have reviewed the draft text he put together as well as explored my own values and perceptions about the US and the global economy as a student at Boston University where I received my MBA in 1994. While my father sought to articulate the Church's role in preserving community in the midst of multinational growth, my focus has been more secular in some respects. I have applied my business school teachings in the development of some fairly simple measurements concepts. These measurement concepts seek to make players in the US and the worldwide economy more responsive to community development concerns like civil society, human health, human capital and climate change. What links my current text to that of my father is a certain sort of “thankfulness” that generally is associated with some level of spiritual fluency or spiritual intelligence.

Thankfulness as an Indicator of Spiritual Fluency: That said, in preparation for reviewing the ideas of this article, I request that the reader consider these quotations:

- *Be thankful for what you have; you'll end up having more. If you concentrate on what you don't have, you will never, ever have enough.*

--Oprah Winfrey



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- *It is impossible to feel grateful and depressed in the same moment.*
--Naomi Williams
- *When I started counting my blessings, my whole life turned around.*
--Willie Nelson
- *We tend to forget that happiness doesn't come as a result of getting something we don't have, but rather of recognizing and appreciating what we do have.*
--Fredrick Koeing

These quotations¹ when taken in light of the “Techno-Agrarian Renaissance” suggest the idea that: 1) we may already have all we need for food and energy security for the planet and 2) the harvesting of both food and energy can encourage positive developments in civil society, human health and climate control. The challenge is in recognizing the blessings that we already have.....

¹Quotes were retrieved from <http://www.great-inspirational-quotes.com>. The quotes remain as the intellectual property of the original authors as cited above.



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I. Introduction re Systems-Based Measures at the National and International Economy Levels

Introducing the “Techno-Agrarian Renaissance”

New systems-based measurement opportunities abound in the United States as well as worldwide. These new measurement opportunities are characterized by:

- A migration away from old silo-based financial measures;
- A transition to more process and/or systems-based measurements;
- An orientation toward limiting waste or unwanted by-products such as negative health impacts;
- An evaluation framework that combines companies or industries that prior have not been evaluated together (“cousin industry analysis”);
- Inclusion of long-term economic success markers such as “intergenerational equity” at the national and international economy levels;
- International policy structures that integrate political and economic functioning.

It may be that by simply changing what we measure as “success,” we make great strides toward economic recovery in a very short period of time.

In general, the movement toward this new basket of measures particularly for health, food and energy concerns can be characterized as the “Techno-Agrarian Renaissance.” The “Techno-Agrarian Renaissance” borrows its techno-orientation from the Information Age. But unlike the Information Age, the “Techno-Agrarian Renaissance” seeks to harness information 1) in the reversal of unwanted by-products and 2) in the advancement of positive civil society and/or human health concerns. This information harnessing is also associated with the use and advancement of new technology (or perhaps not so new – see technological advances in energy markets circa the 1970s) in various energy markets such as solar, wind, geothermal and biomass.

The Role of “Nouvelles Fermes”

In addition to its technology focus, the “Techno-Agrarian Renaissance” seeks to evolve our economy well past the Industrial Revolution / Company-as-Factory model. The unit of such economic growth in the Techno-Agrarian model is the “nouvelle ferme.” The “Techno-Agrarian Renaissance” recognizes the compromises of the Industrial Revolution / Company-as-Factory model to the family and to family learning structures. Unlike in the Company-as-Factory model, the “Techno-Agrarian Renaissance” and the “nouvelle ferme” seek to:

- 1) Encourage learning in the family or on the farm rather than in the factory;
- 2) Honor commitments and learning between farm workers and farm owners;



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- 3) Encourage learning by doing within the home/farm environment (rather than the development of institutional knowledge at the factory level, which is often gained at the expense of the family);
- 4) Reward impacts or outcomes of labor rather than some sort of labor abstraction (such as billable hours or time spent on the job).

Further, the “Techno-Agrarian Renaissance” and the “nouvelle ferme” seek to challenge the Company-as-Factory model with new concepts based on old traditions such as:

- 1) Preservation of the family structure;
- 2) Preservation of apprenticeship/journeyman and other models of self-learning (rather than competition between and among factory workers);
- 3) Preservation of food and energy security by reconnecting the farmer to production and/or financial goals.

Rather than removing the farm and/or the farmer from ideas such as food security and energy security, the “nouvelle ferme” seeks to maximize the production of foods that are healthy and secure for the nation as well as the production of energy sources that are healthy and secure for the nation. Under this definition, the “nouvelle ferme” may:

- 1) Grow any number of products including foodstuffs and/or energy sources such as solar, wind, geothermal and/or biomass;
- 2) Operate in such a way as to share and leverage technological advances across farming and/or energy concerns;
- 3) Remain in some respects competitive surrounding non-technology based core competencies;
- 4) Organize operations as a hybrid not-for-profit / for-profit or and/or operate like a privately managed public utility.

Introducing the “Food-Energy-Health Nexus”

The industry focus of the “Techno-Agrarian Renaissance” may include any number of new industry advances that utilize “cousin industry analysis.” For the purposes of this article, though, the Techno-Agrarian Renaissance is focused majorly on economic activity in these three markets:

- Food and Beverage;
- Energy (both renewable and traditional);
- Health/Preventative Health/Environmental Health.

This focus is referenced throughout this article as the “Food-Energy-Health Nexus.”

Introducing Systems-Based Measurements

The use of “cousin industry analysis” is promoted throughout this article and is considered a system-based measurement. To illustrate what is meant by systems-based measurements, revisit a simple model of a computer-based system.



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This model consists of:

- inputs
- processing
- outputs
- by-products

The main complaint about economic models today is that they function on a linear or silo basis with often just a look at:

- inputs
- processing
- outputs.

By-products of all kinds, both good and bad, may be considered as ancillary or may not even be counted in the measurement system. These unwanted by-products are generally called “externalities.” They are called “externalities” because heretofore they have been considered as being outside of or “external” to the system of measurement in use. *In contrast, the use of “cousin industry analysis” seeks to “internalize” these by-products or “externalities” in the system of measurement in use. “Cousin industry analysis” seeks to evaluate “externalities” as an internal part of the system of measurement in use. It also seeks to convert these “externalities” from unwanted by-products to something of “value” in the economy.*

Example: Systems-Based Evaluation of Energy and Energy By-Products

Consider the fossil fuel industry as an example. By-products of the development and use of fossil fuels include: Nitrous Oxide, Sulfur Dioxide and particulate matter. In the traditional silo financial model, these by-products are not considered at the systems-level. These products are managed after the fact with the introduction of scrubbers on flumes of factories producing energy. This is called “the end of the pipeline” approach. Rather than seeking to minimize these harmful by-products by making changes to the overall system, current “end of the pipeline” thinking seeks to build bigger and better scrubbers.

In contrast, under “cousin industry analysis,” the goal is to seek power generation models that reduce or eliminate Sox, Nox and particulate matter at the beginning of the pipeline rather than at the end. In the cousin industry model, the health or climate impacts of air pollution are considered not as an after-thought but as a fore-thought. The goal is to produce energy that is healthy and affordable and that minimizes the production of harmful health (or climate) by-products concerns from the beginning. End-of-the-pipeline “band-aids” such as scrubbers are considered non-strategic approaches to advancing the “Food-Energy-Health” nexus. These “band-aids” are recognized as helpful to the old school measurements but are not recognized as clear components of a more strategic systems-based measurements approach.



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In general, “cousin industry analysis” and other forms of systems-based measurements seek to address problems or unwanted by-products at the systems-level which usually means strong surveillance at the point of input or at various points of “processing” along the way rather than at the point of output (band-aid approach).



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II. US Economy Measurements Developments

Introduction

The idea of systems-based government and systems-based measurements gained popularity in the United States under the Clinton Administration but did not flourish under President William Jefferson Clinton or President George Walker Bush. This article challenges the Obama Administration and its supporters to re-examine measurement and valuation in the government and the economy in order to:

- 1) Promote policies that simultaneously advance renewable energy and healthcare markets.
- 2) Value traditional and renewable energy sources based on their impact to human health or climate change.
- 3) Consider and capture benefits to future generations (“intergenerational equity”) while simultaneously considering and capturing benefits for the current generation.

Old Linear Based Measures Are Still Used in Measuring the US Economy’s Performance

To date, green policies are often perceived by business as added constraints to current operations rather than as a source of exciting and profitable new financial directions. This perception is largely due to the fact that old, linear-based measures are still used to evaluate economic success.

Consider the benefits of two new systems-based measurements in our economy: 1) “Cousin Industry Analysis” and 2) “Intergenerational Equity Valuations of Energy.” To date, industry players tend to analyze market opportunities that exist either within the linear bounds of their particular industry and/or according to old-school ideas of creating “value.” Consider if industries could come together and analyze costs and benefits across a family of industries in the “Food-Energy-Health Nexus” and/or evaluate economic opportunities across the generations.

“Cousin Industry Analysis” – a Working Example at the US Economy Level

Consider bringing together these US industries: Food and Beverage, Healthcare and Biofuels. These industries may be considered cousin industries in that prior to the present they have not been analyzed together.

Consider newly released data from studies that correlate the use of high fructose corn syrup and increased body fat. Princeton University has currently evaluated this connection and found that fat content per the same caloric intake is higher when rats consume high fructose corn syrup rather than sugar.² Consider that corn is a critical input to biofuels with particular regard to biodiesel. Consider that the National Biodiesel Board (NBB) has estimated that pure

² <http://www.sciencedaily.com/releases/2010/03/100322121115.htm> (hereafter cited as “Princeton HFCS Study”).



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biodiesel (B100) provides a 93.6% reduction in cancer risk as compared to petroleum diesel.³ The NBB also estimates a 96% reduction in hazardous waste generation in the production and use of biodiesel as compared with that of petroleum diesel.⁴

When the “Food-Energy-Health Nexus” industries are evaluated traditionally, we might find that Coca-Cola and other US Food and Beverage players experience huge losses as information surrounding corn syrups and health issues proliferates. In addition, there is no directive to switch corn to alternative energy. Incentives for advancing biofuels do not readily exist for Food and Beverage industry players. When Cousin Industry Analysis is used, on the other hand, consider these results:

- Diabetes and/or weight gain concerns may be risk reduced as raw sugar or other sweeteners are reintroduced into food products⁵;
- High Blood Pressure may be risk reduced as raw sugar or other sweeteners are reintroduced into food products⁶;
- Cancer risk reduction may occur as biodiesel leads production over regular diesel⁷;
- Food and Beverage players may enjoy some form of health tax credit for:
 - o Diabetes risk reduction
 - o High Blood Pressure risk reduction
 - o Weight Gain risk reduction
 - o Cancer risk reduction;
- New markets for renewable energy, specifically biodiesel, are developed;
- Food and Beverage players may enjoy minority ownership in biofuels and developing alternative fuel markets. Food and Beverage players may actually serve as investors in new energy models and/or may convert associated farmers to “nouvelles fermes” which produce an amalgam of food and/or energy products.

Intergenerational Equity as a Concept

Intergenerational equity refers to the idea that we want to preserve “the public good” for our children and their children. If fossil fuels are used at the current rate, there may not be fossil fuels available for the coming generations. Additionally, the use of fossil fuels in the present generation may be associated with environmentally induced illnesses or climate concerns. The goal of “intergenerational equity” policies is to 1) ensure that energy sources (largely traditional sources such as oil and coal) remain available to future generations and 2) ensure that the healthiest production/use of energy sources is pursued within each generation.

³ *Biodiesel Educational Workshop*, sponsored by the Iowa Soybean Promotion Board, National Biodiesel Board, National Renewable Energy Laboratory, United Soybean Board, USDOE, September 1999. Section L, P.10. Hereafter cited as *Biodiesel Workshop*.

⁴ *Biodiesel Workshop*, Section N, p.25.

⁵ *Princeton HFCS Study re weight gain*. Diabetes risk is not included in the Princeton HFCS study but is extrapolated here.

⁶ <http://www.drweil.com/drw/lu/WBL02172/High-Fructose-Corn-Syrup-and-Your-Blood-Pressure.html> (hereafter cited as “Dr. Weil HFCS”).

⁷ *Biodiesel Workshop*.



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Intergenerational Equity and Energy Markets

Perhaps most crucial to consider in adopting systems-based measures for the economy is new economic valuation of energy sources, including both renewable energy and traditional energy sources. Consider a “cousin industry analysis” framework where Food, Energy and Health are evaluated. (In this model, corn is swapped from a Food input to an Energy input.) To date, energy market players can claim “value” in their production processes as raw energy sources such as fossil fuels are processed into petroleum and/or related fuels or by-products. Consider what would happen if this idea of claiming “value” for energy production began with the counting and measurement of inputs. These inputs may include:

- Solar energy
- Wind energy
- Biomass
- Geothermal.

All of a sudden, added “value” in energy markets is associated with renewable and healthy fuels.

What Happens When “Value” Is Attached to Renewable Inputs?

Currently, renewable resources like sunlight, wind, biomass, geothermal as well as traditional energy resources like oil and coal are measured as they are converted into power at some intermediary level. Consider what would happen on the books of traditional and alternative energy players if all the sudden we were to “value” the existence of renewable energy sources such as sunlight, wind, biomass and geothermal. Consider if we were to value the mere presence of these alternative sources into perpetuity or as long as the earth is in orbit with the sun. Rather than just “valuing” energy as it is produced, we could attach “value” to the mere existence of energy sources. *Virtually overnight, solar, wind, biomass and geothermal are captured on the books into perpetuity. Rather than giving ourselves credit for using up our traditional energy sources, we would actually provide ourselves credit for developing and preserving energy in the healthiest manner possible.*

New Measures Impact on Traditional Fuels

Consider under these new rules, oil or coal reserves, when valued on the books as a future resource, may prove to be more valuable as future equity than as a current harvest. Instead of encouraging us to process the most oil or coal possible, new measures would place value on saving oil or coal reserves until a time when their processing would be cleaner – without health or climate impacts.

Finance and Nature in Harmony, Intergenerational Equity Success

Recognizing sunlight, wind, biomass, and geothermal as renewable energy resources and thereby sources of present and future equity means we are honoring intergenerational equity in our energy markets. The timeframe we use to value our natural resources moves from the-



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present-time to a timeframe that includes future generations. *All of a sudden, economic value is based on the existence and continuation of natural resources rather than their depletion. Energy assets may move from x to infinity times x . Finance and natural resources are in perfect harmony.*

Who are the Techno-Agrarian Producers or “Nouvelles Fermiers?”

This allegiance between finance and nature creates a new opportunity for our financial systems to evolve and honor the successes of our farmers. Farmers here includes renewable energy workers engaged in energy security as well as agricultural workers engaged in food security. It may be that the same farms can simultaneously make advances in safe food production as well in solar, wind, geothermal or biomass.

Under the Industrial Revolution model, farmers have had to adapt to Wall Street measures of success. In some cases based on this unearthly combination of goal structures, it actually costs the farmer more to produce a crop like corn than it does for him to buy that crop. This is not the goal of “nouvelles fermes.” “Nouvelles fermes” seek to correlate advances in our food security and energy security markets by adapting valuable farmland across the nation for multiple uses.

The emergence of a farm-first model (rather than a Wall Street first model) is at the core of the “Food-Energy-Health Nexus.” It is also a key requirement of a “Techno-Agrarian Renaissance.”

“Satellite Settlements” - the Structure of “Nouvelles Fermes” around the US

If the idea of “nouvelles fermes” were to advance in the US, it might be easiest to see how such farms would develop around energy hog (and food hog) cities such as New York, Los Angeles or Atlanta. “Nouvelles fermes” would exist around the circumference or outskirts of major US cities and are tasked with providing between 51 and 99% of the food and energy supply of their sister cities. A city the size of Los Angeles might have fifteen to twenty associated “nouvelles fermes” dedicated to its supply of locally raised food and locally harvested energy. A city the size of New York City might have twenty to thirty such “nouvelles fermes,” while a city the size of Atlanta may be paired with ten to twenty “nouvelles fermes.” The idea is that the Satellite Settlements would be organized in such a way as to minimize transport costs and other energy inefficiencies associated with long commutes over the grid. The Satellite Settlements would also be tasked with providing the majority of food production for their Satellite Cities.

In this way, there develops a synergy between food production and food use and between energy production and energy use. Both of these concerns are considered top concerns of a stable national plan for food and energy security.



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Summary National Economy and “Techno-Agrarian Renaissance”

In sum, the United States is blessed with a wealth of natural renewable resources. By simply measuring the mere existence of renewable resources in the United States, we can make pronounced progress in the fields of alternative energy and preventive healthcare. By valuing renewable and traditional energy sources differently, we progress the economy by correlating what is good for the environment and what is good for human health.

By applying lessons learned from technological advances regarding energy processing from the 1970’s forward, we foster the development in the United States of a “Techno-Agrarian Renaissance.” Instead of food and energy farmers being forced to fit into Wall Street measurements of economic success, the concerns of farmers and of alternative energy workers are brought to the forefront. Financial measures in this light work with farmers’ concerns (rather than against the farmer) in a “Techno-Agrarian Renaissance.”



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III. From National Economy Concerns and Measures to International Economy Concerns and Measures

Introduction

It is probably true that as long as the nation-state measures its economic success under old school financial silo models, the international economy will continue to evaluate its success along the same set of measures. Until systems-based measures can be evolved to challenge the industrialization of our food production, farmers (of food and probably of renewable energy) will operate largely as pawns in the system rather than as strategic players. That said, there is ample room as the nation-state evolves its measures, for the worldwide economy to evolve into a more robust set of measures.

Those concepts presented previously as relevant for the US economy are also relevant for the international economy. They include:

- 1) “Cousin industry analysis” – With cousin industry analysis it is possible to widen the view-finder of economic analysis of the “Food-Energy-Health Nexus” in the worldwide economy. Similarly, “externalities” such as unwanted health or climate impacts at the international level are evaluated and addressed.
- 2) New Valuation Strategies – Should the US find that it is able to begin to associate “value” with the mere existence of energy inputs such as solar, wind, geothermal and biomass, the practice of doing this at the international economy level should soon follow suit. The extent of the annuity into perpetuity may be found to be limited by the physical area associated with a nation’s borders.
- 3) “Intergenerational Equity” at International Economy Level – Likewise, organizations at the United Nations concerned with economic development of developing and underdeveloped nations should be very interested in developing food and energy models and concerns that promote human health concerns. It may be that by evaluating equity distributions between developed, developing and underdeveloped more insight is gained into intergenerational equity for all nations.
- 4) “Nouvelles fermes” organized in “Satellite Settlements” – it may be that in certain parts of Europe local food production goals are already associated with their neighboring cities. In any case, the idea that a farm may have multiple uses – to grow food as well as harvest energy from a variety of sources – is probably not that new to Western Europe or other areas where real estate is more of a premium. That said, farms in the international model may exist across multiple outputs as well as in connection with a sister or satellite city.

At the international economy level, what is considered the primary concern to date is the development of a political and economic model that seeks to integrate political concerns such as human capital, human health and natural resource preservation with economic realities. To



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date, the organs which govern political development and economic development in the international economy are seen as operating largely independently.

In this section, the “Rain Forest Model of International Development” is recommended as an effective way of integrating worldwide economic concerns (such as the purview of the World Bank and the International Monetary Fund) and political concerns (such as United Nations Human Rights campaigns and similar developments). This “Rain Forest Model” is backward compatible to economic and human rights concerns at the national economy level whether that be the United States’ or some other nation-state’s economy.

Working Example: Cousin Industry Analysis in International Economy

Consider the surpluses and shortages in food, energy and health when evaluating US and for example African concerns. In general, American populations have a surplus of food particularly of cheap beef, pork and chicken. If the US were to migrate to more food and energy security developments that include biorefineries, the US would have to address some tactical issues and challenges that biorefineries present. The top concern with biorefineries at this juncture may be “leveling the burn” associated with employing a variety of biomass inputs. These inputs include animal effluent as well as animal carcasses impacted by disease. Also to consider is the fact that many human health concerns in the United States population can be considered as linked to a diet that includes more meat/pork/poultry than we need.

Now consider similar concerns of what is called here “the African Federation.” In general, there is a shortage of food particularly meats/pork/poultry which contributes to general health concerns in Africa. As contrast though, Africa may house the world’s best natural regulator of the biorefinery burn – “African Aloe.”

Spheres of Influence Introduced

Consider the progress that could be made if trade protocols were based on symbiotic advances in the “Food-Energy-Health Nexus.” Consider US trade goals in tandem with African trade goals in a “US-Africa Sphere of Influence.” These trade developments are akin to bartering but in reality enjoy a set of trade agreements that seek to address “Food-Energy-Health Nexus” issues in the US as well as Africa at the same time. On the one hand, the US could provide African people with more affordable foods while reorienting our own diets to smaller portion sizes and to more sustainably grown foods. On the other hand, African nations may enjoy ready markets for African Aloe to stabilize the burn at biorefineries in the United States or other nations rich with farmland.

In general, “spheres of influence” may build upon prior histories as well as shared ethnic and racial considerations. It may be that natural resistances for food-related illnesses as well as for energy or climate-related illnesses are better developed if food and energy trade follows a “spheres of influence” model.



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Other Spheres of Influence in the International Economy

Likewise, other historical relations between nations -- such as Great Britain and India or France and Indo-China or Spain and Portugal with Latin America -- may serve as additional spheres to be developed. At a minimum, these “spheres of influence” establish partnering opportunities for technology transfer from more developed nations to less developed nations. In addition, rain forest and other natural resources in less developed countries may be more strategically managed if nations partner around long-term and short-term economic goals.

Under a “spheres of influence” model, advanced economy players are expected to:

- Provide a leadership role for example in sustainable harvesting of natural resources from rain forests or other such natural blessings or wonders.
- Play a leadership role in reforestation of whatever natural resources are being harvested such that these resources remain available for future generations.
- Provide resources and/or communications around ensuring the coordination of legal considerations at the tribal, town/city, state/county/province, nation-state, international levels.

Under a “spheres of influence” model, underdeveloped or developing nations are expected to:

- Collaborate regarding sustainable harvesting of natural resources from rain forests and other natural areas.
- Collaborate regarding reforestation goals of natural resources being harvested.
- Seek to develop laws that integrate concerns at the tribal level on up to the nation-state and international level.

Perceived Benefits of “Spheres of Influence:”

When nations are grouped by “spheres of influence” it may be that symbiotic trade developments and natural resources harvesting are more likely to develop in a manner which is sustainable and in a manner that considers multiple generations into the future. It may also be that with “spheres of influence” a “Techno-Agrarian Renaissance” is more likely to occur and/or occur in a way that is sustainable.

Consider these potential advances if the “Techno-Agrarian Renaissance” develops along “spheres of influence” lines:

- Technology transfer is facilitated from more developed nation to less developed nation;
- Healthy market-based competition is fostered as technology developments in one “sphere” may compete with technology developments in other spheres;
- Food security concerns may be enhanced when food products stay largely within circumscribed ethnic or racial groups, ie. consider Black/African Americans and African natives and their collective resilience to disease;



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- Energy security concerns particularly if that energy involves biomass and the exchange of plant matter may also be enhanced based on similar considerations that collective ethnic/racial groups may hold similar resistance to disease;
- Pre-Industrial Revolution learning models have the opportunity to develop and flourish. Consider knowledge transfer models such as apprentice, page, journeyman, etc. Knowledge transfer from most skilled to least skilled is encouraged and enhanced by “spheres of influence.”

International “Cousin Industry Analysis” Enjoys Similar Health Benefits

As with the national model, the international model of “cousin industry analysis” enjoys similar health benefits:

- As biodiesel is developed in Africa and the US, the cancer risk associated with the production and use of regular diesel is addressed.
- As high fructose corn syrup is replaced by raw sugars or other sweeteners in US and African food markets, these additional health developments may occur:
 - o Weight gain associated with HFCS may be addressed;
 - o Obesity associated with HFCS may be addressed;
 - o Blood pressure increases associated with HFCS may be addressed;
 - o Diabetes associated with HFCS may be addressed;
 - o “Empty calories” contributing to malnutrition may be replaced with “full calories” for underserved populations in the US as well as Africa.
- Health credits may be provided by the appropriate governing entity at the nation-state and/or international level.

The Rain Forest Model of International Economic Development

The Rain Forest Model of International Economic Development is presented and explored in full in the subsequent text to help illustrate how governing entities at the nation-state and international levels can work together to measure and promote change, especially with regard to human health, human capital and climate concerns.



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IV: The Rain Forest Model of International Economic Development

Introduction: Development of the International Economy with Limited Planning

Since World War II, the international economy has developed virtually in a vacuum without much of a stated strategic plan. Multinationals with roots in developed nations dominate the landscape with seeming little regard for medium-sized and smaller businesses. In addition, there is little organized strategic connection between international economic structures and international political structures. The World Bank and the International Monetary Fund exist virtually independent of the United Nations (UN) and its organs. This schism between international economic functioning and international political functioning is evidence to the fact that, to date, we have no substantive strategic plan for worldwide economic development.

Need for a Worldwide Economic Plan

“The Rain Forest Model of International Economic Development” (Rain Forest Model) serves to provide a working model for worldwide economic development with the following characteristics. The model:

- 1) provides for small and medium sized businesses as well as multinationals;
- 2) integrates economic and political functioning at the international or UN level;
- 3) seeks to “grow the overall worldwide economic pie;”
- 4) seeks to address gaps in the distribution of wealth between developed and developing nations;
- 5) employs the expertise of seasoned political leaders to foster economically and environmentally safe and viable fiscal activity. This activity would address climate change and other global concerns as well as honor human health, human rights and/or other human capital advancements.

As a much needed alternative to the present, consider the Rain Forest Model. The Rain Forest Model has four discreet components that work together in a common system. These components are:

- The Canopy Layer;
- The Emergent Layer;
- The Understory Layer; and
- The Ground Layer.

In addition to these four layers, nation-state based Commissions exist at the Ground Layer to incent safe migration from a static Canopy and static economic state to a more dynamic international marketplace.



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Current Multinational Economy as Canopy Layer

Consider the multinational economy and its activity as the Canopy Layer. Observe that there has been little to no emergent behavior since World War II. In the existent model, this Canopy Layer has been allowed to dominate so long that there is no visible emergent behavior. Consider as a prime example energy market developments since 1950. In the 1970s, the United States was virtually ready for the Canopy Layer to give way to new alternative energy technologies. In theory, these new alternative energy technologies would have formed an Emergent Layer protruding from the Canopy Layer. However, financial and political leadership did not promote these developments. Instead leadership sponsored either actively or passively what may be considered as an unnatural extension of traditional energy players’ dominance in the Canopy Layer. This unnatural extension of traditional energy players’ dominance is associated with such issues as global climate change concerns and other related environmental and human health concerns.

Movement in the Canopy Layer Allows for the Emergent Layer to Develop

The static nature of the Canopy Layer over the last 50 to 60 years further can be seen as a sign that the overall forest or the overall economy is closely posed for an overarching, devastating event if change is not adopted. Climate change experts may see this overarching, devastating event as the advent of increased natural disasters such as tsunamis and floods and/or increased risk of animal-to-human borne illnesses, to name a few. To be a truly growth-oriented and healthy economy, the Canopy must allow for the transition of non-performing Canopy Layer players to new growth in the upcoming Emergent Layer. To provide for new growth in the Emergent Layer, some old Canopy players must fall. These felled trees allow sunlight to reach into the forest and attract new Emergent growth and Understory advancement.

When considering the economy as a dynamic system, observers may find the current multinational-dominant and static Canopy as a sign of stasis in the overall growth of the economic pie. In this climate of economic stasis, fiscal advances become more and more likely to rely on black markets, monopolistic forces and/or other aberrations of a malfunctioning economy. Simultaneously, important advances in human health and environmental protection may be prevented from flourishing due to the linear economic evaluations of fiscal success.

Canopy Layer Movement Also Allows for Understory and Ground Layer Developments

In a developing forest, it is understood that Canopy players have a set lifespan; they are not intended to exist at a dominant level into infinity. If long-standing dominance is preserved for the few, the overall forest ceases to grow and/or becomes threatened by overarching disease or natural catastrophe. When political advances at the nation-state and UN and/or World Bank levels extend the life of Canopy players unnaturally, the overall economy becomes at risk. In a healthy rain forest, Canopy players fall from time to time.



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As a Canopy tree falls to the ground, several important things happen:

- Sunlight reaches the Understory Layer and the Ground Layer and encourages new and healthy growth;
- Emergent Layer players have an opening through which to advance equal to or greater than the old Canopy;
- With biodegradation of the fallen tree, the Ground Layer is replenished with important nutrients (or in this case research and information) for the growth of all trees at all levels.

In the Rain Forest Model, these nutrients may be considered as important data/information for advancing cousin industries in the national and international economies. As an old Canopy player falls, data surrounding that industry or that company sifts down to the Ground Layer and provides fodder for new, more progressive economic growth at all levels.

Emergent Layer Distinctions and Example

An important distinction should be made when characterizing the Emergent Layer. Emergent Layer players are not considered to be those trees or those companies that are bigger than the Canopy. (How could a company be bigger than a multinational?) Instead, new Emergent Layer players are considered as those companies and those industries that are smarter or more agile than the existing Canopy players. Instead of relying on old linear based models of economic success as the Canopy players do, Emergent Layer players engage in new cross-industry economic analysis (or “cousin industry analysis”) and/or exist in the form of new ethical investments. This Emergent Layer is informed by such concerns as civil society climate change, energy security, food security, etc. Emergent Layer players actually create value out of unwanted by-products and create new markets by combining analysis of here-to-for non-related industries. In general, Emergent Layer players are not bigger than Canopy players, they are usually smaller and most definitely smarter.

As an example of an Emergent Layer player, consider the advancement of the biomass industry where corn inputs for biomass have been recovered from inputs to food and beverage production. The swap (from corn as a sweetener to corn as a biofuel input) promotes the development of alternative energy markets while simultaneously lowering the overall population risks for both cancer and diabetes. Biodiesel is associated with reduction in cancer risk. Ridding food and beverage products of high fructose corn syrup is associated with a reduced diabetes risk.

Another important distinction of Emerging Layer players is that they may be local, national or international in scope. Again, it is not their size necessarily that characterizes them as above the Canopy. It is their information-rich, waste-wise behavior in the marketplace. In other words,



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these players are excellent systems-based performers. They may advance by making simultaneous inroads for example in human health as well as protection of the natural environment including climate.

Old Canopy Players May Evolve into Emergent and/or Understory Players

In the current evolution from old growth Canopy, it may be that old growth Canopy players reorganize themselves in a variety of ways. As old Canopy players learn to develop markets with systems-based approaches, they may be candidates of or sponsors for Emergent Growth. At the same time, Canopy players may also find that certain markets previously pursued at the Canopy level may be better pursued at the Understory Level. The Understory Level in this new model is where those industries with a national or local economy reach (not an international reach) are poised.

As an example, consider the case of Chevron and geothermal and traditional oil markets. Chevron is currently an old Canopy Layer player. Should Chevron make a dedicated advancement into geothermal and partner with several other non-Canopy players to make this happen, Chevron could move from the Canopy Layer to both the Emergent and Understory Layers. As Chevron embraces geothermal and new systems-based approaches and partners with new market players, Chevron becomes an Emergent Layer player. As Chevron may dedicate its traditional oil production to fuel for developing biorefineries, Chevron's oil markets may fall back to the national level or Understory Layer. As Chevron finds local, national markets for its oil production in fueling biorefineries, it may retain oil market participation but at the national instead of international level.

Critical Nature of the Understory and Ground Layers

The Understory and the Ground Layers are crucial for securing growth in the overall forest or the economy. The Understory Layer serves to prime players for new, Emergent growth as a canopy player falls and provides room for industry advancement. The Ground Layer serves to inform players at the Understory Layer which are ready to advance past the Canopy. The Ground Layer further seek to regulate Emergent layer behavior such that Canopy fellings are controlled (rather than pursued across the entire Canopy at one time).

It can be said that the Understory Layer in today's economy is rather sparse. In today's economy, by and large most successful players must be international in scope or perish. The Understory Layer is considered in the new model to be a crucial incubator zone for future Canopy and Emergent Layer players. Without this incubator zone, the Canopy never evolves and markets stagnate and become more prone to black market developments.

Likewise, the Ground Layer today is also relatively uncoordinated in the current international marketplace. The Ground Layer in the new model is considered a pre-incubator zone. It is ultra-information-rich and seeks to promote the advancement of market players at every level



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who are ethically inclined and oriented to furthering the growth of the overall economic pie. The Ground Layer is not so much “the bottom” as it is the location of nutrient-rich soils or information-rich analysis for the development of the most healthy trees and plants in the forest. In our budding economic model, this Ground Layer is made up of nation-state governments, international government agencies, policy organizations, NGOs and all those who are vested in fostering economic activity that honors human capital, human health, environmental protection and other non-linear or systems-based advances.

Advent of Rain Forest Commissioners by Nation-State to Govern the Forest Growth

This article promotes the adoption of Rain Forest Commissioners to govern at the Ground Layer. These Commissioners:

- 1) oversee the development of Emergent Layer players;
- 2) monitor the extent to which Canopy players fall or recede and thereby create Emergent opportunity;
- 3) insure that vital information from Lessons Learned needed in “cousin industry analysis” and systems-based market advancement is circulated throughout the forest ecosystem;
- 4) form a much-needed nation-state-based matrixed organization that links political and economic concerns such as global warming and climate change.

Commissions from all participating nation-states are recommended as Ground Layer organs that seek to marry international economic and political trends. Commissions with their appointed Commissioners would seek to link World Bank economic activity and UN political activity. In this model, Commissioners would work closely with World Bank leadership to ensure that Canopy layer developments were regulated for their speed as well as for any developing monopolistic tendencies. For example, Commissioners and World Bank leaders would work together to ensure that energy markets progress to allow for new alternative energy directions but without any widespread demise of current energy markets. On the other hand, Commissioners and World Bank leaders would also work together to ensure that old Canopy players do not continue to dominate Emergent layer behavior. In other words, Canopy players may be minority investors in new Emergent growth but not usually controlling majority interest players.

Commissions and Commissioners would matrix to political leadership at the UN level. Commissioners would serve to promote economic activity in the Emergent layer that serves the interests of national as well as state or tribal leadership. Commissioners would work to develop laws that promote human rights and other advancements at the local, tribal, state, national and federal levels. For the purposes of this article, US Commissioners might include former Presidents Jimmy Carter and Bill Clinton. The vast political experience of these leaders as well as other leaders around the globe would help to ensure a functioning matrix between international politics and international finance.



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Success of the Rain Forest Model Is Its Systems-Approach

The success of the Rain Forest Model is not in the development of any one layer but in the fact that the various layers work together in an ecosystem or system. As a few Canopy Layer players fall, resulting sunlight allows for the break-through of several Emergent Layer players and/or the retreat of certain old Canopy players to Understory markets. At all times, the “failures” and successes of market players at all levels are reviewed and evaluated by nation-state based Commissioners at the Ground Layer such that Lessons Learned inform newer, more robust market activity. This robust activity is characterized by the recovered value of waste products, simultaneous economic and human health/human capital advancements, and win-win economic developments for tribal and non-tribal peoples in each nation-state and/or federation.

Perhaps the most important feature of the Rain Forest Model is that it provides for a working relationship between international political and financial structures. Political leadership at all levels is sought at the Ground Layer as nation-states based Commissioners develop national and international laws which protect and promote the interests of tribal and non-tribal peoples. Simultaneously, Commissions and Commissioners work with the World Bank and other international economic structures to incent and/or manage the evolution of the Canopy Layer from a static state to a dynamic one. This approach correlates political and economic leadership in the international economy while prompting the growth of the most human-friendly, earth-friendly and climate-friendly trees in the forest.



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V. Closure/ Summary

The “Techno-Agrarian Renaissance” and the “Polemical Fourth Branch”

When the Founding Fathers of the United States established the Constitution and called for three branches of the US government: the Presidency, the Supreme Court and the Legislature, there was no knowledge at that time of a fourth power structure that would later emerge in the twentieth century. Some may consider this as a “polemical fourth branch” of the US government. Since the end of World War II, the rise of “the multinational” has colored both the national and international economic landscapes. In general, policies and procedures to govern “multinationals” at the national level in the US and internationally have developed in a de facto environment. Often multinational advances are allowed to occur without due concern to some of the more unhealthy or undesirable by-products they create.

Today, the most pertinent question in our government and in our economy may be: Are the three branches of the United States Government adequate to provide policies and procedures to govern multinationals (or the polemical “fourth branch”) both at home and abroad? The best answer may be: “We are not yet quite sure..... But, by adopting new measures which are systems-based at the US and UN levels, we become more sure.”

The “Techno-Agrarian Renaissance” at Home and Abroad

With new measurement systems, multinationals and their smaller competitors are challenged to grow smarter and/or more sustainably. They are also challenged to evolve in ways that limit unwanted by-products and/or that convert these unwanted by-products into “value.”

In this light, systems-based measures are not just a “nice to have” option. They are an integral part of making sure our national government in its existent three branches is actively working to develop goods and services that honor human health, human capital, human rights and related concerns such as climate change for this generation and the next. Systems-based measures likewise at the worldwide economy level will ensure similar human health and human capital advances occur around the globe.

The starting point for developing these systems-based measures is the “Food-Energy-Health Nexus.” By adopting such practices as “cousin industry analysis” and “spheres of influence” in national and international markets, we create and deliver the “Techno-Agrarian Renaissance.”

In general, both the United States economy and the international economy can benefit from the adoption of systems-based measurements such as “cousin industry analysis” as well as of new valuation strategies for energy inputs. These valuation strategies can apply to renewable energy sources as well as more traditional energy sources. In addition, including provisions for measuring “intergenerational equity” the national and international levels may safeguard that



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our financial success in this generation is in keeping with financial success in our children’s generation or in our children’s children’s generation. All too often – especially in energy, food and health markets -- it appears that financial developments for the present generation are achieved at a cost for future generations.

While “cousin industry analysis” is promoted at the national and international level, the development of an overarching model for economic success is needed. This model is called “The Rain Forest Model.” It seeks to integrate political and economic functioning at the international level. It includes these concepts:

- Emergent Layer players
- Canopy Layer players
- Understory Layer players
- Ground Layer players
- Commissioners

In this model, the experts at “cousin industry analysis” are the Emergent Layer players. These players are not so much bigger than Canopy Players as they are “smarter.” In other words, Emergent Layer players are the experts in systems-based measures.

In sum, this article seeks to promote systems-based measures at all levels of the economy. These systems-based measures in theory and in fact should honor the concerns and successes of our farmers (of food and of energy). By adopting valuation strategies that honor the availability of solar, wind, geothermal and biomass inputs, we are putting the farmer back in charge of our food production (rather than the corporation). We are also honoring the farmer’s role in advancing renewable energy markets. This is the beginning of the “Techno-Agrarian Renaissance” in the United States as well as internationally.