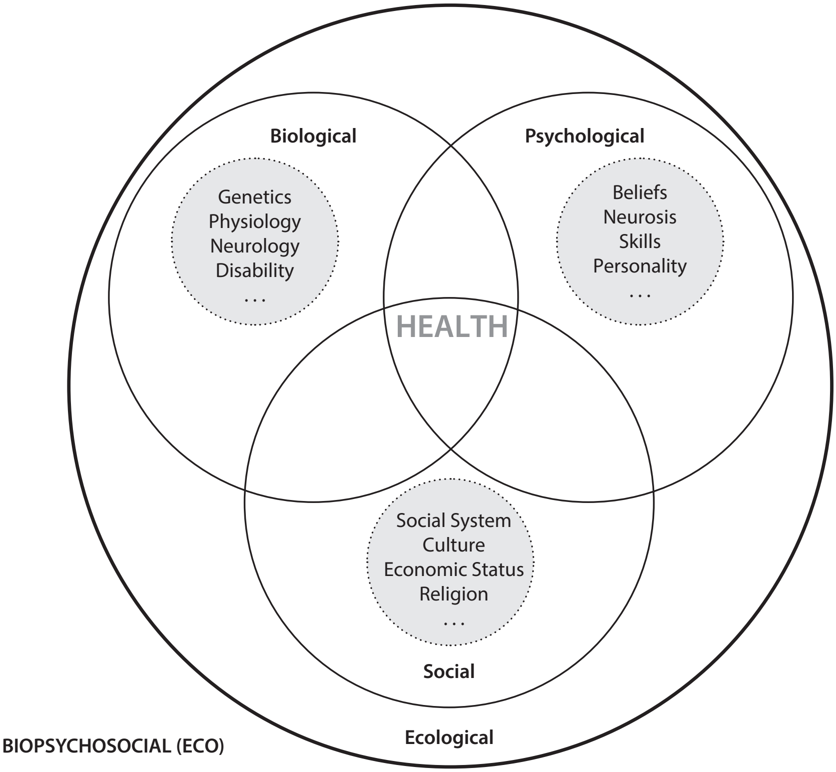

FIGURE 1A. While incomplete, this conceptual graphic represents the biological, psychological, and social (biopsychosocial) influences that intersect to define the health and character of a human being. The larger context of ecology has been included to emphasize the total influence habitat has on all factors.

fields are not eventually viewed in connection with each other, as they are in the real world. Systems theory highlights this need for inclusive comprehension in the search for causality in nature.

As is the case with the study of the human body, understanding the singular properties of parts only, such as cells or organs, is incomplete. We need to understand how all those parts work together, producing the human being as a single system. Yet at the same time the human body itself is not an island. It is also a falsely detached construct, as much as we are inclined to separate ourselves in consciousness. A human being is along with the need for economic growth to recover from previous contractions, powers the machine's structure. Earthly resources are inventory to be exploited, along with human labor. At the same time, negative externalities flourish, and increasingly so, as our technological capacity grows, often being used for the wrong purposes. This is all embodied in the market structure, like the tiny seed that sprouts a towering tree.

Again, it is often argued that capitalism is a specific mode of market behavior, separate from other forms of market economies. This is a false distinction. While economists often talk about true "free markets" or differentiate between "state capitalism," "merchant capitalism," and even "market socialism," these are all variations on a core, foundational theme. The tiny seed that grew to a towering tree may produce various fruits, but no matter how diverse they seem the genetics of that tree remain the same. To repeat my statement above, "a social system based on property, exchange, labor-for-income, competitive self-regulation, and

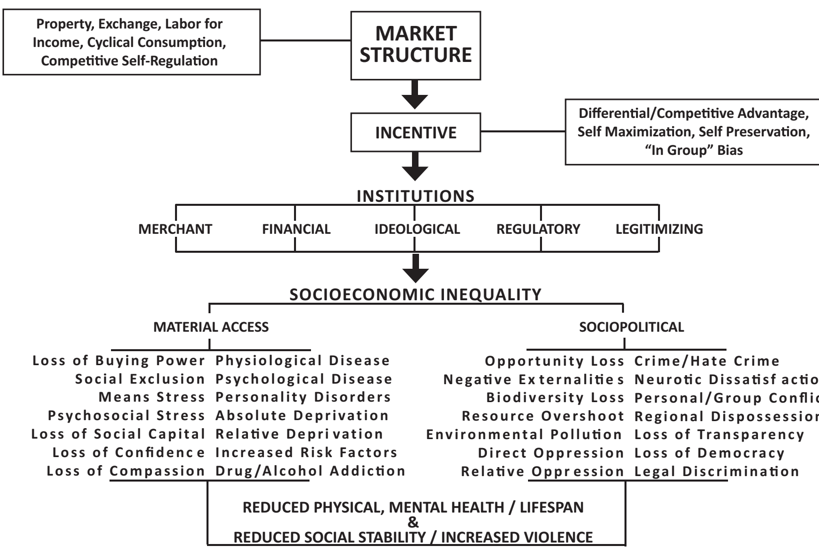

FIGURE 4A. The market structure produces behavioral incentives that are codified in both formal and conceptual social institutions that enforce and preserve the market structure. This leads to a host of socioeconomic inequalities, which, in turn, produce numerous negative public health outcomes. The figure is for from definitive and there is some contextual overlap between the listed examples.

stress people into unhealthy states and patterns, *relative deprivation* is just as powerful in its own way.

Regarding drug and alcohol addiction, the biopsychosocial nature of this issue has become extremely clear in recent times. While the world still imposes primitive legal punishment for people who self-medicate or are addicted to illegal drugs, recognition of the issue as a problem in public health has been steadily growing.

Dr. Gabor Maté, a Canadian physician who specializes in the treatment and understanding of addiction, said, "The greatest damage done by neglect, trauma or emotional loss is not the immediate pain they inflict but the long-term distortions they induce in the way a developing child will continue to interpret the world and her situation in it."[110] Further, "Not all addictions are rooted in abuse or trauma, but I do believe they can all be traced to painful experience . . . The effects of early stress or adverse experiences directly shape both the psychology and the neurobiology of addiction in the brain."[111]

It has been historically common to conclude that addiction simply emerges from the repeated use of an "addictive" substance or activity,

FIGURE 4B. Health and social problems are worse in more unequal countries. *Source:* Wilkinson & Pickett, The Spirit Level. www.equalitytrust.org.uk

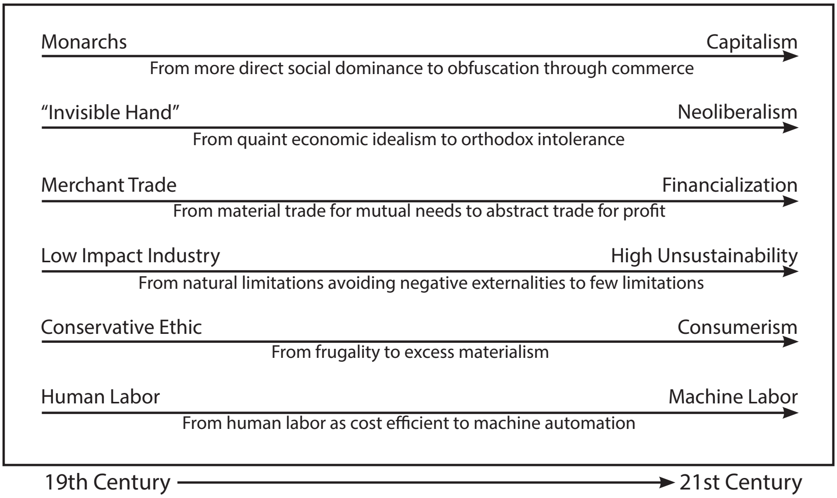

FIGURE 5A. Conceptual trend depiction of six notable issues that have evolved since the Industrial Revolution. Each of these developments are natural to the market ecomony, consequential as social and technological conditions have changed.

root socioeconomic orientation of competition, exploitation, and scarcity has been dominant. The molding of modern-day capitalism over time was inevitable as more complex labor roles and technology unfolded. In this, the once-obvious social inequities and undemocratic power imbalance of early societies slowly became cloaked by the idealism of the "free market." Unlike in earlier eras, which featured intolerant government monarchs, abject slavery, and other more primitive forms of dictatorial power and direct oppression, this new structure provided the needed illusion of democratic participation, rights, and freedom by structurally submerging social dominance within the mass competitive act of "free trade." The beauty of this means of social dominance is that it facilitates the pretense that totalitarianism doesn't exist. Kings and regimes no longer wield total control over the lives of their subjects. Rather, power and wealth remain concentrated by way of a process of competitive advantage in the market—a process that is provably undemocratic and structurally rigged to favor a small, undefined, transient minority in the same basic manner (yet obscured) by which a monarch exerted control.

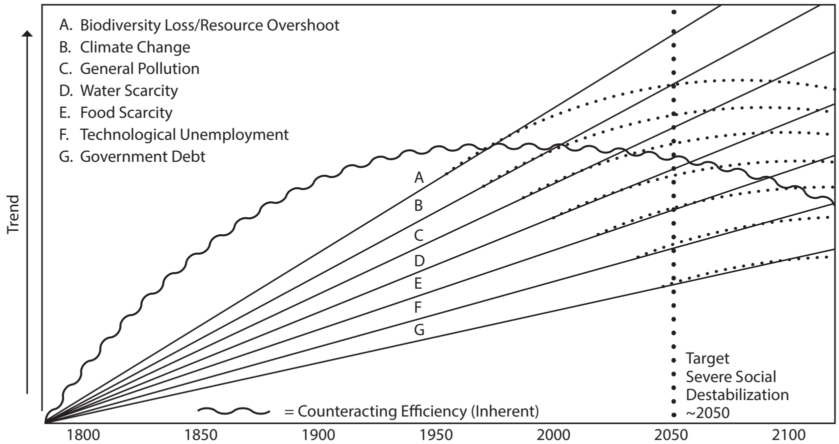

FIGURE 5B. Conceptual trend depiction of the top seven factors that may lead to severe social unrest. Based on independent studies conducted for each issue, targeting ~2050 for peak problems. This figure begins at 1800 BCE, around the first Industrial Revolution, where most of the issues take root. The "counteracting efficiency" factor marks the possibility that current trends may slow due to increased efficiency in some form. This is noted as "inherent" since it is assumed conduct will still be "business as usual."

> tar sands development destroys species habitat, wastes enormous volumes of water, pollutes air and water, and degrades and defiles vast swaths of land.[15]

Today, we have passed 400 parts per million and climbing, with ever-increasing biodiversity loss.[16]

Regarding Figure 5b, we begin with *biodiversity loss* and *resource overshoot*. At the cost of $24 million, a four-year study sponsored by the United Nations utilizing more than 1,300 scientists from 95 countries found that 60 percent of the world's forests, grasslands, farmlands, rivers, lakes, and other known ecosystem attributes are being depleted and disturbed in an unsustainable manner.[17] In the words of Jonathan Lash of the World Resources Institute: "This report is essentially an audit of nature's economy, and the audit shows we've driven most of the accounts into the red."[18] Corroboration of these conclusions is extensive, showing things getting worse as time goes on.

In effect, what underscores these new attributes is a dramatic change of our current *root socioeconomic orientation*. Unlike with the market, which is structurally based on scarcity, trade, competition, and exploitation, this new model focuses on strategic and sustainable abundance, collaboration, and balance. In a single word, it is about *design*. I wish to express that I am not using these terms poetically. I am not gesturing, saying: "Hey, let's all just collaborate, be sustainable, and seek abundance." Wishful thinking has proven to be of little help without a structural foundation to support goals, which is why all the poems, stories, and songs about peace, love, and human solidarity have remained an idealistic backdrop in the midst of constant human conflict, deprivation, and abuse. Also, the degree to which any or all of these changes are made is proportional to the benefits achieved. In other words, even if only partial transitions were made toward the ideal goals expressed, it would

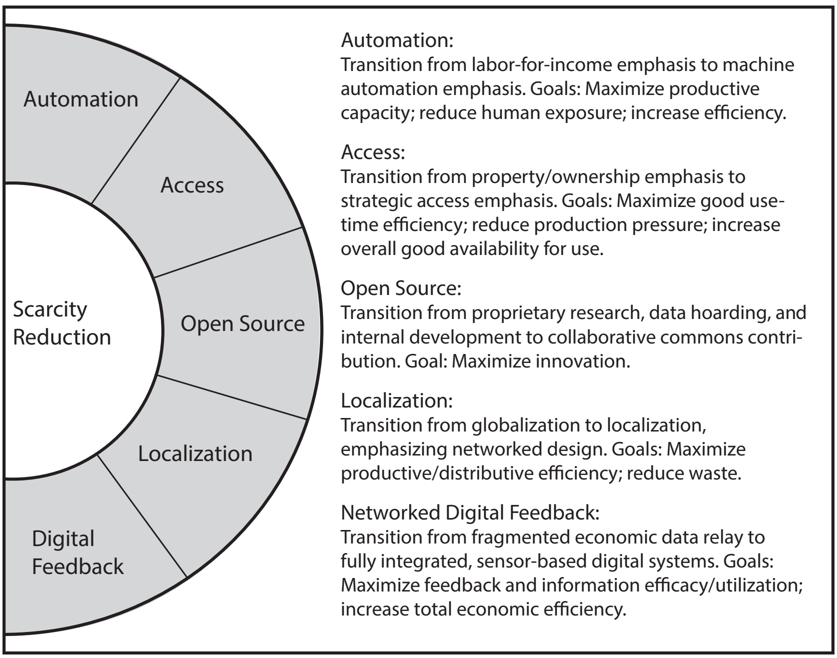

FIGURE 5C. Conceptual graphic representing five shifts to increase economic efficiency and reduce the scarcity pressure. These adjustments will decrease socioeconomic inequality and the consequential spectrum of disorder and oppression.

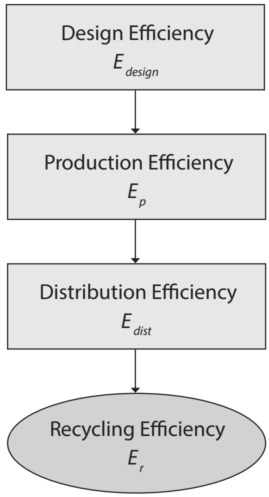

FIGURE 1. Block-scheme of system process

$$f_P(E_{\text{design}}, E_p, E_{\text{dist}}, E_r) \rightarrow \max$$

FIGURE 2. System process as expression

that this process would unfold in real terms by way of a software platform that has these measures, rules, and data streams built in, engaged by the user or organization as a critical interaction to ensure the most optimized outcomes possible at that given point in time.

DESIGN EFFICIENCY

Efficiency standards are standards by which a given design must conform to ensure optimal integrity. This can also be thought of as a *filtering* process. Proposed designs are filtered through a series of sustainability and efficiency protocols to optimize performance. This is the first stage of intelligent product creation.

Symbol	Description
E_{design}	Design efficiency
E_p	Production efficiency
E_{dist}	Distribution efficiency
E_r	Recycling efficiency
f_p	Production function
E^i_{design}	Design efficiency standards
t_d	Durability
A_{design}	Adaptivity
c_r	Recycling conduciveness
$g^1_c, g^2_c, \ldots g^i_c, \ldots g^{Nc}_c$	Genre components
Nc	Minimum number of genre components
H_L	Human labor
A_L	Automated labor
f_{design}	Design efficiency function
D_S	Demand splitting value
$\tilde{A}$	Flexible automation process
$\bar{A}$	Fixed automation process
C_i	Consumer with index i
D_i	Distributor with index i
d_p	Distance to the production facilities
d_{dist}	Distance to the distribution facilities
P_{reg}	Regenerative protocol

FIGURE 3. Logic Symbols and Description

$$E_{design} = f_{design}(t_d, A_{design}, c_r, Nc, H_L)$$

FIGURE 4. Expression for the "optimized design efficiency" function

These include the following:

a. Strategically Maximized Durability
b. Strategically Maximized Adaptability
c. Strategic Standardization of Genre Components
d. Strategically Integrated Recycling Conduciveness
e. Strategic Conduciveness for Labor Automation

As expressed in Figure 4, design efficiency E_{design} is a critical step affecting the overall efficiency of the manufacturing and distribution process. This design efficiency depends on several key factors, which can be called *current efficiency standards* E^{i}_{design}. Here the index *i* corresponds to some particular standard. Each standard will be generally explored as follows, expanding in certain cases with respect to the logic associated.

a. "Strategically Maximized Durability" means to make the good as strong and lasting as relevant. The materials utilized, comparatively assuming possible substitutions due to levels of scarcity or other factors, would be dynamically calculated, likely automatically by the design system, to be most conducive to an optimized durability standard.

   This *durability* $t_d(d_1, d_2, \ldots, d_i)$ maximization can be considered a local optimization issue. It can be analyzed by introducing the factor d_i, which affects it where $d^o_1, d^o_2, \ldots, d^o_i$ are some optimal values of the factors.

$$t_d(d_1, d_2, \ldots, d_i) \rightarrow \max,\ t_d = t_{\max}(d^o_1, d^o_2, \ldots, d^o_i)$$

b. "Strategically Maximized Adaptability" A_{design} means designing for the highest state of flexibility for replacing component parts. In the event a component part of a certain good becomes defective or out of date, the design facilitates easy replacement to maximize full product life span, always working to avoid replacing the good as a whole.
c. "Strategic Standardization of Genre Components"

$$g^1_c, g^2_c, \ldots g^i_c, \ldots g^{Nc}_c$$

means all new designs either conform to or replace existing components, which are either already in existence or outdated due to a lack of comparative efficiency. This logic should apply not only to a given product, but also to the entire good genre, however possible.

$$Nc \rightarrow \min$$

The aim is to minimize the total number of genre components *Nc*. In other words, the standardization of the process will make it possible to lower the number *Nc* to a possible minimum.

d. "Recycling Conduciveness" c_r means every design must conform to the current state of regenerative possibility. The breakdown of any good must be anticipated in the initial design and allowed for in the most optimized way.

e. "Strategic Conduciveness for Labor Automation" means that the current state of optimized, automated production is also taken into account in an effort to refine the design to be most conducive to production with the least amount of complexity, human labor, or monitoring. Again, we seek to simplify the way materials and production means are used so that the maximum number of goods can be produced with the least variation of materials and production equipment.

This is denoted by human labor H_L and automated labor A_L. The aim is to minimize the human interaction with the production process.

This can be written as:

$$H_L / (H_L + A_L) \rightarrow \min$$

Using this equation, we could also write a simpler condition:

$$H_L(l_1, \ldots, l_i) / A_L(l_1, \ldots, l_i) \rightarrow \min$$

l_i are factors that influence human and automatic labor.

So, returning to Figure 4, this "Optimized Design Efficiency" function can be described as f_{design}, where t_d is durability, A_{design} is adaptability, c_r is recycling conduciveness, *Nc* is the minimum number of genre components, and H_L is human labor.

PRODUCTION EFFICIENCY

Dynamic feedback and monitoring of production factors are critical to integrity, especially in a world where extensive resource overshoot now occurs. Maintaining equilibrium with the Earth's regenerative processes while also working strategically to maximize the use of the most abundant materials, strategically minimizing any emerging scarcity, is critical to efficient production. The scope of this accounting is vast; hence only three issues will be discussed here. The first two deal with (a) "scarcity" and the degree of (b) "labor complexity."

a. "Scarcity value" could be assigned a numerical value, from 1 to 100. One would denote the most severe scarcity with respect to the current rate of use, and 100 would denote the least severe; 50 would be the steady-state dividing line. The scarcity value of any given resource would exist at some value along this line, dynamically updated by whatever feedback systems are tracking such inventory. Figure 5 expresses this visually.

   For example, if the use of lumber passes below the steady-state level of 50, which would mean consumption is currently surpassing the Earth's natural regeneration rate, this event would encourage a countermove of some kind, such as "material substitution" or finding a replacement for lumber in any future productions.

   In a market system the price mechanism is used to decide which material is more cost-efficient, assuming a given price will have already accounted for relevant technical information. This accounting is only weakly accurate. This new approach accounts for a direct given technical quality by a comparative quantification, rather than

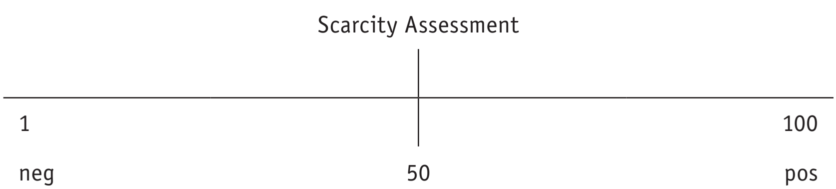

FIGURE 5. Scarcity rank visual aid

production, rather than on monetary remuneration and employment, which tend to interfere with efficiency when prioritized. Means of production in this way would likely evolve as automated factories, small and large, that are increasingly able to produce more with fewer material inputs and fewer machine configurations (that is, "more with less").

The number of production facilities would be strategically distributed topographically based on population statistics and concentrations. This is a "proximity strategy." Parameters can change according to the nature of the facilities and how much machine variation in production (fixed automation vs. flexible automation) is required at a given time.[2] For the purpose of exemplification, two facility types will be distinguished: one for high demand or mass production (generally less complex) and one for low demand or short-run, custom goods (generally more complex). Figure 6 expresses this based on these parameters.

A simple class determination is made that splits D_S, the destination facilities, based on the nature of production requirements. The "high demand" target assumes fixed automation $\bar{A}(a_i)$, meaning unvaried production methods ideal for high demand/mass production. The "low demand" target uses flexible automation, $\tilde{A}(t, D_c(t), a_i)$, which can do a variety of things but usually in shorter runs.

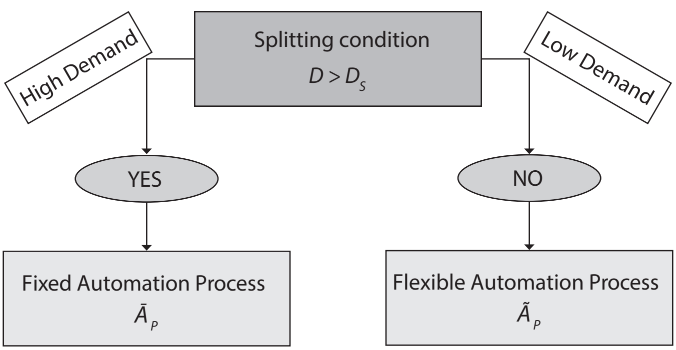

FIGURE 6. Dividing by low and high; class-determination process

consumer, it is still an "access system" in principle. At any time, the user of the custom or mass-produced good can return the item for reprocessing or restocking. (This nonmarket approach removes the incentive for resale as the accessed good was not bought to begin with.)

As per Figure 7, upon product creation, the process moves to the [Optimized Distribution Efficiency] stage. In short, all products are allocated based on their prior [Demand Class Determination]. [Low Consumer Demand] products follow the [Direct Distribution] process. [High Consumer Demand] productions follow the [Mass Distribution] process. Both the [Low Consumer Demand] and [High Consumer Demand] product will be regionally allocated as per the [Proximity Strategy], as before.

In the case of [Low Consumer Demand]

$$D_c < D_S$$

the distribution scheme is direct (Figure 8a). In this case the product goes directly to the consumer without the help of network intermediaries.

In the case of [High Consumer Demand]

$$D_c > D_S$$

the distribution scheme is mass (Figure 8b). In this case the product goes to intermediary facilities, such as "libraries" D_i, to engage the potential consumers C_i.

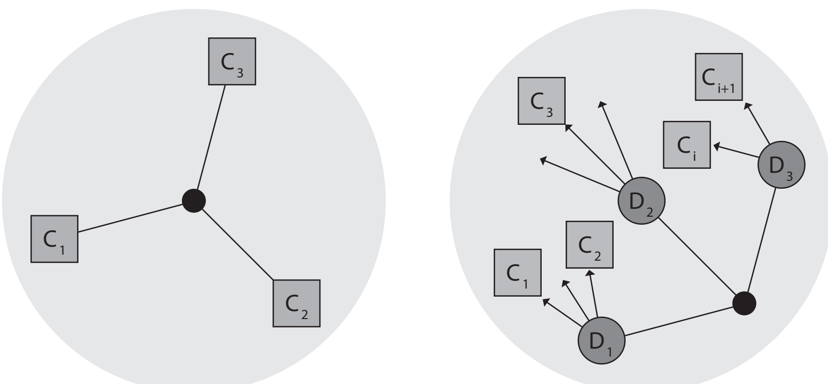

FIGURE 7. Illustration of the distribution schemes A (left)—Direct Distribution—low-demand case; B (right)—Mass Distribution—high-demand case