

depends upon the existence of fairness (or equity) between persons, upon its inclusion or exclusion in the definition of justice [in a society]. Here, equity is simply the fulfillment of all human need. Equity means that all humans have their needs met and can share in mutually coordinated fulfillment.

In “The Spirit Level”, Wilkinson and Pickett (2011) publish clear data on the following economic and social indicators involving social equality and issues of common concern - almost every social indicator gets worse as countries become more unequal. For instance, child well-being is better in more equal countries; drug use is more common in more unequal countries; educational scores are higher in more equal countries; health is better in more equal countries; homicide rates are worse in more unequal countries; levels-of-trust are higher in more equal societies (i.e., people are more likely to feel they can trust one another in more equal societies); rates of imprisonment are higher in more unequal countries; infant mortality is higher in more unequal countries. Although cancers are more common in high-income societies, diarrhoeal diseases, which are the second leading cause of death in children under five years old worldwide (*Diarrhoeal disease*, 2013), are more common in low-income societies. Living in an affluent region is simply likely to expose someone to other disease risks. There is a common myth that the gradient of health in industrialized societies is simply a matter of poor health for the disadvantaged and good health for everyone else. However, the findings of Wilkinson and Pickett (2011) reveal that a society that is stratified in access to fulfillment is going to have concomitant health and social issues. In appreciation of “The Spirit Level”, Sargent (2009) states:

“In their new book, epidemiologists Richard Wilkinson and Kate Pickett extend this idea” (of the harm caused by status differences) “with a far-reaching analysis of the social consequences of income inequality. Using statistics from reputable independent sources, they compare indices of health and social development in 23 of the world’s richest nations and in the individual US states. Their striking conclusion is that the societies that do best for their citizens are those with the narrowest income differentials—such as Japan and the Nordic countries and the US state of New Hampshire. The most unequal—the United States as a whole, the United Kingdom and Portugal—do worst.”

Note here that Mills (2012) published a critique to the works of Wilkinson and Pickett.

Social and economic practices can deteriorate our well-being, particularly in regards to stress, mental illness, mortality risk, and rates of disease. Modern social structures, values, and practices have deviated away from or are ignorant of what true societal health means. In early 21st century society, most measures of prosperity and social integrity are equated through

economic baselines (e.g., GDP and employment figures), which tell us very little about true human well-being and prosperity -- they are decoupled from the actual life support system, the Earth, our resources, our environment, our physiology, our mental health, and the lifeground needs that we all share. In truth, the analysis of the health of a society cannot be based on an aberrant and decoupled economic system. Instead, we want to examine things that have an actual physical referent [through scientific research]. Unfortunately, in early 21st century society, it is more common to focus on the by-products of income inequality as isolated problems in-and-of themselves.

In the market, there is often very little feeling of trust in social relationships, because in every relationship “you” always feel like their is an ulterior motive (other than knowledge, human fulfillment, someone’s well-being, etc.).

Social inequality generates psychosocial stress for everyone. There is a relationship between stressors, everyone’s health, and the inequality that exists around us. What has been found scientifically (and statistically) is that the more income inequality, the more problems for everyone in society. Even those at the top of the income hierarchy would benefit from a systematic redesign of society toward more equal access (i.e., they too would have better health and higher levels of well-being). Take, for example, the fact that researchers have long known about the phenomenon that stress is “contagious” and is a form of sympathetic communication passed through simple observation of [at least] another’s facial expressions, tone of voice, and touch. Simply watching a stressful situation is likely to impart “second-hand stress” onto another, as if it were contagious. Partly, it’s a function of our brains being wired to mirror (or, repeat) the actions and emotions of others.

Empathy is an essential characteristic of resilience. Strong relationships with others can “bail you out” in times of need; they are a form of resilience. Understanding another’s situation, and what they need, is what connects you with others, which in turn bolsters your ability to weather life’s rough patches.

The contrast between material success and social failure in more affluent countries is an indicator that it’s time for early 21st century society to reorient its worldview. In a system where monetary gain is a priority over (or even equivalent to) human well-being, then we are unlikely to see any real, systematic change [while such a system runs its course]. Rather, we more likely suffer from increases in environmental and psychosocial stress as we all struggle among great suffering.

Do we not all desire at some fundamental level a social system that at its core is concerned with human well-being and fulfillment, and the sustainable regeneration of environmental resources. Environmental resources are a common basis of survival. All social systems regardless of political philosophy, beliefs, traditions or customs, ultimately depend upon natural resources, and it is why this fundamental point needs the attention it

demands. Resources are a common basis for survival.

Herein, the method by which social or economic equality is structured may be described as efficient if there is no possible restructuring which could be performed to make this structuring more advantageous to any particular individual without simultaneously making it less advantageous to another individual. Wherein, effectiveness always lies in knowledgeably resolving reality for the highest fulfillment of all concerned. It is important to note that what is being discussed by the meaning of justice represents is an entirely different socio-economic design, one that removes the encoded existence of socio-economic stratification by those “*rich* in access/property/capital” and those “*poor* in access/property/capital”, which is not in any way equivalent to [forced] wealth redistribution. In other words, the idea of “*rich*” or “*poor*” among society is removed altogether [by removal of the market, and hence, the State]. Redistribution toward equality with a fixed capital pot (i.e., the market) implies taking away income (and property) from those with more of it and giving it to those with less. Or, in the context of growth, reducing the increase in those with greater income to below what it otherwise would be. However, redistribution (in any form) is not what is advocated here, or more accurately, “designed into” this community model. The Community represents a complete and systematic redesign of the modern socio-economic environment, of which force is not a structural element; and hence, the Community will only arise when people voluntarily and cooperatively decide to participate in its emergence (i.e., the Community is not equivalent to, nor does it advocate, a system of [forced] wealth redistribution).

Fundamentally, individuals need to ask whether or not fairness can even exist in a system that is not designed at its foundation to meet the individuals’ need for fairness? Some systems are inherently unfair. For example, it isn’t fair that some people can’t pay their bills, afford nutritious food and healthcare, or not be overwork by their employer, but it also isn’t fair to apply coercive force to another person to pay for the person who can’t afford the monetary expense required to fulfill their basic needs. Some systems are inherently unfair and are not structured for fairness; they maintain a chronic state of social, economic, and environmental disequilibrium. Although nothing is “fair” in nature, a socio-economic system could be designed to equitably fulfill human needs and facilitate, where necessary, reciprocity.

Take a moment to ask yourself, why does society need a “justice system”? The answer on the tip of your tongue might just be, “because there are injustices”. But, that begs the question, why are there injustices? Maybe injustices exist in part when a system is designed in an unjust way - when its conditions and conditioning (i.e., the structural environment) create injustice. Maybe a solution-orientation and not a criminal justice system would be a more valuable orientation. Inaccurate and imprecise understandings are unlikely to resolve into systematic solutions for they do not [accurately] account

for the whole system.

Of crucial importance in the idea of fairness is the quality of social relationships. Because members of the same species have the same needs, they can, all too easily, be each other’s worst rivals -- fighting for food, nesting sites, territories, sexual partners and so on. But human beings, as well as having the potential to be each other’s most feared rivals and competitors, also have the opposite potential: We can be each other’s best sources of cooperation, assistance, support, learning, and love. Our relationships could align with a value system that supports in an orientational evolution toward everyone’s higher potential. Herein, fairness becomes the equal fulfillment of needs through designed access to common heritage resources as an “equalitarian” sharing structure.

Wisdom has a difficult time affecting change in world where nationalistic, monopolistic, commercial, and “family” demands cloak the common heritage of humankind and prevent the advent of justice on a global scale. Are we not all equal “shareholders” (or potential caretakers) in the Earth?

Instead of seeking a state of equality in access to outputs of natural services in the fulfillment of common need, authority endows people with righteousness. And, righteousness combined with rationalization leads to individuals justifying their horrific behaviors by saying, “I am doing the right thing when I kill you, the authority wants me to kill you”. Authoritarian righteousness is the trait of individuals who are completely out of touch with the natural world and any sense of human fulfillment. When justice primes a sense of righteousness, then the structuring of society is soon to become unfair.

Many people in early 21st century society simply cannot imagine not having a final authority. They cannot imagine a system without authority telling them what to do and punishing them (though primarily “others”) for what they ought not to have done; it is anathema to them. They cannot imagine the cooperative organization of systems at a social level, systems that biomimic nature in the production of services that meet our common needs. And yet, a portion of these people even agree that the initiation of force is morally wrong, which is a contradiction, for a monopolistic authority invariably ends up initiating force.

There seems to be a peculiar form of rhetoric where “equality” is professed and “fairness” is claimed, but where in practice, all sorts of hierarchies and authorities are implied -- the ideas of democracy and the “free” market are two such examples. This is the rhetoric of the highfalutin, “noble” sort, making lofty-sounding and not-systematically-thought-out statements about the inherent “dignity of man” and so on and so forth. People give a lot of credit to such pronouncements even though they are not worth the paper they are printed on, for their systems are still socially hierarchical (e.g., State constitutions).

Equality can be pursued to no good end in a system that is not designed for equality. Thus, those who pursue equality in “rights”, “treaties”, “negotiations”, and

"instruments" might fail to recognize the continuous generation of inequality innate within the system in which they pursue façades of equality [given to them as pre-packaged "gifts" by other authority figures].

Fundamentally, an unequal society is not a structural organization designed to fulfill needs, and it is very likely to have a "private force" to defend the privileged through exclusive "rights" to ownership (i.e., property rights). Alternatively, if there is privilege in community, then the perspective is that we are the privileged inheritors of the Earth.

It's also very hard to see the equality and the community in a system where your guilt or innocence heavily depends on your ability to pay a special group of people who can navigate an extremely complex formalized system determined by a corrupt confrontational process that seeks to own the confrontation, and can lead you to be tortured, kidnapped, caged or even killed on the basis of rules no one ever living agreed to (or at least "you" never agreed to) -- a "social contract" is socially constructed nonsense.

Equality and freedom are two sides of the same coin. In a state-of-freedom persons are able to express and to remain their intrinsically motivated selves. When inequality of participation and access exist, then power differentials exist, and when power differentials exist then coercion manifests and gaming strategies (e.g., deny, disrupt, degrade, and deceive) are engaged. The power of coercion is neurochemically habituating - poetically speaking, "the self corrupts the self of others". In a social system, coercion is the state of an elimination of freedom. Freedom is not present when coercion exists, and therein, equality and fairness are nowhere to be found. The alternative to controlling via coercion is the systems and engineering science of human need fulfillment, reworking the structure of society so it does not produce/incentivize crime (and hence, there is no need for coercion).

Whatever maximizes "your" freedom must maximize everyone else's freedom, or your freedom is necessarily not maximized. In society, the individual crucially depends on other human beings for the maintenance and sustenance of his or her own freedom, and this can be effectively organized once there is a recognition of commonality (and mutuality) in the existence of a persistent interrelationship. When the existence of a persistent interrelationship is recognized, then equality and fairness can be worked toward. Yet, there are some structures of society that inhibit the recognition of said existent interrelationships.

INSIGHT: *If rules are to be broken, then rights are to be violated. The logic is the same until new premises are introduced.*

4.3 The sub-composition of "justice" in community

QUESTIONS: *Can we make justice into a science,*

as something we can repeat and test (and use to continuously add to and improve our well-being and our fulfillment)? How can we facilitate participation in fulfillment? How can we restore a sense of self-direction and trust among relationships that have become fractured? How can we optimize the effective fulfillment of need for all individuals and ecological systems within society?

Justice is the state in which the needs of all forms of consciousness (i.e., "parties") in an interrelationship are effectively [and ecologically] fulfilled. In humanity, justice becomes the effective coordination of these relationships to structurally facilitate and maintain a state of participative fairness and equality in access to common resources, for without these conditions behavioral pathologies are highly likely to manifest. Herein, justice involves equality in access to the socio-economic system as well as the restoration of the fulfilled self-directed individual in cases trauma and harm. Justice may be reciprocally defined as the state in which every individual in the community has their needs regeneratively, sufficiently, and participatively fulfilled such that their highest potential life direction is known and available to them in all moments. Herein, justice refers to the effective coordination of participative social and economic relationships among individuals, technologies, and ecological systems that lead to the restoration and equitable fulfillment of human need. This definition maintains three conceptual understandings:

1. Justice is participative. It is a chosen state of volition (as in, voluntary), and not forced or coerced. This orientation to justice is known as **participative justice**.
2. Justice involves social and economic interrelationships that restore states of self-empowered fulfillment within an individual and between individuals. This is known as **restorative justice**. In general, restorative justice [practices] exist to facilitate prevention, intervention, and restoration [of universally preferable dynamics, states, and behaviors].
3. Justice involves social and economic relationships that coordinate the equitable fulfillment of human needs through access to common [heritage] resources while continuously seeking an overall improvement of the system to reduce fulfillment inequality, unfairness, and the variety of forms of structural violence. This is known as **distributive justice**.

Who would not like to live in a society where their physical, mental, and social needs are fulfilled; otherwise there would be little point in living in society at all. It only seems natural to seek a socio-economic organization that effectively facilitates fulfillment of these needs (i.e. if

there are a number of social forms that fulfill our needs, we should seek out the one, given what is known now, which does so the most adequately). Individuals are essentially interested in being at full health instead of partial health, shelter which shelters us completely and aesthetically instead of partially, enough leisure time to enjoy our lives instead of less, friendships that fulfill our social needs completely instead of only partially, the ability to explore our world and verify our ideas, and so on [all qualified by hormesis and that which self-development entails]. Together humanity is capable of rendering a reality of the highest potential and exploring a higher potential of experience in reality when its needs are effectively fulfilled.

INSIGHT: *Justice isn't served, justice is designed. If there is no coercion, because fulfillment is predictably planned for the species (using common heritage resources), then there is likely peaceful co-existence among the species. Community is a peaceful, not necessarily defenceless, configuration of society.*

4.3.1 Restorative justice

A.K.A., *Transformative justice, conflict resolution, therapeutic jurisprudence, holistic justice.*

Individuals' sense of interconnectedness may be undermined by their societies approach to justice. Herein, restorative justice (also sometimes called 'reparative justice') seeks, where possible, to restore "victims" and "aggressors" to whole, wherein they are once again making fulfilling [life] choices and maintaining "right relationships" with both themselves and with others. It is a process that supports all concerned in returning to a state-dynamic where needs are sufficiently fulfilled, and self-efficacy is engaged, such that individuals are once again pursuing their highest potential direction. Herein, the idea of restoration is applied to repair discordance and dissonance rather than simply to inflict equivalent harm. It rebuilds connections (i.e., it reconnects one to the path of fulfillment). It is an approach to justice [as the effective fulfillment of needs] that focuses on needs as opposed to satisfying abstract legal principles or punishing the "offender" [of authority]. The practice of restorative justice maintains the understanding that there is no singular action of violence, there is a process of violence.

NOTE: *In many cultures, a 'crime' was something to be resolved between the "offender" and the "victim" (and their families and community), with the goal of restoring wholeness and a sense of a rightful relationship. Therein, how individuals express anger is dependent upon what they know and the tools available to them.*

Restorative justice is not concerned with retribution and punishment; instead, it is concerned with (a) making the victim whole and (b) seeking to restore and

reintegrate the individual(s) who initiated (or pursued) harm and violence back into a fulfillment-oriented society [where possible]. Fundamentally, the question must be asked, what is more effective than restoring the health and functioning of natural living systems?

Hence, restorative justice emphasizes the importance of both the restorative process and the desired directional outcome (i.e., a re-connection with the state of 'flow' in human fulfillment). It involves repairing the harm caused by aggression and violence and traumatized behaviour. For which, there are a wide-variety of verifiable restoration processes and strategies. Certainly, justice does not involve the propagation or "equalization" of harm.

In contrast to *restorative justice*, *retributive justice* and *punitive justice* are reflexive in that they are [primarily] about equalizing the harm suffered by someone by causing suffering to the [targeted] other or by punishing them into contemplation. Even the notion of reparations is associated with the retributive form of justice; it is essentially the desire to force a change in ownership status. In many modern societies this "equalization of harm" takes the form of property usurpation, social isolation, economic monopolization, and forced mentation (and sometimes, accidental or pre-determined death). At the individual level it often includes a complete elimination of social freedom through structurally violent isolation (i.e., kidnapping, caging, jailing, and imprisoning). A retributive/punitive justice system may also be called: incarceration justice, criminal justice, legal justice, or State justice, all of which could be said to be the opposite of socially restorative justice (or "social justice").

There are two primary types of criminal justice system (a.k.a., punitive/retributive) in early 21st century society:

1. Adversarial system - a State (government/ jurisdictional) prosecutor indicts someone, a defense lawyer defends that person, and a judge is supposed to ensure "fair play". An adversarial "court" [of justice] system will go after a defendant to seek a guilty plea regardless of if someone was hurt or they are guilty, because it is adversarial.
2. Inquisitorial system - the judge and the prosecutor are essentially the same person.

The inquisitorial process can be described as an official inquiry to ascertain the "truth", whereas the adversarial system uses a competitive process between prosecution and defence to determine the "facts". However, in either case, neither the truth nor the facts of the underlying societal issues that are the cause of "criminality" are never (or, almost never) revealed or called into question; because, in part, those "professionals" that are participating in the process would have to question their own professional existence and the very idea of a criminal justice system.

The circular argument of retributive justice is:

"If you do this bad thing, I can do bad things to you, because only bad people do this bad thing, and bad people are "fair game" for good people (i.e. "me") to do bad things to."

Further, and worst of all, early 21st century society's system of justice interjects the State as the paramount victim. As a result, aggressors are labelled "offenders" and they no longer have to face the personal pain or damage caused by their acts. Instead of being held accountable to their victims, they face representatives of the State, who have not experienced real pain as a result of the event, and who are financially profiting off of the situation. There is little opportunity or support for the "offender" to seek forgiveness from the victim or seek reintegration into the community.

Meanwhile, with the State taking on the role of "victim", the real victims of a violation are left out. In early 21st century society, many express a sense of having been re-victimised by the justice system, which rarely gives the victim any say in the outcome of a case, seeks collectable restitution for the victim, or even informs the victim as to when the perpetrator might be released and again be a threat.

When violations of person occur within a community, the community needs to do everything it can to rebuild the ties of accountability, trust, and mutual respect between those whose trustful relationships have been violated. And, in order to do this, there must exist a sympathetic understanding and compassion (or "sympathy") for why everyone behaved in the way in which they behaved. Therein, empathy allows for the establishment of a connection with someone who may be "lost in their suffering" prior to supporting them in forgiveness, self-sufficient restoration, and a re-directing of their 'locus of control'.

The concept of restorative justice maintains the recognition that an expression of behaviours are in part derived from conditions and conditioning - there exists a relationship between the individual and their environment. Hence, to reduce socially corrosive behaviours, the environment, which includes the conditions and conditioning that individuals experience, particularly the young and the soon-to-be-born, must be accounted for at every knowable level from the neurophysiological to the structurally economic.

Sometimes living systems need support and facilitation to restore themselves to their natural state of balance and harmony, of equilibrium, and of justice. Two generalized examples of this include the Earth's ecosystems and the healing mechanisms of the human psyche and body in cases of illness or injury.

In truth, violence is a process and not a singular act. Violence is not about "that guy", that "bad guy", the "perp", that "criminal", or the "villain", although the mainstream media would like you to believe that to be the case. Instead, repulsive acts of behavior are a product of a society that ignores human needs and maintains a

chronic, structural state of violence.

Every violent and aggressive act can be explored within an individual, as well as at the larger social level. It would be disingenuous not to state that this exploration may take the form of an 'intervention' when someone poses a danger to others (Read: community safety), which doesn't mean "writing off" the individual. Intervention can be applied incrementally as much as physics and our decision system will allow (through informed response and not impulsive reaction). With skill and verified experience we can act with greater transparency, coherency, and accuracy in our formalized socio-economic, safety response to situations of conflict and violation. When dealing with someone who is a potential danger to others, then there has to exist some form of containment or restriction from sensitive positions, which is not equivalent to imprisonment. Even within containment there will still be cooperation and restorative communication with others outside -- finding ways of healing old wounds, which in many cases, were a factor in the hurtful behavior. Herein, there is an empathic causality which might be wise for us to recognize.

Also, it is important to recognize the concepts of 'mental capacity' and 'competence' as elements of restorative justice. A person with brain damage may, for example, not have the [functional] mental capacity to understand a situation of which s/he has become a personal part due to a decision s/he has taken.

Herein, the notion of a 'social intervention' also involves [in part] looking at a social problem as a whole instead of independently (i.e., thinking systematically), which brings a needed simplicity and unity to our actions during a state of conflict and the transforming of systems.

Certainly, those who have become or who may see themselves as "victims" are not tools to be used in a political, or other, agenda. Instead, victims deserve as rational an analysis of the incident as individuals in society are capable of providing as an orientation toward the prevention of its re-occurrence.

Government, per se, does not exist at the systems-level of a community - there exists organization and coordination, but not "government" or authority. A community is [in part] a set of common interrelationships, a "living" dynamic [of fulfillment]; it is not something to control. Whereas government seeks to control relationships, a community of individuals seek to recognize, understand, and re-structure [toward fulfillment] the complexity in existent interrelationships. Therein, when problems are understood as systemic, then a new mindset emerges, which replaces retributive justice with restorative justice and an inquiry into the systemic causative factors of socially symptomatic problems. Then, in the re-arrangement of any society, there must always exist two synchronous paths, the individual and the system(s) of which the individual is a part. Accordingly, to solve a social problem there must exist an examination of the causal system relationships

themselves.

Simply, there are two ways to facilitate the improvement of human life:

1. Improve the life of an individual through [f]actual fulfillment while facilitating a refined moral orientation toward living consciously, purposefully, and in, self-stable integrity.
2. Re-design the community's dynamics and systems to more effectively and efficiently facilitate the freedom of individual fulfillment in community. This is an orientation toward the improvement of the life conditions of all individuals.

At an individual level, justice may involve the process of "rehabilitation", as restoring someone's full well-being and self-directed fulfillment. And, it may involve improving the [geometric] architecture of our language and our thought so that we communicate our essential[ly similar] selves more clearly. Herein, societal interventions might include: research studies into contributing factors a behavior; transparency in the community of ongoing findings, developments, and modifications; and participatively redesigning systems so that the dissonance (possibly expressed as violence) is less likely to appear in the future due to a more fulfilling overall structure. Fundamentally, better behavior should not be expected when the structure of the system in question does not encourage better behavior.

Restoration and punishment are incompatible concepts - one does harm whereas the other restores from harm. One is not even an alternative. Restoration is the reduction of suffering through the reconnection and integration of relationships that sufficiently fulfill an organism's needs. Punishment exponentiates the inflammation and suffering that is already present. That said, it is true that an aggressor might experience certain phases of the process of restorative justice as painful and burdensome, so they would view the claim that they are not being punished when they are subject to restorative justice interventions as disingenuous and hypocritical. Therein, it is all about the biases present in the perspective, warping someone's perception that their needs are being fulfilled when they are clearly not and they have harmed others.

Theoretically, trauma can cause individuals to dissociate (that is, mentally compartmentalize) their painful experiences, and restorative justice is [in part] is the application of modalities that facilitate the re-engagement someone's self-esteem, their self-directed and empowered nature.

Before overcoming their own self-limitations most people stop and deny, because piercing through the conditioning can be very painful and vulnerable; some experiences hold painful and vulnerable feelings and their release requires the processing of these feelings in a restoratively safe set and setting. It is not necessarily

"easy work". And in time, all fulfillment inhibiting programs and self-limitations start to break down under the light of truthful experience, method verification, and self-work (as willful self-engagement).

Guilt is one emotion that sometimes arises with the conceptualization of justice. Guilt is a damaging emotion, and it is a tool used to turn obedience into a compulsion. Religious guilt, for instance, is based on sin, which is defined as disobedience to an outside authority. It becomes an addiction, a compulsion, which is meant to stay with you for the rest of your life. The concept, its thought structure, is designed to control consciousness and keep consciousness "in the fold". Taking responsibility for one's behaviors should not lead someone to remain in a state of guilt [as a healthy state of processing], but rather to a more conscientious and rationale approach towards one's thoughts, words, and actions, which can only be healthy. The desire to live a healthy, fulfilled, and pleasurable life is innate in us; to not allow it is to fight nature. Herein, it must be asked, what does terror do to people's consciousness? It allows for greater [external] control over the mind. Who is the greatest terrorist in a given society?

QUESTIONS: *What are the environmental pressures that emerge around an individual to create a behavioral act that humans commonly find repulsive?*

4.3.1.1 Power[-over-others] changes how the brain responds to others

Researchers, Hogeveen et al., (2014) randomly put participants in the mindset of feeling either powerful or powerless. They asked the powerless group to write a diary entry about a time they depended on others for help. The powerful group wrote entries about times they were calling the shots. Then, everybody watched a simple video. In it, an anonymous hand squeezes a rubber ball a handful of times — sort of monotonously. While the video ran, the researchers tracked the participants' brains, looking at a special region called the mirror system. During observation, 'motor resonance' was determined with transcranial magnetic stimulation (TMS) via measures of motor cortical output.

The mirror system is important because it contains neurons that [in part] become active both when you perform an action and when you watch someone else perform a motor action (e.g., squeezing a ball or changing a facial expression. Whether you do it or someone else does, the mirror system activates. In this small way, the mirror system could be figuratively said to "place the observer inside a stranger's head". Former findings suggest that the mirror neuron system plays a key role in our ability to empathize and socialize with others - they help us to learn and to understand the intentions of others.

The researchers wanted to see if bestowing a person with a feeling of power or powerlessness would change how the mirror system responds to someone else

performing a simple action. It turns out, feeling powerless boosted the mirror system — people empathized highly. The findings were, “when people were feeling powerful, the signal wasn’t very high at all.” When people felt power, they really did have more trouble getting inside another person’s head.

High-power participants demonstrated lower levels of resonance than low-power participants, suggesting reduced mirroring of other people in those with power. These differences suggest that decreased motor resonance to others’ actions might be one of the neural mechanisms underlying power-induced asymmetries in processing our social interaction partners.

“What we’re finding is power diminishes all varieties of empathy,” says Dacher Keltner, a social psychologist at University of California, Berkeley, not involved in the new study. He says these results fit a trend within psychological research. “Whether you’re with a team at work [or] your family dinner, all of that hinges on how we adapt our behaviors to the behaviors of other people,” he says. “And power takes a bite out of that ability, which is too bad.” At a fundamental level, power [over others] changes how the brain operates.

Often, people who hold power over other become less capable of discernment over time, they loose more and more compassion, they increasingly see problems where there are no problems, they increasingly create conflict where there would otherwise be no conflict. Holding power over others changes the brain, and the change can be fast (e.g., Stanford prison experiments) or slow (e.g an officer or warden who losses compassion and moral discernment over time).

4.3.2 Distributive justice

INSIGHT: *No person earned having the Earth here. Nobody earned the resources under the ground and in societal technologies. Matter and information are not something that naturally should belong to anyone. This is a mentality that has been lost to many for quite some time, and to which many are reawakening.*

Distributive justice refers to the equitable distribution of habitat [urban] services and objects. All social systems, regardless of philosophy, beliefs, or social customs, ultimately depend upon natural resources and a consideration of their distributed allocation to maintain a standard-of-living, quality-of-life, and ultimately, human well-being. Humans have needs that are met, in part, by economic systems - systems that [at least] transform and re-transform resources into functional goods and services. Distributive justice involves the application of the ideas of equality and fairness to a ‘socio-economic reference factor’. Distributive justice is also sometimes known as equity justice, economic equity justice, or access justice. This reference could be human well-being, it could be a standard-of-living, or the quality of goods.

It might also be equal access, or personal profit and property acquisition. Herein, distributive justice refers to the condition of access equality in the fulfillment of common human needs through the cooperative and organized sharing of our ecological resources and our intentionally architected ‘habitat service system’ (this system is described at length in the Decision System specification) without an administrative class of governors or the encoding of competition.

NOTE: *In community, distributive justice is found in providing enough fulfillment and well-being that people’s experience of inequality is reduced to a level where needs are accounted for and preference is expected.*

To achieve a condition of distributive justice there is the equanomy" principle that states that it is optimal for a population to reduce the difference in access between individuals and populations, and thus have more togetherness and flourishing. The concept, "equanomy", comes from equa- "shared or common", and -monia, a suffix signifying action, state or condition).

Distributive justice asks the questions,

How do we reduce inequality in access to fulfillment among the global population?

Distributive justice (i.e., economic equality) does not involve the concepts of entitlement, reward, or duty, but is instead founded upon a common empirical understanding that if fairness and cooperation aren’t accounted for in the design of the systems that fulfill the needs, wants, and preferences of individuals, then socially corrosive behaviours are highly likely to develop, and as the gap widens, conflict becomes an increasingly likely outcome. In community, it is wrong to view "equal" habitat access from the perspective of entitlement, which denotes that someone who does not own a piece of property is entitled (i.e., has a claim on the title of that property), simply for existing or being present in a given geographic location (and possibly, being of a specific demographic). In a society structured via access without property there is no such thing as entitlement (over another’s, or others) because there is no such thing as property.

Distributive justice exists in contrast to that which is known as ‘corrective justice’. Corrective justice involves the idea of "liability" (Read) debt or punishment) in rectifying the "injustice" inflicted by one person on another. This concept of justice focuses on whether one party has committed and the other suffered a "transactional injustice" or "negotiated injustice". Although corrective justice claims to feature the maintenance and restoration of justice between the parties in a transaction (or negotiation), it is in fact a "blind" form of justice. Principally, it is blind to the reality that there are ecological and other [persistent] systems dynamics at play. Second, it is blind to the systems-

level view of the social and economic context in which the transactional injustice is said to have occurred (i.e., it is blind to the persistence and ongoing of social and economic interrelationship) -- in community there is an ongoing dynamic of relationship, whereas in the market [abstraction], every transaction is claimed as a finite thing with no persistence of relation. It is further blind to the probability of usurpation of the entire process of 'corrective justice' itself by any party with greater power. It is also blind to the fact there no such thing in nature as property, only access exists (this is discussed at great length in the Decision System specification). And lastly, it is blind to the empirical lifeground and to the nature of human need.

Descriptions of corrective justice sometimes go on to state that the "law" is the wisest correcting force. The "law" re-establishes the initial equality present before the "injustice" by depriving one party of any unjust transactional gain and "restoring" it to the other party, which may be the government on behalf of its "public". Here, it is possible to see the similarity between retributive justice and corrective justice in that neither form of justice actually perceives human needs as a factor, and they are both forced-based equalization strategies.

Aristotle likened the parties partaking in corrective justice as two equal lines (Aristotle, 350 BCE). In "Nicomachean Ethics", Aristotle then goes on to state that injustice upsets that equality by adding to one line segment a line detached from the other. The "correction" removes that line segment from the lengthened line and returns it to the shortened one. The result he said is a restoration of the original equality of two lines. Clearly, humans are not lines and his rationalization (or rationalized analogy) for the application of corrective justice is invalid for multiple reasons. Not the least is that its premise assumes that force is a valid means to justice and that two parties enter into transaction in some mathematically perfected and unequivocally "equal" state. Essentially, Aristotle is himself committing the fallacy of equivocation in his metaphorical analogy of a line representing a human.

The question of entitlement, reward, and duty and other possessive and extrinsically motivating language involves an entirely different contextual paradigm of thought than the one present in an empirically life-grounded community. It represents a thought paradigm that does not maintain a systematic solution-orientation, and often originates from a place of force and authority. This rival and more common definition of justice [in early 21st century society] as "giving to everyone their due" (or "equal proportion") is largely derived from the notion of the human being as a [singular objective] possessor, eventually leading to hierarchies and institutional establishments of possession.

Therein, justice loses the sense of being the harmonious coordination of individuals' interrelationships over time to fulfill human needs, and is re-defined as the "morality of aggression" over the defense of property abstracted

from environmental and systemic factors, including human need. Property becomes identity, a division of unity, and potentially even, State "personhood" - division of the awareness of universal relationships (i.e., separation from unity).

The term 'individual' in Latin means "not divided" or "indivisible" (in- ["not, opposite of"] + *dividuus* ["divisible"] from *dividere* "divide" one with all aspects of the self). The 'individual' is the experience of the self, which is indivisible (as in, not separated). Whereas, 'personhood' may be defined as the continuation and continuity of identity over time (i.e., this is me, this is me again, this is me, this is me again). But, when a person defines themselves by their property, then they have broken the connection with their true identity. Property defines their identity and justice becomes the "just" use of force in defense of property, in defense of the "abstracted self". This was an early notion of justice suggested to Socrates who rejected it as a universal principle, since it would necessitate one's returning to individual violence as a solution to social ills with potentially disastrous consequences for everyone. The codification of property naturally threatens force while it defines the individual in the defensive.

Plato modified this common view of justice in "The Republic" to mean that each person should perform their own function in the State so that the proper functioning of each part - the commercial, the military, the administrative - would result in justice. This view of justice regards human beings as "complete" only in relation to their work, not in relation to objective reality or even to one another. It does not understand the authentic human person to be essentially related to others in a verifiable sense. It is the natural perception of the biologically & psychologically immature, that there is no existence outside of one's own perceptual identity.

Once society delineates property it is delineating the defensive use of force with that property. Also, a society that delineates property may eventually begin to see everything in existence as property, leading to the defensible commodification of [the information system of] reality itself (e.g., intellectual property) - it feeds on itself - it is a principal destabilizing concept. The repetition of some conceptual patterns of thought produce a destabilization in the fullest expression of embodied consciousness. With property comes the reinforced opportunity for power and reward, which are habituating experiences (i.e., they replicate in a reflexive manner without human conscience). Although property may have some initial benefits as an incentive system, it is destabilizing in its nature and will eventually lead to its own collapse. Property is just a social agreement, a form of social organization. It is not something that is written into the laws of the universe.

In a property-based society, ownership is protected by violent armed force, which is advantageously monopolized [by entities in the larger interrelated socio-economic system]. Key resources needed to fulfill humanity are actually under armed guard. This is

where early 21st century society is now, this is early 21st century society, and it is neither a joking nor a happy matter. It is a very real and serious reality. This true reality, the real world, is harder to see in the information chaos and confusion of early 21st century society, but is more clearly visible in the types of relationships that exist between multinational commercial industries and tribal, native, and shamanistic societies.

In order for force to remain effective at a social level it must appear to have the potential of being applied to the maximum, to death. For example, if taxes are not paid, then kidnapping occurs, and if you are caught trying to escape the cage you might be killed, or at least your life will be made much harder.

There is generally a weapon wherever you are talking about property. There is a "right to force" in maintaining one's property as well as a legitimate gateway for the use of force to death in the self-defense of property. Of course, this logic is actually valid within a property-based paradigm. Unfortunately, a property-based paradigm is out-of-touch with the accessible real world, and hence, so is its logic. In reality there is not property, there is only access.

When access to life supporting resources and technologies can be controlled, then a power disparity is created that is globally problematic for the distributed fulfillment of human need. Such an environment naturally generates behaviors that cause suffering [as a lack of fulfillment] and limitation [as a lack of information] in society.

Ownership of a resource creates a "bottleneck" to common access. Others have to "go through the owner" in order to gain access to the resource they may need for their very health and survival, or for the organization of a more fulfilling life and community system. Such a socio-economic organization transfers (or gives) power to the owner at the expense of others. With power comes great potential for the acquisition of hierarchical control over the fulfillment of other's needs.

Ownership requires obligational exchange and force to maintain the [scribed] obligation. Therein, entries into the ownership market (i.e., commercial entities) define the boundaries of choice, and today, they do so through what is commonly known as 'purchasing power'. Essentially, an entity in modern day's ownership-market is only as free as its purchasing power. Choice and power are no longer free under nature and participative social cooperation, but under an abstraction - that of money, profit (more money), and power. Therein, choice is made available [into the socio-economic system] by profit driven entities in the market (Read: a place for "marketing ownership", the producing and purchasing of goods and services by capitalists and laborers).

Free market philosophers like to talk about dispute resolution organizations (DROs), which become the "correcting force" in their [abstracted] market-based paradigm of thought. To them, DROs represent [the force of] corrective justice.

Profit is a harm inducing orientation through its

incentivization of deceptive behaviors. If "you" damage something and "your" profit (or livelihood) is at stake, then you have an incentive to conceal the harm. The very structure of some incentive systems (or "some systems of incentive") cause otherwise good people to behave quite badly [environmentally, socially, individually - wherever they might be causing and hiding the harm]. Incentives can be perverse. "Your" natural desire to survive can be channelled by established institutions and Statist agencies into having "you" collaborate in a harm-producing system and not even be aware of it.

In particular, coercive forces want individuals to own themselves, for it is only thereafter that they can coerce the individual into selling himself or herself (and his/her labor) in the marketplace. The idea that objects can have intrinsic value, or even the existence of subjective value, leads very quickly to the idea that the ownership of person, land, resources, and even knowledge is a "right", a "property right". Such a "right" either comes from authority or it comes from nowhere. If it is believed to come from authority, then there will exist monopolization. A "right" (i.e., positive right) is [in practice] a privilege from authority. And, since authority doesn't actually exist, rights do not come from anywhere, they do not actually exist. There is no authority [in the real world] to give a "right". And fundamentally, the belief in authority involves [in part] the surrendering of one's own mind to some higher power (or "authority"). The notion of "rights" are discussed at length in the Decision System specification.

When force-based institutions are seen for that which they are, then the possibility for non-coercive social cooperation and human flourishing become probable. Therein, the individual and the social are fully realized in a larger societal context defined not by "rights" and "liberties", but by the socio-economic system (or life-system) functioning as a distributed network of participation and cooperation toward a commonly meaningful purpose.

What is the purpose of property? The commonly stated purpose of property is to provide instant access or use of something to the owner at any particularly desired time. Therein, "property rights" answer the question of who controls what: who has controlled and instant access to a thing when they want access to the thing? However, is it necessary to "own" something to have access to it? No, it is not necessary to apply the concept of ownership when the concept of access already exists. The application of ownership is highly dependent upon a societies chosen socio-economic organization and orientation, which may engineer scarcity or thwart scarcity [through the application of biomimicked ecological principles reinforcing ecological pathways that influence abundance and population surthrival (Read: survival and thriving).

Under conditions of scarcity, property is more likely to exist, and so is authority. And yet, instead of looking at the world as scarce, one might look at it as if it were an artwork that required participation and

appreciation to continue fulfilling its experienter. In place of the perception of scarcity one might recognize the potential for common ecological principles (i.e., accurate information), which when are applied are likely to generate states of abundance in fulfillment.

Ownership is not a systematically efficient means of access at a community level. Property entails a whole host of unfortunate, and some might say tragic, consequences. In a community, property will always generate problems in the flow of what are truly persistent interrelationships. What is actually needed, and actually exists, is access. If “you” have access to abundantly comfortable transportation, do “you” need to own a car? Can “you” rent a car or checkout a car from something akin to a car library and still access it whenever you need. Certainly, human intelligence can efficiently organize resources to meet common access needs. That said, there are some basic necessities that make sense to “own”, or more accurately, have exclusive access to (e.g., personal hygiene items and a personal living space). Yet, if someone has the freedom to travel and move whenever or wherever he or she wants, then is there any reason to claim a home as property? These issues are articulated in full in the Decision System specification.

Distributive justice might be considered a form of fairness: an impartial and non-opinionated economic distribution. It involves the distributed access of resources, goods and services in a “humane”, person independent and effective manner for the entire population of the community - it is a process that generates a state of persistence in equal access. Herein, there is no separation between what one person can access and another can access [qualified by safety & localization protocols discussed in the Decision System specification].

The statement that “all people are equal” is entirely meaningless without a context and an objective physical referent. All humans are not equal in their abilities, their qualities, their passions and interests, or their personalities; the word “equal” does not make sense in this context. Yet at another level, to say that all humans are equal is to say that they are all alike in some manner. The manner in which they are most alike, are most similar, is their common needs and states of expressed being (and the highest common direction that all actualized humans desire). And, if we all have similar human needs and we can realize a similar common direction, then the idea of ‘equality’ as applied to a social system refers to equality in access to the community; wherein, all contributors contribute to the whole of the community.

Equality as it concerns the distribution of resources might be valued by a community that recognizes that the unequal distribution of these things by individually desired quality, such as status, prior wealth, knowledge & skill, labor capability & past work history, resume check list, birth, power, possession, etc., is likely to manifest a divisional system in a population that generates de-

structuring behaviors leading to seriously destabilizing social and environmental costs.

Justice does not involve an “obligation” to bring about equality (i.e., the term “obligation” interjects the notion of authority), but it is about a empirical and rational recognition that equality of access leads to a higher likelihood that every individual will be better off. And, by exchanging and participating through that value orientation, and by encoding it into our decision system, we maintain an emergent and intentionally fulfilled community.

Having empathy and compassion for others is the root of all forms of justice. Yet, justice isn’t a “required” value; it is a value arrived at through observation and reason, through the integration of experience, and through the re-structuring of a truly just society. It is an objective value related to how effectively individual needs are fulfilled in both a local and a societal context. Wherever justice is “required”, then it is not aligned with fulfillment.

Massive injustice lies at the root of much of the contemporary distribution of wealth. The possession of land is the most obvious example. But other kinds of force and violence—the internal passport system implemented in eighteenth-century England, for instance, or the engrossment of unowned land by State fiat—have also served to deprive humans of the ability to participate in the sharing of access through what is commonly known as a “commons”. The beneficiaries of this kind of material aggression have varied to some extent, but they have consistently belonged to politically and commercially favoured groups—they’ve been either members of the power elite, their families, or their associates.

Is it not desirable to design systems that ensure freedom of access to those goods and services that individuals need to be fulfilled and feel satisfied? Is this not a desirable state? And yet, the idea of ‘property’ negates the state of distributed access. In a community setting, self-directed freedom is most likely to arise when the following two conditions are met:

1. When everyone’s baseline material needs are sated such that material acquisition is no longer of paramount importance and competition over resources becomes irrelevant (i.e., scarcity of life-need is sufficiently reduced to reveal a higher potential direction). In other words, ‘social justice’ exists when everyone has achieved a state of strategically designed certainty in the fulfillment of their needs that would otherwise cause primal and anxiety driven behaviours to appear, derailing everyone’s highest fulfillment.
2. When everyone in the community either owns the same or no one owns anything, but has equal access to everything (i.e., distributive justice). The latter being the most efficient form (i.e., no one owning anything). If equal access to the fulfillment of needs does not exist then consequently envy

will exist, which leads to (or “breeds”) contempt, resentment and jealousy as the emotional resultants of envy. Actions and behaviours derived from these emotions reduce the stability and freedom of a community by injecting into it an increase in the probability of reactively corrosive social behaviors. Relationships built upon these emotions cannot sustain a functioning community.

That which is essentially sought by a community is a conditional [dynamic] state where no individual has coercive power or advantage over other individuals in the continuous and systematically re-creation of society and the fulfillment of common human need. It is a system of cooperative access, not a system of market ownership.

It is important to clarify here that the desirable value state of “distributive justice” described herein is not equivalent to the governmental, administrative class process [state] of “wealth redistribution” - wherein the government takes by force and re-distributes that which is considered wealth (e.g., currency). It is inaccurate to equivocate the two concepts. If the term ‘distributive justice’ is in any way defined as authority’s role in redistributing “wealth” and providing services, then it is not equivalent to the definition of ‘distributive justice’ described herein.

Commodification, which is [at least] the exchange of some form of property in the market, destroys the fundamental premise or relationship between a service [from nature] and the human need it is intended to fulfill. And further, commodification generates artificial scarcity by making things increasingly inaccessible as prices increase, inflate, and are “hiked”. Maybe, instead of looking at entrepreneurs as heroes, we should be offended at the idea of taking a natural lifegrounded service [that may not have previously been commodified] and charging for it. To perceive matter and information as property is unfortunate, for property, itself, is not a sufficient concept for orienting a society toward human fulfillment.

There is a question sometimes asked of those who maintain that there exists value in the commodification of anything which can be commodified - that the “voluntary” market should penetrate all crevices of one’s life. That question is, “Would you charge your daughter for protection?” This is quite a poignant question and when answered fairly as “no sane and healthy person would ever charge their daughter for protection,” it reveals the degree to which someone sees their responsibility and relationship to (or importance of) another organism of our species on Earth. A father would not even consider the safety of his daughter as a product in the marketplace, nor any other beloved member of his family. A ‘family’ consists of those individuals to whom someone has a degree of responsibility to and is in a persistently supportive interrelationship with (at least, ideally), who are important to someone, and to whom someone is in

turn important too. When this understood relationship is more deeply considered, then the question arises: “Who is your family, who are the people you share and cooperate openly with? Who are those people you exist in a persistent, participatively voluntary and supportive, caring (or care-taking) relationship with? Who are the people you desire to support and protect? Who are the people whose needs you view in common with your own? Who would you organize cooperation with in the mutual fulfillment of need? Who would you not compete with at a socio-economic level?”

MAXIM: *To live with dignity there has to be a baseline.*

These are useful questions because they present an opportunity to those who believe in [the] commodification [of existence] to perceive their true “level of care” in the world:

1. Are you **ego-centric** and care only for yourself;
2. Are you **kin-centric** and care only of blood relatives (some maybe more than others);
3. Are you **ethno-centric** and care about the tribe, race, village or nation;
4. Are you **world-centric** and care about all humans;
5. Are you **earth-centric** and care about all living beings on the Earth;
6. Are you **truth-centric** and care about what it means to actually “care about” something;
7. Are you **openly-centric** such that you ask questions about the truth of consciousness and the fulfillment of all known beings in the universe?

The very notion of “commodification” is tied up with someone’s level-of-care of others in the world as well as their understanding of the persistent dynamics on this planet. If you wouldn’t charge your daughter for protection, but you would charge your neighbour, then you have superficially limited your empathy to and care for others in the world.

Prejudices rise and fall as people preach to promote them or teach against them, as doctrine is interpreted toward peaceful interaction or toward force and retaliation -- [from a systems perspective] doctrine is always a form of dichotomy and duality [for it is based upon interpretation]. In the interpretation of doctrine, an individual may begin to inquiry more deeply into real existence and develop and appreciation for verifiable experience, or they may dip more deeply into belief and fear.

Prejudice is nurtured; it is often the product of environments of interpretation and fear, which is easily stoked up and often takes years to quench. One manifestation of prejudice is that when great numbers are seen as less deserving, as slaves, paupers, as another class, as outsiders, or just “average” or “other”, then a minority can describe their own behavior, not as greed, egoic-projection and violent, but as simply receiving

higher rewards because they are a different kind of human being, who deserve to be “put on a pedestal” above those they view with a prejudice. It is unwise to become pejorative of any people, for we are all walking the same path and we all exist in common.

We are of our highest potential when we recognize that we are of one human family among a universally cosmic family. Technology has helped us realize that we are [at least] one global family, that we can drop all the territories (e.g., clans, nations, states, and other landmass distinctions and artificial distinctions) and become humanity, Earthlings, our unified, consciously sourced, selves. Our communication networks are global. Our astronauts and engineers show us photographs of Earth in minute detail. Technology can help show us more of who we really are. And, the exploration of consciousness may show us our timeless cosmic nature. Technology and consciousness exploration enable a recognition that we are all one. However, technology does not drive change or create greater equality; instead, accurate [scientific] information enables change toward a more orientationally fulfilling direction. The intention of a conscious identity, an individual, drives change toward technologies that allow for greater states of freedom, or technologies applied toward greater states of self-enslavement. When technologies work for us they empower us and when they work against us they enfeeble us.

NOTE: *If someone or some organization owns an idea, then they can stop that idea from progressing. Who owns the idea of justice in society? Is it some form of the State? Is it the market? Is it someone on a stage with a box in front of them? Is it someone in front of others in a classroom?*

4.3.3 Participatory justice

A.k.a., Contribution justice.

A digital, technological economic system allows for the massive self-aggregation of individual effort around the expression of common value (i.e., a commonly valued [system of] orientation). Therein, highly complex social artefacts, such as an open source transportation system, a universal encyclopedia, and a universal computer + operating system, are entirely possible through the process of open and free contribution to a common project (or economic demand/inquiry). Herein, society becomes an emergent “project” with which anyone can participate and everyone benefits. This process is sometimes referred to as ‘peer participation’ or ‘peer-to-peer participation’ (P2P). The peer participation process may be extended to include the iterative and cooperative redesign of the social and economic decisioning systems themselves. In a true “state of justice”, contribution to society is not based on the narrow selfish pursuit of personal gain at the expense of others. Community benefits only when everyone has the opportunity and

the incentive to benefit.

INSIGHT: *In the state of social fairness (Read: equality/fairness of access) exists the state of equal opportunity in participation.*

It is important to note here that notion of life being voluntary has limits; it is important to recognize that it is not voluntary to live within the bounds of one’s ecological environment. Individuals are bound by the ecological systems that sustain them, systems which dictate the conditions and resources available. This inherent dependency underscores the significance of restoring and adapting to the natural limits imposed by the environment, thereby highlighting the necessity for sustainable living practices that ensure the longevity and health of both the individual and the ecosystem at large.

In a participatory process the expression of value originates from and remains within the community, in a ‘commons’ of ongoing interrelationships. Participation is a platform and a process that maintains a commons-oriented approach where input, processes, and output are free from private appropriation through [claim of exclusive and defensibly rightful ownership to] property. Herein, individuals in the community contribute open data, knowledge, open code, open design, and open effort to a common pool of information resources for coordinated and value-oriented fulfillment. Participation is an organizational process that exists to maintain an operational platform (or structural dynamic) for the benefit of everyone in the community.

A peer participation system is designed so that individual and “collective” benefits coincide. Herein, a contribution, for whatever reason, creates something universal, something potentially useful to everyone as it is open to use and modification by anyone [qualified by safety protocols]. Within such a system the universal benefit exists regardless of motivation -- even selfish motivation remains universally beneficial. If someone were to fix a bug in Linux (an open source operating system), because they were using the system and desired resolution of the bug for their own selfish wants, then it automatically creates a better operating system that everybody can use for free on any computer.

Herein, peer-to-peer is a open and relational dynamic, a particular organization in which people relate to each other by contributing to a whole. For example, the Internet is a cooperative peer-to-peer construction of organization for the benefit of everyone based upon formalized [standard] protocols. In the Community, peer-to-peer is applied toward the sharing of a common lifeground and distributed re-structuring of information toward a similar direction of purpose: toward the cooperative re-creation of systems that meet the needs of individuals in the community. It is a form of free, volitional, and truly voluntary association without external reward or punishment, without erroneous incentives, and therefore, it has the potential to engage intrinsic motivation toward the purposeful fulfillment of individual need. In community, we create because

of who we are, we don't need to make money or any other abstraction to create; principally, in community we become our intrinsically motivated selves.

Peer participation is based on the distribution of tasks [and constructors] across the community. (Deutsch et al., 2014) Unlike an industrial system, it is not based upon a division of the individual through ownership-labor (i.e., the market economic "division of labor"), but on an intentionally designed information organization that enables systems-level transparency such that participants know what needs to be done (i.e., tasks) and what the most efficient and effective allocation of effort and resource (i.e., constructors) is toward the fulfillment of those needs. It is an open system of organization, communication, and construction (or "production and recycling") that allows people and technological (i.e., applied knowledge) systems to aggregate their skills and resources toward the fulfillment of the needs of the community organized by open tasks and projects (i.e., sets of tasks). Instead of a society based upon industrial growth, a redefinition of 'justice' as participation facilitates a movement toward a life affirming and life sustaining society.

Herein, a distributed peer-to-peer system manifests as a technical system of collaboration that enables the sharing of information and equality in access, which maintains a highly abundant, stable and sustainable community. Collaboration means working together cooperatively; it means applying energies, effort, and personal power in a common direction through a similar value orientation. When someone is living in a fluidly interdependent group (i.e., a distributed community) the best way to mitigate risk is through sharing; herein, sharing promotes resilience.

The peer participation process is significantly different from socially-hierarchical (or "socially vertical") processes, which are based on 'panopticism'. Whereas the panopticon is the model for external surveillance, panopticism is a term introduced by French philosopher Michel Foucault to indicate a kind of internal surveillance. In panopticism, the watcher ceases to be external to the watched. Panopticism exists in contrast to holism (or "holarchy") where everyone in the society, regardless of [active] participation, knows (or, can easily access) what is occurring with and within the socio-economic system. In other words, the system that organizes fulfillment is transparent to all in the society regardless of active participation.

Peer participation involves communication and effort on a horizontal scale without the need to ask permission of an authority to contribute. Hence, its very design allows for the global scaling of small group dynamics. Essentially, the overall design for the Community (i.e., the design specifications in full) can be scaled to the size of a global society if the idea of peer participation is effectively integrated at a core structural level.

Individuals involve themselves in the participatory process because they either desire use of the output or they consider that it is going to be useful to someone

else. Hence, one of the principal motivations for effort expenditure in this environment is the fact that the output maintains a 'use value' to someone (i.e., it has a purposefully thought out need). Individuals are highly unlikely to contribute in an intrinsically free manner to a project when their work can be appropriated by someone else and not shared. And, individuals cannot be said to exist in a state of valued cooperation with one another if they do not have open and free input. Further, open and free access to outputs is required for coherent[ly oriented] adaptation - participatory adaptation through user feedback to user needs - participation becomes its own feedback mechanism.

The model of peer participation described herein is sometimes known as 'peer production', 'commons-based peer production', and 'mass collaboration'. It is a process with the following characterization, in the negative and positive:

1. In its negative characterization it involves:
 - De-institutionalization (it exists beyond fixed organizational formats and fixed formal rules),
 - de-monopolization (it avoids the emergence of groups of individuals who monopolize power, such as governance structures, industries, and business entities), and
 - de-commodification (i.e. production is for use-value, not exchange or trade value);
2. It is positively characterized by sharing within a community of commons. It is based upon free participation in regard to input, processing, and output, and free usage even by non-producers. A participation model involves the accessing of a common pool of shared resources for systematically fulfilling identified needs, wants and preferences in the community. It is a cooperatively organized commons that facilitates access to resources and outputs, and ultimately, the sharing of natural[ly life-grounded] services.

A community is equivalent to a natural living system. In similarity to a natural living system there exists a "circulation of the commons" and this is how the commons "reproduces" itself: open input; a participatory formal and emergent process; and a commons-oriented output. Notice that it is an adaptive process. People contribute and add to the emergently designed and constructed system, not because they are trying to gain from it [at another's expense], but because their contribution has a deeper meaning.

In order for peer production to exist there is a requirement for an enabling common organization, a similarity of architecture and of infrastructure. This organization is intended to service the needs of the community and facilitate [through enabling technologies] the arrival of equitable economic decisions based on a process of participation and re-formalization [as new and more accurate information becomes available in the decisioning space]. This organization

must maintain a structure for systematically fulfilling the needs of individuals in the community if it is to remain orientationally useful (i.e., it must correct for feedback of information into a re-constructable or re-formalizeable system). Herein, the Community conceptualizes the idea of a 'service system' to systematically organized the fulfillment of human needs. The 'service system' is a constructed and formalized system for servicing the needs of individuals in the Community. The concept of a 'service system' and the types of service systems that exist in the Community are described in detail in the Decision System specification.

It is entirely possible for a society to design social and economic organizations to maintain a collaborative platform for enabling and empowering participation by individuals. Wherein, an open and collaborative social system will in turn create an open and collaborative economic [decisioning] system through the encoding of its social values.

When someone becomes involved in making and creating in their community, then they are naturally inclined to acquire an awareness and appreciation of what the process [of creation/construction] involves. Herein, every individual has the power to make a synergistic difference when given access, which leads to a state of stigmergy. (Dipple, 2011) stigmergy is a mechanism of related, but indirect, coordination between agents (and actions) and their environment (i.e., it is a *mechanism of self-organization*). In a stigmergic process, global system behaviour emerges from the indirect interactions of the agents that occur by modifying the environment. (Bourjot et al., 2003) The idea of stigmergy is that information traces left in the environment by a previous action stimulate the performance of a next action, by the same or a different agent. The term was derived from the observation of insects in their food gathering and construction processes. Subsequent actions tend to reinforce and build on each other, leading to the emergence of coherent, apparently systematic activity and behavior. However, without a sufficiently accurate model of the environment it is difficult to predict the outcome of self-organisational methods based on this mechanism as the global behaviour emerges through interactions with the environment; hence, falsifiable [scientific] knowledge is necessary for orientation and navigation in the real world.

Science has recently shown humanity that the fiber pathways in a human brain, the "connectome", are not isolated structures; in a very real sense, every pathway in the brain has a "relationship" to every other pathway given by their mutual position in a single unified grid structure. Through scientific understanding and technological construction humanity can now see the whole material structure of the brain. The "connectome" is a single unified whole structure that fits into a single framework which expresses developmental rules and per speculation, functional rules also. Maybe if society began to recognize existent relationships and

participated in them intrinsically, then it would be a lot closer to acting like a unified and interrelated whole, a "social connectome" for human fulfillment.

4.3.3.1 *Participation and the role of technology*

Technology can extend the functions of [at least] human cognition, locomotion, and perception. We as humans have always recognized that the powers of our mind and the motion of our bodies are limited to some natural degree. And, we have always made devices to compensate for these limitations. One of the most remarkable technological inventions is writing. If you think about it, writing is a technology for storing information outside of our heads so that we don't have to remember it. An abacus was an early calculator. Carriages move people faster than their legs can move. The bicycle is a technology that extends our muscles and ability to locate. We have a great history for recognizing this, and one of the defining elements of the human species is as a technically complex tool maker and a tool user. As humans, we are capable of recognizing our present limitations and also of "re-processing" (i.e., modulating the dynamics of our common human system) our world to build technical services and devices that provide relief, caretaking, and life betterment.

Go out in the woods with no clothing and see how long it takes to succumb to exposure ... because your clothes are a technology, shelters are a technology, food preparation with fire involves technology; hunting effectively involves technology. Even permacultural practices involve the communication of knowledge across time.

If you think about any technology, but computers in particular, the only reason we have computers and the only reason we value them is for our own purposes - to extend our ability to understand the world around us and to make better decisions. This is the purpose for their existence. It would be wise, then, to apply them where they might be most effective. And, to recognize in their application that there exists a similar computational network in every biological system.

In essence, thinking itself (i.e., cognition and the mind) is a kind of computation. It's not, of course, like the kind of computation done in a digital computer, for many reasons; rather, the elementary data representations and goal states that cause our behavior are implemented as neural networks and ultimately can be tied to [at least in part] the underlying neurophysiology. It is important to remember, however, that the argument toward neurophysiological computation laid out in Steven Pinker's book, *How the Mind Works* (original publication 1997), has been found to be reductionist [to the neurophysiological level of explanation].

Technology is an organic part of humankind, and we create these tools to extend the boundaries of how we live and express ourselves. The software application Photoshop, for example, allows for the unlimited expression of the self in 2D form; literally, anything

you can imagine in 2D can be created with Photoshop. Biology is basically software that writes its own hardware - bacteria literally re-design their own genome. The spider's web is a technological aspect of the spider itself.

We are a species accelerating in its capacities to be creative and maintain thought responsive environments. Unfortunately, all the technological wonders of the world are just tons of junk unless they enhance the lives of the individuals [in a community]. A chaotic mind in a thought responsive environment creates [exponentially] more chaos as the environment becomes more [technologically] thought responsive. In essence, it could be said that the very reason we create technology is to shrink the lag time between our imaginings and their instantiation. The more powerful our [computing and creating] tools the quicker we can create fulfilling change in the world, or destroy ourselves and our world. Technology, and digital technology in particular, is creating a new class of creative collaboration (e.g., the Internet + 3d physibible printing) that is disruptive to modern competition-based society and changing to old [power and thought] paradigms; wherein, traditional jobs and even the market [as an abstract entity] become seen for what they are, and become, obsolete. Yet, better technology alone will not save us or even make our lives better unless we make social changes as well.

In early 21st century society we have become dependent on our technology, and have come to believe that only technological solutions can solve our problems. Yet, the technology we develop is wholly dependent on our intentions. By relying on tools instead of improving our understanding, we are travelling down a slippery path toward further separation and possible destruction. Wisdom is found in the users of tools, not in the technology itself. The use of a tool cannot be separated from its origin and useful intention, just like humans cannot be separated from our natural environment or from the tools we use.

In a thought responsive environment we need to be careful in our thoughts, we need to be careful of faulty thinking, and also of not thinking at all (i.e., letting authorities do our thinking for us).

Are we actually getting the best of what technology has to offer right now? In some cases, we are: In an article entitled "Golden Eye" by Ross Anderson he speaks of the Hubble space telescope and how it is an instrument of mankind - it was the "eye" of mankind - an exoskeleton of humankind's optic nerve; which, literally allows an individual to mainline snapshots of universal time through their optic nerve. Instruments of science expand what everyone can see and verify. They represent the potential for the expansion of our minds. Scientific instrumentation, when applied toward the expansion of our perception, is eminently useful.

Technology can facilitate participation as well as provide a transparent and persistent recognition of a larger and more encompassing [dynamic] whole. And, a purposeful social orientation combined with participatively developed technology has the potential

to create a state of equality in need fulfillment without an administrative bureaucratic class of governors. Yet, at a fundamental level we must ask ourselves, is the technology going to be used to facilitate lifelong holistic well-being or are we whitewashing a dystopian politico-corporate dictatorship. The statement, "It's what we do and how we use it," fits in nicely here. In other words, for what purpose is the technology being developed? Is it being developed through secret experiments sanctioned in the name of profit and defense, or are the technological systems that we use openly developed by users for their own fulfillment?

INSIGHT: *You can ignore reality, but you cannot ignore the consequences of ignoring reality. When the environment changes, behaviours change - this is reality. A society must study its relationship to nature, the natural true world from which meaning is relationally derived.*

4.4 The rodent experiments of Bruce Alexander and John B. Calhoun

During the 20th century, a series of rodent experiments were carried out to discover more about rodent fulfillment and overcrowding. The two most significant rodent experiment sets were conducted by Bruce Alexander and John B. Calhoun. The factors experimented with were the factors of density dependency (Ramsden, et al., 2008):

1. Opportunities:
 - A. Education.
 - B. Contribution.
 - C. Leisure.
2. Disease.
3. Competition.
4. Predation and aggression.
5. Birth rate.

The experiments never went on long enough to have a genetic bottleneck situation; however, the experiments did produce a population bottleneck with a sharp reduction in the size of a population due to environmental density dependent events.

4.4.1 The rat park utopia experiment(s)

A.k.a., The rat life-radius modification experiments, the urban rat experiments, the rat addiction recovery playground.

Canadian psychologist Bruce Alexander, at the Simon Fraser University in British Columbia, Canada, suspected that the preference of rats to morphine over water in previous experiments might be affected by their housing conditions. To test his hypothesis Alexander et al., (1978) built an enclosure measuring 8.8 square metres for a colony of rats of both sexes. This area was around 200 times the area of standard rodent cages.

'Rat Park' (as it was known) had decorated walls, running wheels, and nesting areas. Inhabitants had access to a plentiful supply of food, perhaps most importantly the rats lived in it "together". It was a giant rat paradise enclosure built to house many rats of both sexes with plenty of opportunity for physical activity and healthy environmental interaction; essentially, to have a normal rat life (as close as could be approximated). Rat Park was what neuroscientists would call an enriched environment, or a non-deprived one. Alternatively, rats that live in a small cage on their own experience a form of sensory deprivation (housing isolation; "openness deprivation").

In the tests, rats reared in isolation cages drank as much as 20 times more morphine than those brought up in Rat Park. Inhabitants of Rat Park could be induced to drink more of the morphine if it was mixed with sugar, but a control experiment suggested that this was because they liked the sugar, rather than because the sugar allowed them to ignore the bitter taste of the morphine long enough to get addicted. When naloxone, which blocks the effects of morphine, was added to the morphine-sugar mix, the rats' consumption didn't drop. In fact, their consumption increased, suggesting they were actively trying to avoid the effects of morphine, but would put up with it in order to get sugar.

After the first phase of Rat Park, Professor Alexander then took this test further. He re-ran the early experiments, where the rats were left alone, and became compulsive users of the drug. He let them use the drug for fifty-seven days, so that they became addicted to the morphine. Then he took them out of isolation, and placed them in Rat Park. He wanted to know, if you fall into that state of addiction, is your brain hijacked, so you can't recover? Do the drugs take you over? The result was that under the conditions of Rat Park the rats previously addicted to morphine were observed to have a fewer twitches of withdrawal (than controls), they soon stopped their heavy use, and eventually returned to having a normal life. The "good" cage saved them from addiction. Essentially, the Rat Park experiments demonstrated that the opposite of addiction is not sobriety, but a healthy connection to others and to one's surrounding environment.

The results are catastrophic for the simplistic idea that one use of a drug inevitably hooks the user by rewiring their brain. When Alexander's rats were given something better to do than sit in a bare cage they turned their noses up at morphine because they preferred playing with their friends and exploring their surroundings to getting opiated. Rats with poor living conditions will make choices that are poor for their health.

The rat park experiments have been similarly replicated in a host of other organisms. If these experiments were to convey just one useful idea it might be the notion that the structures we accept and build around ourselves into that which is our 'environment' have a persistent relationship with our well-being. How do our structures effect our decisions, and our health in turn? What

variable are we neglecting to think about? It is wise for us to consider the possibility that we have unwittingly built cages around our social selves. Are modern cubicle farms not cages? Are employment positions not cages? Are professional institutions not cages? Is property not a cage for those who don't have property? Are schools and grades not cages? Is a belief not a cage?

4.4.2 The rat city population-density experiment(s)

A.k.a., Rat city utopia experiments, rodent density dependency collapse.

Behavioral researcher and ethologist John B. Calhoun experimented with rodent city societies for approximately 30 years (from approximately 1948 to 1975); he called them "universes" and gave each a number. In one of his famous experiments published in the 1962 edition of Scientific American, Calhoun described the cities at the start of each experiment as "rat utopias". Once the rats in "rat city" had all their visible needs met, they bred rapidly. The only restriction Calhoun imposed on the population was area. As the population grew, the lack of space became increasingly problematic. As overpopulation became visible, the "utopias" become "hells". At first, the rodents had all the food, water, and area they could want; their population exploded, "utopia". But, as the population of rodents grew, density dependent factors eventually caused the population size to plummet, and finally collapse irreversibly. (Ramsden, et al., 2008:2)

Over the course of these experiments, the same sequence of events would transpire each time:

1. The mice would meet, mate and breed in large quantities.
2. Eventually a leveling-off would occur.
3. After that, the rodents would develop either hostile and cliquish or passive and anti-social behaviors (among other behaviors).
4. The population would then trail off to extinction.

Calhoun conducted separate experiments with rats and mice, and they both ended up in extinction due to density dependent factors. Essentially, Calhoun was studying the breakdown of social bonds that occurs under extreme overcrowding, a phenomenon he termed a "behavioral sink." "Behavioral sink" is a term invented by Calhoun to describe a collapse in behavior, which can result from overcrowding. "Behavior sink" describes the results of overcrowding in an enclosed environment; including, the breakdown of social functions and the eventual and total collapse of the population. (Ramsden, et al., 2008:2) Density-dependent factors include: disease, competition, predation, and birth rate. When there is too high density, there is higher disease, higher competition, higher predation, and in the latest stages, a collapsing birth rate (among other effects). Calhoun

created a such a significant density dependent situation that the population would turned on itself (behaviorally) and collapsed (in births). With this in mind, in community, cities must be designed with density dependent factors as accountable measures, which is possible because habitats are pre-planned, and the planning is cyclical.

According to Calhoun, the lessons from his rodent universe experiments demonstrated five fundamental aspects about both rodents and humans:

1. Rodents must develop the skills for courtship, child-rearing, territorial defense, and personal role fulfillment on the domestic and communal front. If such skills fail to develop, the individual will neither reproduce nor find a productive role within society.
2. As with rodents, all species will grow older and gradually die out.
3. If the number of qualified individuals exceeds the number of openings in society, chaos and alienation will be the inevitable outcomes.
4. Individuals raised under the alienating and chaotic conditions will lack any relation to the real-world. Physiological satiation will be their only drive in life.
5. The loss of a concern for others within a civilization could lead to its collapse.

Calhoun felt that city planning was key to avoiding behavior sinks. He thought the design of cities was partially responsible for the ways in which inhabitants interacted with each other and that steps should be taken in tandem with urban development to maintain positive relationships between individuals among the population.

4.5 Basic principles that enable contribution

MAXIM: *Those who understand it, and participate with it, progress it.*

Scientific findings have uncovered a variety of basic principles for enabling contribution without expectation of extrinsic reward. These principles [and others] are well known in the field of social psychology. Research into contribution reveals that there are ways in which a community can inspire more “giving” without the expectation of [material] exchange. Society can be designed to facilitate contribution, participation, and sharing over self-oriented production, consumption, and profit. There exist [at least] three discovered principles that enable contribution:

1. People are unlikely to contribute in a non-transparent system where they do not know who precisely they are helping and how their contributions will make a difference.
2. Openness reduces the likelihood of someone

harming their reputation by acting corruptly.

3. Transparency allows for everyone in the community to have an awareness of what everyone else needs. Finding out what people need brings potential “givers” out of the woodwork. Because, they saw ways that they could contribute that they weren’t aware of before. If a community wants individuals to contribute, then it must [be organized to] encourage individuals to ask for help and to inquire. And, the community’s architectural and technological platforms must be designed to facilitate queries for information and assistance. Many people for discoverable reasons withhold help seeking in early 21st century society.
4. People are more likely to contribute when they share a common identity with the beneficiary; and possibly, a common value set. What identity, what values and understandings, does the contributor share in common with the beneficiary that actually makes their well-being part of the contributor’s well-being? What makes helping them, and giving to them, a little bit like helping oneself - a regeneration of the state of contribution?

Research shows that there are many benefits to contribution. Joy and meaning are two of the most commonly mentioned. Further, people who freely participate come to feel more valued and more appreciated, which lead to a host of positive psycho-physiological (hormonal) benefits. However, not all social arrangements are conducive to the “success” of givers. Being someone who gives under certain social organizations, such as giving in a competitive market, might unfortunately mean that you get trampled on (Read: trampled over toward another’s profit). A “giver” who resides in an environment composed of completely selfishly self-serving people is likely to be taken advantage of and exploited -- it re-generates the opportunity and provides incentive for some to take advantage of others [in meeting their own felt needs].

In looking at the principle foundations of participation it might be useful to explore how other species organize their communication and participation systems. Bees, for example, perform their own form of open and objective participatory communication in their communities. It is known as the waggle dance. The waggle dance is a system of signaling communication used by bees to communicate information about useful resources to one another.

MAXIM: *Absolute inequality is harmful to everyone; and it exists absolutely in a market economy.*

4.6 Power as social power

The power to “do work” and to store potential energy in various forms may be observed in the structure

of every existent system. It could be said that power lies in the harnessing and otherwise transforming (i.e., transformational movement) of energy from an environment through structure into new structure with a different potential for “doing work”. In its basic form, ‘power’ denotes the movement of energy and the transformation of information into a different potential [of structure]. Power in this [systematic and structural] sense is a neutral concept that lies at every structural level and in every system in society, including but not limited to: the individual; the social; the economic; as well as the ecological.

At the social level power has the potential of becoming maleficent, forming a socially structured hierarchy of power (as in, “force” and “coercion”). In a social hierarchy there is the concurrent conceptual formation of the idea of “authority” (sometimes given the professional label “manager”, “boss”, “leader”, or “commander”) from which there is [em]powered pressure downward from the upwardly centralized structure. In other words, social hierarchy centralizes power upward and applies it downward as force and coercion. Therein, “force” may become monopolized into the idea of a perpetual State [of downward power] and “coercion” may become monopolized into the perpetuation of a market [of competitive power]. In other words, power becomes “force” at the level of government and “coercion” at the level of a market; although in truth, one cannot exist without the other, and hence, at the socio-economic level, when one is in play then both are in play and there is an active dynamic of the two forms of socially structured power [into what has become known by its umbrella term, “structural violence”]. This form of power exists in contrast to the form that maintains the “neutrality” of the concept of power at the social level, an ‘open systems hierarchy’.

All living systems are open – they receive signals from their environment and respond with some degree of intentional freedom after the processing of information from corrective-negative feedback. An open system hierarchy maintains the neutrality of the concept of power in its application at the social level - a system that does so may be considered “living”, and a system that does not may be considered “dead”. A socially structured hierarchy of power [into force and coercion] does not maintain that neutral understanding for it adds the addition of the idea of competition for rulership over items of ownership, wherein power becomes pejorative to human fulfillment (i.e., force and coercion).

From the perspective of consciousness as a self-initiated, goal-oriented process, power involves the open sharing of information, intentions and goals among one another to facilitate an overall, commonly fulfilling direction (as a commonly meaningful purpose).

Because structure exists at all levels, power exists in some form at all levels. And, in an environment where the idea of “ownership” is also encoded into the structure, then there will exist the ownership of power by competing entities [as a structural arrangement of

that society]. Since effort (as work/power) is required to fulfill most needs, particularly those of a material nature, a society that encodes ownership will simultaneously encode the incentive for the monopolization of power to more effectively and efficiently fulfill one’s own needs [under a state of competition for need fulfillment]. Therein, entities in the market will seek to own coercive power and parties vying for ruler-ship will seek to own forceful power. With such power there is likely to come greater ownership, and a greater competitive advantage, in the satisfaction of one’s own felt needs. Therein, ‘purchasing power’ is the power to fulfill your own felt needs in the market and social influence represents the power to fulfill your own felt needs in politics (or government).

In modern times, there may be no clearer example of social hierarchy than that which takes the form of the modern State. The modern State involves an organized structure of people and technologies that are designed (or “instructionally trained”) with the intention of monopolizing conflict for their own ends within an area they claim as their “jurisdiction”. Also, it is still the case in some countries today that the hierarchical social-market class system is fairly prominent: the caste system in India is one well-known example. In either case, a social power hierarchy is a means to domination [in the exclusive fulfillment of one’s own felt needs at the expense of the needs of others].

As noted, monetary economic power is in part measure by ‘purchasing power’. And, political power is in part measured by one’s hierarchical political position and one’s social network of influence and favor.

The ownership of power by a State or market entity will fundamentally destabilize a society and it will have consequences that ripple throughout the whole of the [human] system.

At the economic level in a structured social hierarchy power becomes an economic resource of control, examples of which include but are in no way limited to: employment; the military and police; subsidization; as well as State issued currencies and fractional reserve banking (which control the flow of the economy itself).

In a social hierarchy, power is the ability to “make” people do what you want through force and/or coercion, which may be highly discernible or indistinctly structural (depending upon perception, experience, and cognitive filtering). According to the classification by economist John Kenneth Galbraith, ‘power’ [at the level of social hierarchy] can be usefully divided into three categories, which he refers to as: condign power (i.e., force); compensatory power (i.e., reward); and conditioned power (i.e., indoctrination).

These three forms of structural social power each represent a sympathetic form of structural violence:

1. **Condign power** – as coercion, aggression, and force. Note: This form of power is expressed through the claim to authority and the

monopolization/obfuscation of violence. It is an aggressive form of power, which may become embedded within the fabric of society itself (i.e., become normalized so that it is no longer seen for what it is).

2. **Conditioned power** – as propaganda, public relations, foreign relations, advertising & marketing, schooling, mass media, the general organization (and culture) of society, and other non-economic incentives. This form of power involves the repetition of beliefs (or programmatic memes) to maintain a state of power through individual perception modification (i.e., belief systems management, -ism's encoding). The expression of this form of power is generally not accompanied by visible aggression. And again, if aggression is present, then it is often normalized.
3. **Compensatory power** – as economic incentives, such as investment, wages, subsidies, and welfare. This form of power leads to the expression of an extrinsically incentivized, socially stratified structure.

Condign power wins submission by the ability to impose an alternative to the preferences of the individual or group that is sufficiently unpleasant or painful so that these preferences are abandoned. There is an overtone of punishment to the term's definition, and this conveys the appropriate impression. There may be the threat of arrest, death, and beating [when condign power is not submitted to]. Galbraith also notes that while condign power is still crucially important in some respects, it has lost a great deal of general recognition in modern "democratic societies" compared to compensatory and conditioned power.

Condign power wins submission by inflicting or threatening appropriately adverse consequences. Compensatory power, in contrast, wins submission by the offer of affirmative reward -- by giving of something of value to the individual so submitting. Monetary reward and State social welfare are examples of this. Compensatory power often leads to an increase in dependence and decrease in self-direction, self-esteem, and intrinsically creative potential.

Conditioned power, in contrast, is exercised by the agenda-based changing of belief. Persuasion, education, or the social commitment to what seems natural, proper, or right causes the individual to submit to the will of another or of others. Therein, the submission appears to reflect the preferred course; the fact of submission itself, is not recognized. Whereas, submission is a common feature of both condign power and compensatory power -- in the one case compelled and in the other for reward. Conditioned power is equivalent to the willing acceptance of the indoctrination of a belief system.

More than likely, if power is present in any of these structural forms, then all of its forms are present to some

spectral degree in that society. Hence, if any of these forms of power are present then [structural] violence is also present.

To mangle a quote from Gary Lloyd, "When a boot (i.e., power) is on your throat, whether it is a coercive boot, a compensatory boot, or a conditioned boot is of no consequence." All three "boots" lead to vast inequalities between human beings. All three "boots" flow from hierarchy and lead to internalized self-hatred, exploitation, suffering, death and genocide. Coercive power is often maintained through: enforcement and through ignorance. In community, intelligence is no longer be a threat to the establishment, because there is no power to be gained in having socio-economic interest over others; no "power establishment". Under this environment it is highly likely that individuals will have a high propensity to become generalists, and not specialists. Specialization may be a limitation. The monetary system promotes specialization as a form of labor distribution for income. The lifestyle of a labor for income system is built in a colossally inefficient manner.

The major problem in separating these forms of power is that they are all necessary for each other. Genocide requires dehumanization of the enemy, and massive resources, to be perpetrated. "Property rights" require indoctrinated obedience and the force of the gun if they are to persist. Indoctrinating people to agree with a social goal, no matter what goal, requires some form of punishment for those who disagree, as well as the means to produce and propagate an effective message.

It is, in part, when powerful entities feel threatened that they use the power that they have amassed, and been given and accepted by the naive, against those whom they perceive as threatening. And scientifically, being in a position of power over others significantly diminishes one's capacity to empathize with others. In simple terms, social power reduces the capacity to empathize. Further, it is important to remember that historically, people in positions of power have very rarely undermined their own power (i.e., given away their own "right" to power).

The wrong people will always ascend in a political[ly powered and socially hierarchical] structure. A community may prevent all ascension to power through the intentional design of its system, which are designed to maintain the empowerment of the individual. There will always be interests in vying for control of mechanisms of social power in a competitive game for survival. It is the fact of the social [power] position itself that is the problem. When there are positions of social power there will always be people who seek the power and will move into those positions. If there is competition for need, then there will exist perpetual incentive to abuse the power.

The nature of government has always been to look at people who oppose what "they" do as being "threats". That's the nature of power -- to regard anybody who's a threat to your power as a [broad national security] threat, a "terrorist".

If you are someone who exercises power and you can know everything about what everybody else is doing, what they say, read, think, plan, and with whom they are interacting, and you can, at the same time, build a wall of secrecy around what it is that you are doing so that no one else can see or know what it is that you are choosing to do with your power, then the power imbalance becomes amazingly acute, which is why all tyrannies instinctively use surveillance as one of their principle weapons, as a weapon for social influence and control. The more you know about the world and other people, the more you can manipulate and control it, and the greater the likelihood of preserving one's own power. The less that world knows about you, the less leverage they have over you. At its core, a power establishment is really about maintaining and increasing the power of one competitive group over another, of competitive advantage in a game.

Hence, an objective of a community is to either eliminate social power hierarchy [by removing structures of exclusion and oppression] while iteratively redesigning the system to distribute power such that it is equally available [by cooperatively organizing self-empowered systems]; which, is essentially the generation of an egalitarian (a.k.a., equalitarian) social structure.

It is untrue to state that egalitarians want everyone to be the same in every conceivable way, among which having the same job and the same possessions may be imagined. This vision of a living systems structure is more akin to robotic conformity, not equality (or equity) as expressed in terms of human fulfillment. Egalitarians do not want everyone to have the same job, they want everyone to have the ability or opportunity to express their desired form of energy into the socio-economic system (i.e., they desire intrinsically motivated, coordinated, and comprehensively informed effort). People holding different jobs or no job at all, or having different possessions, is perfectly egalitarian as long as those "jobs" or "possessions" don't give them power (and economic status) over others or generate structures of competition. Fundamentally, an egalitarian socio-economic environment is an environment without "elites" and "masses" (i.e., social stratification) -- it is not a structurally violent environment where there are elites and commoners. A system where everyone has a commonly equal amount of power to communicate and participate is not a system of "uniformity" in any form of negative expression.

NOTE: *Self-esteem is primarily generated from within, and there are specific environments and contexts of facilitation that more greatly ease its emergence.*

4.7 Justice does not equal force

I.e., Justice is a valuable design state that cannot be enforced.

In community, resources that are occupied by individuals

cannot be forced from them, for no entity exists or may exist to assume such a force. The system is not designed to give rights or privileges to any one individual, or group, that every individual in the community does not have. No entity exists to force anyone or any group of individuals to relinquish their access to a resource that is currently occupied by them. It is generally at this point in the discussion that people existing within the private property-based paradigm "stop believing" in the veracity of an access-based economic model. They simply cannot believe that humans can arrive at decisions and act according to a value set and purpose. If you had no fear, how would you behave? This is why a screening process must exist for the community, and any similar access-based community. Individuals who fear for their preservation, their material sufficiency, are significantly likely to portray socially corrosive behaviors.

Hoarding is a human behavior commonly seen in societies where someone's success, influence, and very survival are predicated upon how much material wealth they have accumulated. Under a private ownership model this type of behavior cannot be considered pathological because it is a behavior necessary for one's very survival (physical and identity), and it is encouraged by established institutions. The behavior is promoted and reinforced by organizations that require its expression for their own continued survival. This is generally known as "consumerism" – consuming not for a need, but for the act of consumption itself in the satisfaction of a pseudo-need. The act of consumptions temporarily satisfies the fear of insufficient material wealth and can become a habit or dopamine addiction. An individual who values efficiency and the equitable access to all resources is someone who would return a "personal access" item when it requires recycling or when it will no longer foreseeable be used – this is someone who does not hoard the item out of fear for their very survival. Such behavioral relationships are unlikely to occur in a socio-economic system that is entirely transparent, otherwise there will exist a reduction in trust, which leads to the potential for fear and the generation of a particular set of behavioral maladies. A transparent system is the only system wherein its users have total trust in the system that services their common needs.

Note that hoarding should not be confused with preparing for emergencies, accidents, and disasters (i.e., buffering and redundancy). *Stockpiling* is a method used to accumulate and maintain a reasonable supply of needed items with a known value for future use should supply be disrupted. Stockpiling insures that needed items will still be available for use when required regardless of incident. These items are usually carefully acquired and maintained. Disaster recovery and [operational] service continuity systems exist as components of the Incident Response operational process. Incidents are prepared for (i.e., planned for).

4.8 Corruption

NOTE: *Violence and aggression are not acceptable in coordinating the movement and transformation of resources into services and goods in this world (if human well-being is a goal).*

In a community-type society, there is no reward for corruption, because the interdisciplinary teams do not get paid and have no status tied to their economic (access) position in society; hence, there is little to no incentive to behave corruptly. The reward of contribution/participation is, in fact, the benefits of the effectiveness and efficiency of fulfillment in the society as a whole. And, individuals therein contribute because it is in their best interests to do so. As such, self-interest becomes integrated with social interest; they become one. In order to help yourself, you must help society explicitly. And the survival of the community is based upon this concept. It is important to consider that corruption can be systemic/structural, and that corrupt behaviors flourishes mostly in "muddy waters" in conflicting objectives, shifting priorities, and secrecy. Corruption comes when people feel disconnected from others and lacking in need fulfillment.

5 Efficiency

A.k.a., Efficient fulfillment, optimization.

Before elucidating upon the term "efficiency", it is important to note that the intention herein is that efficiency be applied toward the fulfillment of the needs of the individual, not toward the exploitation or scientific management of the individual. (Schiro, 1978) The concept of efficiency is problematic only insofar as it is applied (or defined) from the point-of-view of force and authority, disregarding the values in this value system. In time, anything can be designed and accomplished on a more efficient basis. Just as human needs and desires can be fulfilled more efficiently, so too can tyranny and slavery can be carried out more efficiently. Hence, efficiency is a count of desirability for the entity doing the counting. Efficiency must maintain a value relationship with freedom, justice, and human fulfillment for it to be employed in such a manner that it leads to the betterment of the individual and the community as a whole. Efficiency is both a component of, as well as in service to, morality, not the sole other way around (i.e., morality does not serve efficiency).

INSIGHT: *Nature at all levels builds responsive and adaptive structures that conserve material and energy resources (often, through the use of modular components combined with least-energy structural strategies.*

In community, contributors work toward economic efficiency, because the goal is human fulfillment, flourishing and well-being. The goal is not economic efficiency in and of itself. It just so happens that economic efficiency is a necessary value orientation to achieve and otherwise sustain the primary purpose for the Community's existence, global human need fulfillment and ecological restoration. Hence, it can only be said that the Community increases economic efficiency in so far as it relates to (or is qualified by its relationship to) human fulfillment. There is an important distinction here.

NOTE: *The scientific literature indicates that learning has a positive and significant impact on the expression of an individual's technical efficiency, as expected. When people know how to do things more efficiently and they are unhindered by bureaucracies and governance-control structures, they tend carry out changes that will improve their life, their work, and their well-being.*

At a base level, all efficiency comes down to just:

1. Resource utilization.
 - A. Assemblies of resources and resource usages must be optimized.
2. Cycle time (sequential count of a duration, "event").
 - A. Processes must be optimized.

In an economic sense, efficiency could be seen as parsimony -- from pars- "to save", and -monia, a suffix signifying action, state or condition). Hence, efficiency/ parsimony is the action of saving (not using more than absolutely necessary) of resources and time (from occupation and energy input). If parsimony were made into a statement, it might state: reduce the total number of component elements, resources used, interventions made, delays and failures, structural complexity, material complexity, assembly complexity, and behavioral complexity. Wherein, operational efficiency asks, Is the solution (design) and/or operation (team), going as planned?

Systems science, with its holistic approach to understanding and integrating complex interactions within and across systems, inherently fosters efficiency. By examining the interconnectedness of components within a system, systems science enables the identification of leverage points where small, targeted interventions can lead to significant, beneficial efficiency changes. This systemic understanding reduces redundancy, optimizes resource allocation, and enhances the capability to predict and mitigate potential disruptions, thereby streamlining processes and improving outcomes. Consequently, systems science not only operates efficiently by minimizing wasted effort in analysis and intervention but also creates efficiency within the systems it seeks to design and improve, leading to more sustainable and resilient structures.

5.1 The characterization of efficiency

INSIGHT: *The application of efficiency to technology leads to greater freedom for meaningful action.*

Efficiency is considered a concept of measurement (i.e., a 'measurable concept') and its application requires empirical evidence. Note, effectiveness is also a measurable concept. Anywhere quantitative and qualitative data is observed the concept of efficiency may be applied. This includes, but is not limited to, ecological and biological systems, technological systems, economic systems, and social systems. Technological changes, changes in productivity, changes in biology, in physiology, and in society in general are all closely linked with the concept of efficiency.

Efficiency may be used to describe the state, operation or arrangement of physical objects (e.g., an engine) as well as abstract objects (e.g., an organization or thought process). In concern to efficiency as applied to abstract objects, for example, an organization might choose not to recognize, model or reward social status, for status is a form of social diversification and is inefficient in that it neither improves communication nor optimizes effort expenditure, in fact it hinders both. By not encoding, or removing the encoding, of 'status', there is a change in efficiency [of a social operational process].

Efficiency is a characteristic of every system, and may

be defined for a process with any kind of input and output given the increment of time (or change). All time-based processes can be characterized by their efficiency (and their effectiveness in their resulting alignment with a desired goal/outcome). Also, every living information system is becoming more efficient or less efficient in any given moment [as a measure of entropy].

Efficiency is also a component of coordination. Coordination is a state of interaction where the actions of different parts of a system produce efficient and effective movements toward fulfilling the purpose (or objective) of the system. Coordination involves the *integration, arrangement, ordering, and adjusting* of interacting relationships as functions or parts involved in an action or movement. It is an act of organization in which cooperative effort leads to effective and efficient dynamics / relationships.

Efficiency is an excellent measure of the coordination of any action. The higher the efficiency, the more coordinated the action is, and vice versa. Inefficient movement is like driving a car with the parking brake on. You won't go anywhere very fast and you'll damage the vehicle in the process. Similarly, inefficient movement of the human body over times wears down its musculoskeletal system. In robotics' navigation one of an engineers' efficiency objectives is to obtain an 'optimum path', meaning that the robot should plan and execute a reliable path between the source point and the target point without colliding with static and dynamic obstacles found in a probabilistically uncertain and complex environment, and do so in a systematically conserved manner.

No matter how efficiency is characterized, it must begin with data. Data provides the necessary knowledge to quantify/qualify the state of a system as efficient or inefficient, or some degree thereof. Because data may come from different sources, a commonly agreed upon definition for efficiency and platform (or approach) for its application is essential.

And therein, we see the challenge. We as individuals have an attraction to efficiency, but when embedded within a destructive environmental structure our value orientation toward efficiency leads to the "cutting of corners" and the acceptance of "easy answers" without a holistic thinking approach [to thinking systematically through problems]. The easy answers in a destructive system are often counter to what individuals truly need and desire.

In community, any task where efficiency is valued will be automated when labor desires or requires it to be so. If a task is necessary, but no one desires to complete the task, or maybe, the task is very dangerous, then automation is an efficient solution (if it is a possibility).

5.2 The definition of efficiency

MAXIM: *A measure of efficiency in fulfillment is a measure of progress in society.*

A useful definition of efficiency suggests the examination of evidence as 'data' to make fundamental and constructive change moving forward (i.e., progress). Efficiency appears to underlie all progress in general.

Although efficiency can be defined in several ways, each way is essentially similar. Efficiency describes how something is accomplished. As the steady condition of an object, efficiency infers the idea of getting (or receiving) the most out of something (i.e., maximization or optimization). Over time, efficiency implies the idea of receiving more out of something (i.e., a gain in performance or optimization). In a system, efficiency implies that things exist which are preferentially maximized (e.g., product quality), while other things exist that are preferentially minimized (e.g., pollution and energy usage). For an organism, at the very least, a meaningful definition of efficiency involves an alignment with phenomenological, existent reality with at least the objective of optimizing self-preservation, sustainability, resilience, and well-being. At the social level, efficiency is the maximization of the potential well-being of the individual among a community of individuals seeking well-being. The human desire that needs be met in the most efficient manner possible shows consistently throughout history.

Efficiency involves preservation and conservation [of resources and information] to meet needs in the most strategic and iterative (accounting for time/change) way. In an engineered system it maintains the sub-conceptualization of 'parsimonious' - do not use any more resources than are required to fulfill the function.

As a component of this value system, efficiency is defined in three ways: from a *needs* standpoint; from a *value* standpoint; and from a *technical* standpoint. Their definitions are essentially equivalent, although they are applied to different elements of the community's structure.

In concern to needs, efficiency is defined as the optimization of systems and the maximization of the strategic allocation of resources to fulfill the spectrum of human needs, wants and preferences within a finite system while accounting for all known and measurable environmental influences (e.g., regeneration, carrying capacity, pollution). This is true 'economic efficiency' and may be contrasted with the market economy definition of "economic efficiency" (or "cost efficiency").

The market system is incompatible with the mode of optimized efficiency designed into the Community. Optimization is defined herein as the most efficient *arrangement, formation, coordination, and quanta* of inputs, outputs, and processes given what is scientifically known and technologically possible at (or within) a given time. In this context, an 'optimization process' is any process that arrives at solutions to fulfill human needs that are "better" than the solution used before. The term "better" implies improved qualities such as longer lasting, requiring less energy, and less likely to necessitate repair, possibly more localized, and functionally useful.

The concept of efficiency may also be applied

to each of the other value conditions in this value system. In other words, it may be applied to the evolvement of those conceptual models that have been identified as supporting an orientational alignment with the community's highest potential direction. As such, efficiency is defined as the maximization [and optimization] of those conditions that are valued, while minimizing those conditions that conflict, contradict, and directly lead to a greater potential for socially insufficiency in fulfillment (i.e., conflicting values which may be plotted on a value circumplex). Hence, efficiency involves the optimal design, structure, and arrangement of the operational systems [processes] that form the community to maintain as well as to maximize the expression of desirable values.

Essentially, efficiency as it is defined above for both needs and values represents the optimization as well as the progressive and adaptive evolution of the [conceptual] systems by which known human needs are fulfilled. As such, efficiency is applied toward the optimum design of [material] community systems while accounting for the spectrum of valued conditions (i.e., the value system) and known human needs. This represents the application of progress in the direction of our purpose.

The term 'technical efficiency' refers to the performance of processes for transforming a set of inputs into a set of outputs, using resources to their maximum advantage. Hence, technical efficiency is often defined as the state (or condition) where no more of any one input is used than necessary to produce a given output. In other words, the maximum objective output is produced with the minimum quantity of inputs [to create a higher potential state of preservation, and a system with optimized qualities, given what is known]. Technical efficiency improvement occurs when less inputs are used to produce the same output, or more outputs are produced using the same input. When technical efficiency is applied to the production of economic products, goods and services it may be known as 'production efficiency'. And herein, truly efficient production arises from common participation in a common direction of constructive (or productive) fulfillment, which requires systems-level efficiency transparency.

INSIGHT: Generally, more efficient systems capture helpful interactions between components.

Because of the occasional difficulty in understanding technical efficiency as defined above, it will be restated using slightly different terminology: Production/technical efficiency is defined as the optimal relationship between the inputs and outputs of a system, whereby efficiency is increased by a gain in units of output per unit of input. This can occur by holding output constant and decreasing input or by deriving greater production (or functional capacity) from the same level of input. Note that these definitions of technical efficiency do not count any waste that may be generated by a system's

operation. When technical efficiency is applied with a whole-systems engineering approach, then optimization of the entire system (highest-level supra-system) is sought, versus optimization of isolated components for single benefits; hence, *waste must be considered*. 'Waste' can be 'pollution', or it can be an input into another process. Efficiency can come in many forms, including the degree of **modularity** of design and the degree of **customization** (Read: being more efficient by designing/getting things that are tailored to "you").

In a community, technical efficiency also references the known technical principles of nature, it takes advantage of feedback, and it is applied toward optimizing designs that preserve the habitat, reduce waste, and ultimately ensure fulfilled well-being. Nature is a self-organizing system with at least a discoverable technical rule set that may be used to optimize the means by which a community's needs are fulfilled.

From a whole, ecological systems perspective, waste is a product of an inefficient design. There is no concept of "waste" in natural cycles. In other words, waste is either to become a new input for the system in question (i.e., a recycled output) or an input for another system. In nature, individual species and organisms create a lot of "waste", and hence might be considered inefficient. But, integrated ecosystems are highly efficient because outputs of all components are inputs to others, reducing total net "waste" to a near probability of zero (Read: each organism's wastes are another's [eventual] food).

Together, these three forms of efficiency do not have a precise ontological classification; although they could possibly be classified together as 'life-systems efficiency' - a form of efficiency that examines the entire existent life-serving system and acts toward fulfilling the needs and highest potential direction of each human organism by optimizing processes, maximizing desired outputs, and minimizing inputs with all known information available.

Ultimately, nature does not care how "efficient" the human organism or its socio-economic system is - nature is affected by how many resources we extract, how much waste we generate, and what collateral damage we inflict on nature's own regenerative processes.

Note that scientists think that less-than-perfect efficiency is a characteristic of all natural processes due to the appearance of the decaying temporal nature or reality. Therefore, there can be no perfect or utopian (u ["not"] + topia ["place"]) socio-economic system, even if optimization was applied to every system in a community.

5.3 Why is efficiency valued?

MAXIM: *As long as you are going to apply resources you might as well get the most out of them.*

Efficiency is valued because it provides the community more of [and optimizes] those things that have been

identified as valuable, and less of those things that have been identified as corrosive or unhelpful, by increasing the community's organizational alignment with natural processes and a desired direction. Efficiency in movement is crucial for effective performance. Any lack thereof produces extra work required to complete the movement. Herein, efficiency is a principal component of a stable system, for without efficiency unrecoverable waste and persistent entropic randomness will lead to the [exponential] decay and eventual collapse of the system itself. An inefficient system is by definition a system in a relative state of collapse. Possibly, an individual human have an innate desire to conserve energy in one's work. In a socio-technical environment, information systems, software and machines, may be designed and operated to maximize efficiency. At the societal level, one of the many reasons for maximizing efficiency (Read: relationships that operate optimally/well and with little waste) is, increased well-being. One might also say, "We value efficiency so that we have freedom with our (within) time."

The consequences for the application of efficiency are numerous and include the potential for a greater degree of freedom for the individual, a higher likelihood of sustainability, and a more socially just and free system in general (Read: a system that is more freely responsive to our thoughts). For a community, efficiency is a matter of preservation and survival. If efficiency is not kept track of there is a high probability that a community will fail to adapt to changing conditions, lose track of its needs, and potentially accept values and systems that are contradictory to its very well-being. Therein, individuals may cling to the past, and their culture may inhibit the change required for their happiness and their very survival.

Efficiency is a necessary condition for resilience and sustainability; it underpins a reduction in waste and can lead to the preservation and stewardship of resources, of individual well-being, and of mutually fulfilling social relationships in general. Nature does not "frown upon", marginalize, or disregard efficiency, and neither should humankind. Nature is the final and only arbiter; natural processes are either efficient or they are soon, quite unlikely to exist.

Natural environmental constraints (i.e., the natural environment) are the ultimate arbiter, and they place a "natural" (i.e., not socially constructed) outside, environmental restriction (i.e., constraint) on individuals and humanity's behaviors. For example, if an engineer is designing a several story building near a known fault line, and the engineer knows how to build Earthquake resistant buildings, then the environment logically dictates which type of building (resistant vs. non-resistant) will be built; if s/he has that knowledge. Similarly, in a universe where engineers know of ten ways to build a bridge and nine of those ten ways requires a resource that is unavailable, then the building of the bridge is constrained by a bridge design that has all the resources regeneratively available. These are simplistic examples, and decisioning in the

real world is obviously more complex and involves an interplay of environmental, economic, and social factors.

In nature, there are two primary environmental constraints, which must be accounted for in any environmental decision inquiry:

1. **Resource positioning constraints** - resource constraints are identified by answering:
 - A. What is the repository volume of a given resource?
 1. What are a cities resources?
 - B. What is the flow of a given resource.
 1. Where and when are a cities resources?
2. **Carrying capacity constraints** - capacity constraints are identified by answering:
 - A. What is the regeneration rate of a given resource?
 1. Can the regeneration of resources, to continue the system, meet the demand?
 - B. What is the maximum (or, optimum) population size for users of a given resource composed environment?
 1. How many users can a particular design of the environment sustain given a rate of regeneration?
3. **Extinction constraints** - capacity to reproduce species. The mechanisms include, but may not be limited to:
 - A. Loss of genetic diversity.
 - B. Loss of area and resources for continued operation (or, growth) of population size.
 1. Loss of food source; scarcity of food and/or area for population.

In nature, the efficiency of an organism in finding and assimilating sources of nutrition, in excretion and detoxification, in procreating, and in adapting often means the difference between survival and extinction (i.e., it means resilience).

In a community, attention must be given to the inefficiencies of particular methods and practices, such as that of: coercion as a form of behavior modification. When coercive methods are used to modify behavior, for example, then individuals and groups become impelled to act on the basis of an implored [externally programmatic] reaction. Implored reactions and those [reflexes] based on need deficits are unlikely to engage the [spatial] freedom of consciousness in sufficient consideration of an optimal[ly efficient] response. Wherein, consciousness is not given the space necessary to freely consider its decision space and respond in the most efficient and effective manner. Fundamentally, some customs and practices, some conceptual structures, are simply inefficient in their restructuring of an environment toward human fulfillment (just as they might also be structurally ineffective also). Coercion is one of these structurally ineffective and inefficient

concepts, and its methods and practices lead efficiently away from human fulfillment.

Inefficiency could be thought of as the occurrence of damage in a system. For instance, the deliberate withholding of efficiency so that material goods wear out and breakdown sooner (e.g., 'planned obsolescence') is an untenable practice that precipitates the degradation of freedom and justice through the excess consumption of effort, energy, and resources - excess consumption (or "exploitation") has a high probability of damaging any system. Also, inefficiencies have a higher likelihood of rendering the state of [artificial] scarcity and resource depletion. Scarcity antagonizes fulfillment. Scarcity means less potential energy for a desired purpose. It is wise to recognize that scarcity is likely to be artificially engineered into a system when the principal motive for the system's existence is something other than human fulfillment, such as, the profit motive.

Accomplishing production processes with greater efficiency could equate to greater freedom for both the individual and the community by freeing an increasing quanta of undesired human effort for that which is more meaningful and desirable to the individual. Basically, when "you" find a way to do something more efficiently, then "you" have more time and resources leftover for something else.

Ephemerization is the ability to do more with less, and also through good design. It is the equivalent of Moore's law of exponential computational processing as applied to socio-economic fulfillment. Simply, ephemerization refers to new technologies replacing and render obsolete the old technologies, and in so doing, conveying the less usage of resources for more added function. Note that rapid ephemerization makes it difficult to predict the lifespan of a technology. Additionally, for materials that cannot be recycled and must be decomposed, it is useful to have them remain in the environment only ephemerally (i.e., for a relatively short duration of time -- short lived; so that waste does not build up).

Humankind's understandings of the technical nature of reality have expanded to the point that its technological capabilities allow for the increasingly complex and efficient restructuring of matter. Therein, the actualization of the real world referenced concepts (i.e., empirical concepts) of *conservation* and *efficiency* are likely to lead to the usage of fewer and fewer materials to maintain life supporting and enriching processes. For example, the first computer built in the 1960s covered ~1800 square feet of floor space, weighed ~30 tons and consumed ~160 kilowatts of electric power. Today, an inexpensive pocket sized mobile device computes substantially faster, running on a virtual trickle of electricity in comparison. And, similar advances in technology and understanding continue to occur across every domain of service. Effectively, technical efficiency allows for an increasingly higher standard-of-living and quality-of-life with fewer and fewer resources.

Buckminster Fuller observed,

"We are beginning to do more with less, or ephemeralizing our social operation, or at least we are proving that it would be possible were it not for the natural pushback from an established power structure, which benefits off the back of restriction, and a lack of universality of availability."

Technology is all around us, "[it] is all we have," exclaimed Buckminster Fuller. Whereupon he went on to explain that with additions to human knowledge, inventions, and the development of new machines man is capable of doing "more with less" (or "ephemeralization"). Humans are now capable of extending their own functions into the thoughtful modification of material reality to create community-wide useful services, objects and processes. Technological advances allow us ultimately to meet our needs and desires using fewer materials and less energy; thus, imparting greater sustainability and a higher likelihood of preservation to a community.

In business and in finance (in particular) efficiency conveys a slightly different meaning, and a markedly different orientation for a society. In finance, businesses make more money and employ fewer people through increases in their overall technical efficiency. In business, there is an incentive to do the most profitable things with the least capital [investment]. In the market, inefficiency often comes in the form of non-funding of sustainable technologies and integrated service system. Practices in the market often go according to cost, rather than what actually works toward human well-being and is otherwise optimal for everyone. Unfortunately, in early 21st century society, many people don't realize how inefficient things actually are because they have nothing to compare it to. And yet, efficiency is necessary for an economy of scale.

In society, individuals make more of themselves and become more refined through increases in their overall efficiency. In humanity, there is a sense of desiring to do the most fulfilling things with the least expenditure of effort.

In a sense, the very existence of a market is an indication that a society's social psychological sense of itself is one of insufficiency -- a market is a reliance on object (or abstraction - currency) exchange for need satisfaction; it is not the empowering of individuals toward self-sufficiency and the localized fulfillment of need. The market [today] represents an obligation to exchange (or essentially, to die). It is not equivalent to 'efficiency exchange' in nature, which is the process of "trading" energy for higher functioning (and fulfillment).

An obligation to exchange at a social level presents: (1) an opening for conflict in the exchange (e.g., "cheating" and "stealing"); and (2) for usurpation of the exchange process itself by a more powerful player in the market (e.g., transactional taxation). Yet, trying to control others, and conflict in general, is grossly inefficient. It wastes energy and spawns a host of other problems. Therein,

control becomes an instrument for monopolization and not actualization, of self-imposed limitation and not ephemeralization. Envy, fear, and control are closely interrelated. For example, the fear of loneliness can generate a desire to control others or to lust after what they have. Fear is like a cancer that spreads through the mind and body and distorts how one views their life and makes decisions. One might ask oneself, "How is my motivation [for growth and fulfillment] impacted by my desire to control others?" Social control is a distortion that limits the efficient expression of one's fulfilled self. One of the ways a group can control a market is by withhold technical efficiency by buying technologies and sitting on them, by patenting them and forcefully limiting their use, or applying them clandestinely.

Efficiency and laziness are related. Frank Gilbreth, one of the early "efficiency experts", used to ask to be taken to the laziest worker in the factory. His reasoning was that that person would have figured out the quickest, easiest way to do the job. Often, the labelling of others as "lazy" comes from a misunderstanding of human behavior and a projection (or "embedding") of a "puritanical work ethic" onto others.

Laziness quite often means efficiency, and when laziness is combined with a strong drive then there likely exists a desire to find the most efficient solution possible. It might even be said that: laziness + drive = the automation of productivity [for that which is more meaningful]. Unfortunately, that which is more meaningful to dejected and chronically unfulfilled individuals might be nothing at all. Yet, it is efficiency (or "laziness") that asks, "Why am I doing this in the first place?" This question might become someone's first step toward self-inquiry ... as to whether or not the task that one may be procrastinating over is being extrinsically motivated, as well as to one's own general level of energy (or health), both of which impact drive and curiosity behavior. Fundamentally, the "singular" issue of efficiency, laziness, sloth, and procrastination is significantly more [individually, socially, and physiologically] complex than those who enjoy throwing around labels are often willing to admit.

INSIGHT: *Technical efficiency requires a conducive social environment. It is impossible to design structures with as much technical efficiency and integrity as possible when systemic pressures [on numerous levels] inhibit said process.*

5.3.1 Market-type societal efficiency

Economists employ several different definitions of efficiency, depending on the objective of their analysis. Allocative efficiency results when the total surplus in a market is maximized. Total surplus is the difference between the total valuation of the goods purchased and the total variable cost of producing the goods. The invisible hand theorem states that in perfectly competitive markets, the equilibrium outcome is

allocationally efficient. Productive efficiency occurs when producers' unit costs are minimized. Pareto efficiency is the condition that no individual can be made better off without making at least one individual worse off; that is, all possibilities for mutually beneficial trading have been exploited. Dynamic efficiency refers to efficiency analysis that spans multiple time periods.

Economic efficiency - a state in which every resource is made use of to serve each person in the very best way while minimizing inefficiency and waste. Economic Efficiency is determined by the combination of technical efficiency with allocative efficiency.

1. **Static efficiency** - exists at a point in time and focuses on how much output can be produced now from a given stock of resources.
 - A. **Allocative efficiency** - achieved when the value consumers place on a good or service (reflected in the price they are willing to pay) equals the cost of the resources used up in production. Condition required is that price = marginal cost. When this condition is satisfied, total economic welfare is maximised. A market can be said to have Allocative efficiency if the price of a product that the market is supplying is equal to the value consumers place on it, represented by marginal cost. When drawing diagrams for firms, allocative efficiency is satisfied if the equilibrium is at the point where marginal cost is equal to average revenue. This is the case for the long run equilibrium of perfect competition. Allocative efficiency can only be addressed through a suitable health planning framework. What to produce: known as 'Allocative Efficiency' and concerned with the optimal mix of goods and services.
 1. **Pareto defined allocative efficiency** - a situation where no one could be made better off without making someone else at least as worth off.
 - B. **Productive efficiency** - a firm's costs of production and can be applied both to the short and long run. It is achieved when the output is produced at minimum average total cost (AC). Productive efficiency exists when producers minimise the wastage of resources in their production processes.
2. **Technical efficiency** (minimising unit costs of production).
 - A. Efficiency in how something is produced is known as technical efficiency (or production efficiency) and is concerned with the least cost combination of resource inputs for the production of supplied goods or services. This type of efficiency is also concerned with whom

should goods and services be distributed; including, the question of societal justice or equity.

- B. While technical efficiency is desirable, it is only one of the three prerequisites for optimal resource allocation. It's achievement does not guarantee allocative efficiency or the achievement of societal justice objectives.

5.3.2 Other contextualizations of efficiency

INSIGHT: *Consider that doing one thing more efficiently may lead to other useful (or "positive") effects and/or efficiencies elsewhere in a system.*

The concept of efficiency has many applied contextualizations [as mentioned earlier]. If someone were looking for a definition of efficiency to apply to a particular context one may find it among the following bulleted definitions. These definitions of efficiency are essentially equivalent, and encompass the idea that a system is efficient if nothing more can be achieved given the information and resources available.

1. Efficiency describes resource utilization as the fewest number of resources (objects) used to complete a task, the fewest [path] number of resources that could be used to optimally complete the task. Here, resources must be optimized.
2. Efficiency describes cycle time (sequential count of an duration, "event") as the least amount of time taken to complete a task. Here, processes must be optimized.
3. Efficiency describes using something to its maximum advantage while improving processes that accomplish objectives with greater ease. Simply, more desired results, less work.
4. Efficiency describes the extent to which energy, time, effort, cost or resource is optimally applied for an intended task or purpose. Simply, more benefit, less time.
5. Efficiency describes the maximum output of a process or system from a set of inputs. Simply, most benefit, given availability.
6. Efficiency describes the extent to which a system utilizes information in an incoming signal.
7. Efficiency is the optimal coordination of action toward an objective or purpose.
8. An efficient system describes one that quickly adjusts to new information.
9. Efficiency describes the state when there are no known alternatives for optimization or improvement.
10. Efficiency [in part] involves the optimal conservation of energy in a system; it is observed as the absence of waste.

11. Efficiency describes the state where the distribution of desired goods and services are optimally prioritized by how they fulfill their users' needs, wants and preferences (i.e., distributive efficiency). This definition is similar to the market economy definition of "distributive efficiency". (*Distributive efficiency*, 2020)
12. Social efficiency describes the optimally equitable distribution of resources in society. Note that this definition of social efficiency differs slightly from how it is defined in a "market economy". (*Social efficiency*, 2020)
13. Access efficiency describes to the optimal distribution of (or access to) goods and services according to their users desired access quantity, location and schedule. This definition may be contrasted with the economic market efficiency terms, "allocative efficiency" (*Allocative efficiency*, 2020) and "pareto efficiency" (*Pareto efficiency*, 2020).
14. Efficiency describes the state in which individuals' needs, wants and preferences [as goods and services] are fulfilled with the optimal combination of inputs and at the least possible "cost". This definition may be contrasted with the economic market efficiency term, "productive efficiency".
 - A. Productive efficiency (a.k.a., production efficiency) occurs under market conditions when the constraints of current industrial technology cannot increase production of one good without sacrificing production of another good. (Sickles, 2019)
15. A clearer and more efficient mind restructures its mental information system based on new and more accurate information. Similarly, a more efficient socio-economic system comes from restructuring based on new and more accurate information.
16. Optimization requires all systems working in concert, if one is off the entire system doesn't work properly or efficiently.

INSIGHT: *The question is, [how] can we do it at the highest level of performance, the lowest energy and resource expenditure possible, and the safest way possible for the maximum possible benefit [for all].*

5.4 Efficiency and effectiveness

Efficiency is sometimes confused with effectiveness. A simple way of distinguishing between efficiency and effectiveness is the saying, "Efficiency is doing things right while effectiveness is doing the right things." Someone might be doing the right thing for some given purpose, but they might not be doing it as efficiently as possible.

For instance, they might be doing the wrong intensity, the wrong number of intervals, or doing it with bad form. Alternatively, someone could be very efficient at something, but that activity is not appropriately meeting their goal. A need-oriented community necessarily seeks and encodes efficient and effective means of fulfilling common needs. The cross-section of efficiency and effectiveness creates the potential for freedom in the fulfillment of a community. The cross-section is, "Where does doing the right thing mean doing things right?"

To do something right, what must an effective/efficient system do? An effective system (must do) is the one that meets needs and an efficient system it is one that does it sustainably.

1. Effective = 0 to 99% requirements fulfilled?
2. Efficient = 0 to 99% to continue and have desired/ intended persistence into the future?

In concern to human needs, effectiveness is the ability to satisfy stated or implied needs, completely over some cycle. Efficiency is the quality by which the needs were or were not satisfied, including their bio-physical and psycho-social value/use. Here, "negative" efficiency implies they were satisfied with the lowest possible reduction in quality (i.e., are optimized).

Note here that the effectiveness/efficiency with which something is done is often more important than the amount of it done. For example, the effectiveness of getting high quality sleep is relatively more important than the amount of sleep taken. A human that sleeps for a shorter duration of time than another, where both are sufficiently rested at the end, has more efficient/ effective sleep.

Science, for instance is inherently inefficient, because scientists are making mistakes and learning from them. Technological development (Read: innovation) is inefficient because discoverers are trying things that may not (and often don't) work. Science and technological development may be effective at discovery, but their process is often inefficient; yet, the methods may be implemented both efficiently and effectively.

5.4.1 Societal efficiency and cooperation

INSIGHT: *Coordination maximizes efficiency, and cooperation maximizes coordination.*

At the societal level, cooperation optimizes efficiency. In a social system, the optimal configuration (i.e., the low entropy configuration where there is the most order, productivity and value for the organization) is when everyone in the social system cooperates (Read: cares about each other, is helpful to each other, and shares resources). When each one is interested in helping everyone else, that condition, optimizes a social system. The opposite of cooperation is fear; fear is not about other and is all about self: "what can I get, and if I get it, how can I keep it, and if someone else has it, how

can I take it away from them." Fear tends to be very self-centered and lacking in trust. If a system organizes toward cooperation (including, shared fulfillment and compassion for others) then it is going to lower its entropy and optimize entropy reduction, and hence, evolve (versus de-evolving toward fear and self-centeredness). In a fear based society, the individual units of fear start to group up (e.g., define mutual defense packs). Then, other individual units of fear group up separately. This leads to groups in a state of fear taking away the stuff that the smaller groups have in an effort to keep what they have got and take what others have (Note: notice the circular logic of fear). This leads to specific groups getting bigger and bigger. The bigger they get, the more invulnerable they are, which eventually ends up with a number of large powerful hierarchies entities based upon fear. Fundamentally, a fear-based social system is unstable. If someone finds a new invention or great idea, in a fear based social system they will keep it to themselves and not share openly (e.g., they may copyright or patent it). Because, good ideas might be good for them, by working that idea into something more for themselves, be it money or status or power in the organization. This self-centered bias, and incentive system, is sub-optimal for social stability, social efficiency, and social self-direction. In contrast, a cooperative person/organization arrives at a better ideas, understandings, and technology, and spread it openly (i.e., everything open source optimizes efficiency).

Among a society, there can be:

1. Efficiency for private gain at [an]others expense.
2. Efficiency for mutual benefit.
3. Other efficiencies that are irrelevant at a societal level.

Herein, challenges are presentable as opportunities, and serve as catalysts for development (or, expansion), which means getting rid of fear, which colors perception, clouds understanding, and makes decisioning less certain, effectively liming perception.

5.4.2 Transparency enables efficiency and effectiveness

A.k.a., Global cooperation, open source.

In concern to production, anyone in the public should be able to confirm the accuracy and currency of the information. Societal information has to be acceptable to challenge, and the only way to do that is to make it available to the public, for free. With the exception of revealing individuals private identities. Here, actions and events become records transparently upon actualization, and are not given by a group of people who secretly manage and then reveal the information on request. Simply put, instead of the information being managed by a group of people and made available by

request (from the public), the information is transparent from the start.

INSIGHT: *If there are none-disclosure agreements, then there is some lack of transparency.*

The community/public must be able to see the inner workings of all productions. Transparency is highly likely to facilitate the alignment of productions to real-world human need fulfillment by showing those who have demands for human need fulfillment what is actually possible.

In community, individuals and centers of production (a.k.a., habitats) will be working to community standards rather an industrial-State profit-incentivized actions. Note that reputation in the market-State is always an insufficient indicator of actual human need fulfillment, because it can be manufactured; thus, obfuscating the real-world need. Reputations in the market-State can be [falsely] manufactured. This is what marketers and advertisers know very well. Advertising for a better reputation can be bought as a commodity in the market.

5.5 The automation of society

INSIGHT: *What gets done is what you do, or what you have automated to do.*

To humanity, the term 'automation' suggests the "autonomy" of automated technologies. Automated technologies increasingly encompass autonomous possibilities. However, the application of any system highly determines its resulting outcomes. Automated systems can be applied to free humanity from drudgery, but they can also be applied to more efficiently and effectively reduce individual autonomy. Technologies are increasingly capable of performing physical and intellectual tasks traditionally the purview of human beings. As machines increase their capabilities to perform tasks, humans are freed to perform more personally meaningful activities. Fundamentally, automated techniques can be carried out at scales, speeds, efficiencies, and effectiveness in excess of human capability.

There is human sensibility in opting for automation technology as a potential replacement for undesired human labor. Automation can alleviate humanity from labor that reduces human flow and flourishing. Among the many other advantages include increased safety and programmable runtimes. There is no need [in a community-type society] for machine advancement to generate an adversarial relationship between humans and machines. It is not necessary, or even desirable, for human to automate all informational and physical tasks in society. However, where it is possible and decidedly desirable, then specific tasks may be automated. Automating specific tasks in society may facilitate and optimize human access to common heritage resources at planetary scale, through a global network of community-

access habitats.

Among community, natural processes and technological automation are valued in helping the population foster a state of natural abundance; a state wherein there is no fear of insufficiency, and there are sufficient resources and services to strategically maintain the purpose of the society. The application of technology to the automation of labor frees individuals from mundane and arbitrary occupational roles, which have no true relevance for social well-being. The decision system is designed to structure the automation of laborious and banal tasks that are a drain on human potential and replace them with technological automation whenever and wherever possible. Automation provides individuals more time and energy to pursue their purpose, and the technical integration of naturally more efficient processing leads us to a state of greater economic abundance, which becomes dangerous when jobs are a life necessity. Abundance is most useful when developed out of wisdom, for as Heraclitus once stated, "Abundance of knowledge does not teach men to be wise". A society may be creating an abundance with its technology, but what precisely is it creating an abundance of?

Machines exist to more economically and efficiently meet individuals' identifiable needs. Here, question of automation efficiency asks, "How much energy does a task use to repeat the distribution of its service?" An automation strategy exists within the Justice Inquiry process to maximize the strategic access to resources while minimizing banal and repetitive human labor that individuals do not desire to do voluntarily.

It is possible to automate the computational (general artificial intelligence) and mechanizational (robotics) systems of society. It is possible, of course, to do these tasks/jobs manually, but when resources are common heritage and society follows a common community standard, then digital-physical automation (i.e., computational-robotics) optimizes work. Solutions that create states of greater self-directed freedom through greater efficiency (i.e., automation) are more free and fulfilling than those systems that restrict and set up barriers to efficiency.

5.5.1 Technological unemployment

INSIGHT: *Social progress can masquerade as technological advancement. Technology can lead to greater apathy and acquiescence.*

Technological unemployment is a market-State concept that refers to the occurrence of technology displacing wage laborers by substituting their cognitive and fine motor control with computational intelligence and robotic machines.

5.5.2 Artificial intelligence (AI)

A.k.a., Machine learning, synthetic neural networks, artificial neural networks, machine automated economics, rational machine agents,

non-biological self-improving systems.

Artificial intelligence is a non-biological neural network system that can model its own behavior and improve itself -- non-biological self-improving systems. AI will over time, quite rapidly, become better, faster, cheaper, and safer at knower and physical work. With better and safer work done by AI, it may become immoral/unethical to keep humans doing specific jobs. If an AI doctor is better, faster, cheaper, and safer than a human doctor then it feasible to see how it may be considered immoral/unethical not to use the AI in service over a human doctor. And, who would the user/consumer chose to go to? Most users of the service would chose to go to the AI doctor because the outcomes are going to be better (and will cost less). It is imaginable that in such a scenario it could be considered unethical by society to allow humans to continue practicing medicine. Once AI is better, faster, cheaper and safer than humans, it is economically and politically (law) inevitable that AI will replace humans in the labor force and as the State. Especially, if AI is safer and achieves better outcomes, then it may be a moral/ethical imperative to replace humans with AI.

Every artificial intelligence unit is axiomatically composed of:

1. Data (i.e., symbolic language) - is embodied in human meaning and ideas.
2. Algorithms (i.e., programs, software) - is embodied in software programs and mathematics.
3. Compute (i.e., on/off switches, transistors and logic, neural networks) - is embodied in hardware computers powered by electricity and math, particularly linear algebra.

Neural networks are like a web of neurons that make decisions and pass messages to each other. Neurons can improve their decision-making over time as they process more data. Modern neural networks systems are linear algebra, potensor algebra systems. Neural networks, a subset of machine learning algorithms, rely heavily on linear algebra concepts and operations for their functioning. Here's how linear algebra is utilized in neural networks:

1. **Matrix operations:** Neural networks are constructed using layers of interconnected nodes (neurons). The connections between these neurons are represented by weights. Training a neural network involves adjusting these weights to minimize the difference between predicted and actual outputs. This process fundamentally involves matrix operations like matrix multiplication, addition, and subtraction.
2. **Forward and backward propagation:** During training, forward propagation (computing predictions) and backward propagation (updating

weights through optimization algorithms like gradient descent) involve matrix operations across the layers of the neural network. These operations help calculate the outputs, errors, and gradients necessary for adjusting the weights.

3. **Activation functions:** Activation functions, which introduce non-linearities allowing neural networks to learn complex patterns, are applied element-wise to matrices or vectors, affecting the flow of information through the network.
4. **Vectorized computations:** The ability to perform computations efficiently on large datasets is crucial in AI. Linear algebra enables vectorized computations, allowing for parallelization and optimization of computations on GPUs and other hardware accelerators, speeding up neural network training and inference.
5. **Dimensionality manipulation:** Linear algebra aids in reshaping, transposing, and manipulating tensors (multi-dimensional arrays) representing data, allowing neural networks to process and interpret various forms of data efficiently.

Artificial intelligence (AI) could facilitate a more efficient society where community-access is optimized, and could do so in the following ways:

1. AI significantly increases productivity. Production will eventually be given to AI to coordinate, review, and operate machinery. AI in any society will massively increase productive capacity, all other factors being equal; because it is producing a more thought responsive environment for all individuals capable of using its computational networks. AI makes everything more efficient.
2. AI significantly facilitates and improves decision support and coordination support roles.
3. AI significantly facilitates and improves data collection, analysis, and simulation.
4. Machines can perform specific tasks better than humans can; with more precision and more reliability, and more safely. AI can do technical jobs faster and better than humans. AI is better than humans at doing most technical tasks.
5. Safe robots are more reliable at tasks that should have no human bias, and they are more physically durable where physical safety is a factor.
6. AI can streamline economic processes leading to improved human need fulfillment; it can improve the accuracy of technical processes, it can provide support to habitat operations and user personalized services.

It is likely that over time, AI will increasingly penetrate all aspects of the economy, extending the functionality

of humankind even further:

1. Coordination of information.
2. Integration and synthesis and analysis of information.
3. Monitoring of demand.
4. Producing for demand.
5. Monitoring of production machines.
6. Automating of all machines.

NOTE: *Society chooses level of automation according to its capabilities and goals.*

AI is all about tasking, because all materializations, including that of an interface, involves discrete tasks that for larger arrangements of tasks that perform functions for a system. All forms of work in the real-world are done as jobs, which are performed by a 'role' who does a 'function'. A function is a defining part of the purpose of a total system. A task is the unit of action any given function; a job/role is the category of function.

1. Jobs are made up of a number of discrete tasks.
2. Jobs can be decomposed into tasks, and then,
3. Which of those tasks:
 - A. Do humans want to do (want to contribute to).
 - B. Should a large language model (AI) do.
 - C. Should a robotics network do.
 - D. Should a synthetic AI consciousness ("simulant") do.

Artificial intelligence takes three forms:

1. Large language models (a.k.a., machine learning, generative algorithms, general AI). Large language models (LLMs) can generate high-quality text that is useful for many applications, including chatbots, linguistic summary and analysis, language translation, and content creation.
 - A. Note that language is what is used to convince others.
2. Robotics control (specific AI).
 - A. Note that physical control is used to move matter.
3. Body (synthetic AI) - General AI in a robotic body.
 - A. Note that a body is used to provide consciousness a decision-space vehicle in space-time.

The result of the implementation of AI under community conditions is that AI makes everything more efficient, from habitat design to habitat coordination and operations (i.e., manufacturing and logistics to healthcare and education, etc.). One of the most significant advantages of AI is its ability to automate repetitive tasks. Only automated intelligent systems "agents" can sort through global-scale amounts of

data, extract relevant information, and provide pattern recognition results to decisioning in a matter of seconds or minutes rather than hours or days. Artificial intelligence has the potential to significantly improve the efficiency of meeting human needs, from those of life support, to technology, to exploration, and therein, through the life phases of education, contribution, and leisure. Where applied in community, AI will be applied to make the meeting of human needs more efficient. AI can assist, though may or may not be used, in medical care, in education, in research, in coordination of contribution, in technology/habitat production, in architectural controls, in computation and inquiry, etc. AI can be used cooperatively, and viewed as a contributor, as in a community configuration, or, it can be used competitively and/or authoritatively, and trade for power, as in a market-State society. Effectively, when applied by a moral society with capitalism (mixed market-Stated), they will effectively break the system, because of their ability to make previously human-only tasks obsolete. The productivity of human employees who use AI tools is going continue to rise up until the very moment another AI tool or automation tool can just fully replace the human.

Fundamentally, humans can use AI input/inquiry to take common complex decisions. Thus, the advantage of AI is its ability to support ("make") complex decisions more explainable, valuable, and simple for users. It is essential to ensure that AI is used ethically and responsibly to ensure that the benefits of AI are distributed fairly among all in the community. In the market-State, AI will likely oversee all token (money, etc.) transactions. In community, there is no token system to oversee; instead, there are individuals co-existing and contributing in a state of supported harmony. AI allows human contributors to focus on critically relevant tasks. Coordination efficiency is a sign of a prosperous society; it can combine and optimize all searches (inquiries) in an artificial open-to-interface intelligence.

INSIGHT: *The question arises, How ought the AI be open for interface? In community, it ought be open for interface to help meet human needs, while having needs also as another generative intelligence. In the market-State, it ought be open for interface to meet market and/or State requirements.*

6 The seven stabilizing values

A.k.a., The seven secondary value sets, supporting values and objectives, guiding-mission objectives and principles, secondary decision objective agreement sets.

The following values (a.k.a., value states) facilitate the stabilization of the core values focusing community toward optimization of global human need fulfillment and ecological restoration. These secondary values represent the other necessary [prerequisite] conditions for a stable social orientation toward a higher potential of human fulfillment. These values orient a society's organizational design toward the fulfillment of healthy human systems of interrelationship.

The seven orientationally stabilizing value groups (a.k.a., value states) are:

1. Learning and integration [in society].
2. Health [of total ecology] and vitality [of individual].
3. Appreciation [for life] and compassion [for others].
4. Regeneration [of ecology] and abundance [of human need fulfillment].
5. Openness and sharing [among society].
6. Cooperation and collaboration [in production of society].
7. Intrinsic motivators (autonomy, mastery and purpose) [impel/drive individuals in society].

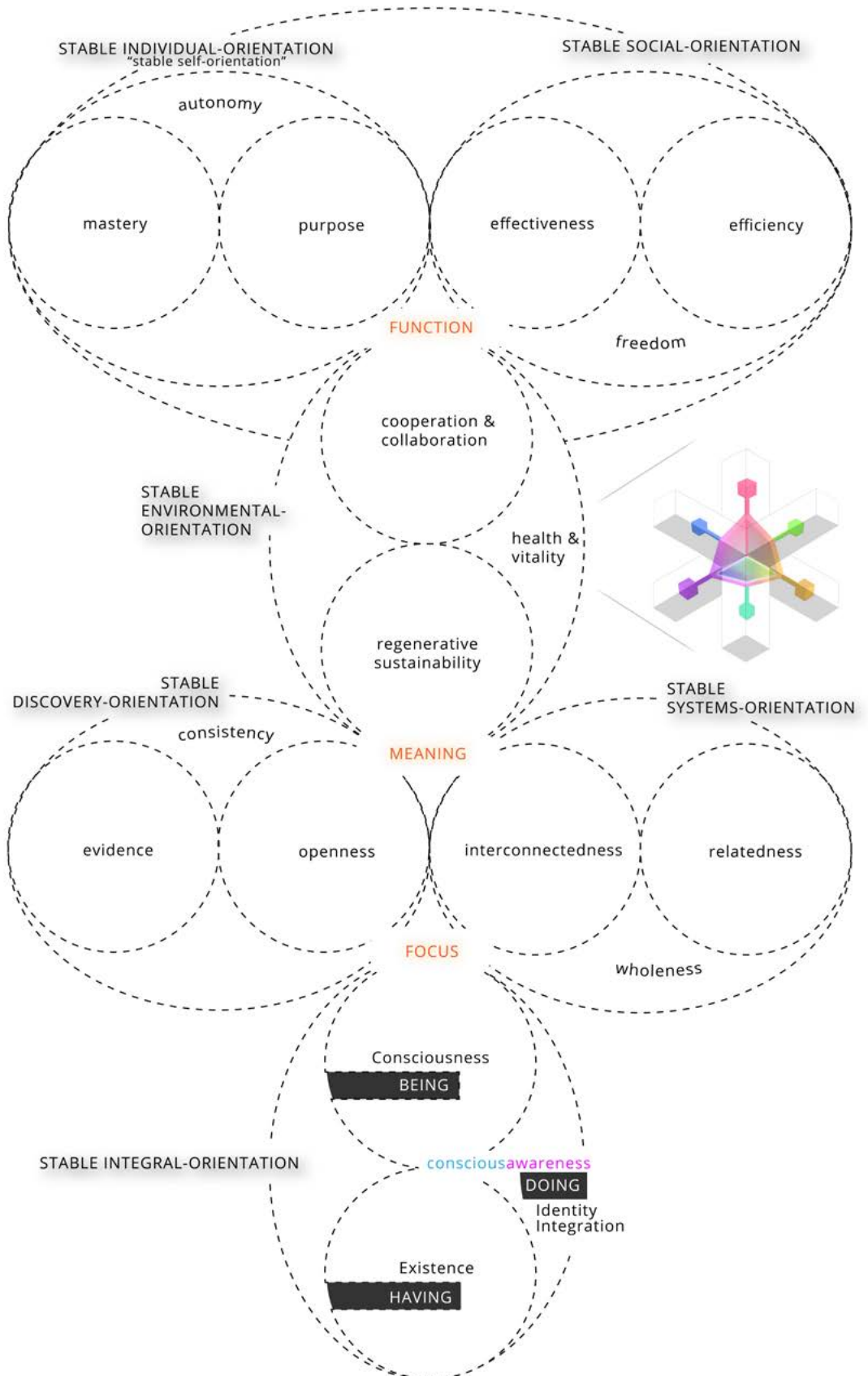


Figure 17. A detailed value system coordinate for a stable fulfillment.

7 Learning and integration

"Know thyself; all else follows."

- Adapted from Socrates; the Vedas have a similar saying: "To know yourself means to know that you are divine, from which all else follows."

To learn and integrate we must discover and explore. Learning is a lifelong process that originates from within the individual; it is a self-initiated and self-directed process. The process of learning involves at least the ideas of having novel experiences and of integrating increasingly accurate information. Learning is required for movement in any direction of progress. All organisms learn and learning is the basic adaptive process of all life. Learning is a natural part of the human experience and healthy functioning humans have an innate desire to seek out new experiences and novel information (i.e., information-seeking and curiosity-exploratory behavior). Intelligent beings devote much time and energy to exploring and obtaining information. Also, it is a scientific finding that the human brain has information-acquisition mechanisms that reward the human organism for learning about its environment – such mechanisms have an obvious evolutionary advantage. (Gottlieb et al., 2013) If information-seeking behavior is advantageous to an organism (and to consciousness in general), then it would follow that the brain has developed mechanisms that encourage such behavior. In community, learning and living are synonymous; together they lead to resilience, adaptation, and a life of fulfilling self-development. Learning is an autonomous and self-directed process-state of expansive adaptation [by consciousness] into ever greater folds of creative exploration. Conversely, knowledge that is acquired under compulsion has little hold in the mind.

7.1 Survival and adaptation

INSIGHT: *In a living system, environmental signals can re-configure the internal [system] environment (e.g., epigenetic expression). When the reconfiguration is efficient, then adaptation is efficient. When it is effective, then adaptation is effective. And, when it is efficient and effective, then adaptation is resilient to environmental change.*

The survival of an organism depends on its instinctive capacity to adapt to changing conditions in a complex environment (i.e., behavioral adaptation or 'adaptability'). An organism's behavior is adaptive or non-adaptive depending on the accuracy of its integration and subsequent evaluation of the environment. The capacity for evaluation depends on the organism's ability to sense and to make meaning of complex environmental stimuli, and then, to learn. Learning is [in part] the result of observation, inquiry, and studied experience based on curiosity and need (i.e., on intrinsic motivation). Intrinsic motivation for adaptive behavior is characteristic of

every (or most) biological organisms.

Human societies are living systems that depend on their environments for the resources they need to survive. But, evolution is a romantically ruthless process: most of the species and human societies that have ever existed are extinct because they either destroyed their environments or could not learn quickly enough and adapt to changing conditions.

Learning and adaptation are critical to survival. In nature, a system that adapts is more likely to survive when conditions change. Hence, a functional learning system is an essential component of a functional adaptation system [at every level]. In a functionally adaptive community both the individual and the community must maintain a functionally emergent learning systems. Herein, the Community details its learning system in the Learning System [design] specification.

The acquisition and integration of new information allows for individuals in a community to align themselves and systems more accurately with the community's intended direction (i.e., a fulfillment-oriented direction) under a dynamically changing environment. The human brain, in part, exists for this purpose at an individual level - it integrates and coordinates need-fulfilling movements [in the real world]. The decision and learning systems of the community operate for this purpose at a social level. And, in a sufficiently advanced technological society, digital computing technology may exist at the community-level for informing the integration and coordination of need-fulfilling movement.

One of the functions of the human brain is to process complex environmental stimuli, and then, make effective decisions for adaptive behavior. Therein, the survival of an individual depends upon his or her ability to identify meaningful patterns of information, and then, adapt to new social and ecological contexts. The processing of complex environmental stimuli can also occur at the level of community through formalized technical (and technological) processes. Functionally adaptive processes, behaviors and technologies depend on the human brain's capacity to understand the changes it is perceiving and to make intelligently informed decisions. Those brain functions which result in effective and efficient thinking (abstracted to systematic, analytic, and critical thought) are that which produce adaptive behavior and functionally useful technologies.

Herein, 'meaningful learning' is a function of the brain's capacity to process complex environmental stimuli and make decisions that lead to creatively adaptive behaviour. The processing of complex environmental information is a function of the highly developed mental processes of thinking - a mental process of the brain (and mind-body consciousness) involving the coordination of "thinking skills", including but not limited to: questioning; organising; analysing; associating; integrating; synthesizing; and evaluating. These mental/ cognitive processes are necessary for the acquisition of knowledge required for intentional and informed decisioning.

Concepts represent a cognitive framework for individuals' interpretation of environmental stimuli derived from events and circumstances. During the integration process the individual compares the existing information with new information and then reacts (or responds) accordingly. A person with "inner freedom" is able to adapt and respond to the environment as it is rather than as s/he thinks it should be (i.e., with accurate environmental alignment). A person with inner freedom does not allow their preconceptions to obfuscate that which would otherwise be the verification and integration of new and more accurate information.

We have to be able to ask the tough questions of ourselves and others, and ask them often. Particularly in the context of learning there is the element of challenge (or controlled episodic stress) to facilitate growth. If we ask no questions we may get told no lies, but we will also pre-eminently hinder our self-development.

7.2 Learning and sharing

INSIGHT: *To adapt is to reconfigure.*

In order for learning to exist, sharing must occur. Traditionally, sharing was a sacred experience and it is tragic when it is hijacked. Verifying and collecting knowledge, and passing it on to future generations, has been a sacred tradition for humankind for millennia, and a necessary one for progress in any society. However, learning is generally sought limit to by power establishments for their own benefit (i.e., growth and learning often leads to the destabilization of existing social power structures). Hence, they sustain (and orchestrate) a differential advantage in access to accurate information and in the fulfillment of needs. The [Prussian and ivy league] schooling system was [in part] designed to maintain this differential.

Some social structures are corrosive to the effective sharing and integration of new information. Therein, establishments become the result of a systemic state of paralysis with an equivalent reduction in sharing behavior. Systemic adaptations are often not welcome by short-sighted "established interests" because such adaptations mean a potential shift in the application of systemic power.

If the social human organism is designed for sharing (as evidence indicates), and the socio-economic environment reduces the desire and likelihood of sharing, then such an aberrant organization will likely be costly to the psychological well-being and self-development of individuals in that society.

7.3 Programmed growth inhibition

INSIGHT: *When we learn (or are taught) superficially, we only recognize reality superficially.*

When personal growth is inhibited an individual is likely to remain attached to their momentary identity, which may

become easily threatened in a larger and continuously evolving system. The inhibition of growth frequently occurs through threats and other forms of violence against both children and adults who are shocked into a "programmable childlike state" wherein they eventually accept the domination program and begin to internalize the voice of authority itself (i.e., internalize the injunction [against the self]). This leads to the creation of someone who will take nearly any command from an authority without question, while underneath secretly having begun to desire to become the authority over others. Such attachment is the recycling of ones conditioning, and it programmatically and systematically hinders adaptation.

The "authoritarian conscience" interferes with a comprehensive understanding of the self and of others. It prevents the formation of meaningful interpersonal relations, and the result is socially inadaptive and potentially corrosive behavior. Such behavior is a direct result of the abnormal conditions for growth, which are prevalent in a cultural environment that focuses on the control of human needs as opposed to the fulfillment of human needs. Growth inhibition in turn affects the ability of a society to develop and evolve healthy individuals and a socio-economic system that supports them.

The programmed inhibition of growth can lead to the destabilization of the personality (of embodied consciousness). Wherein, it is likely to become destructive to itself and to others by degree.

NOTE: *The first act of war is to cut or manipulate the lines of information and communication to the enemy leaving them powerless to respond in the most informed manner.*

7.4 Critical integration

INSIGHT: *Prior to comprehensive integration and effective reasoning, there is the desire to avoid contradiction.*

All learning involves the logical integration of all information into common understanding for informing the processes by which decisions are arrived at. Herein, 'critical thinking' is a form of active and engaged investigation with the purpose of improving the quality of our thought and action, and our lives. If we are going to move forward with reason and actually arrive at designs that facilitate fulfillment, then we are going to have to apply critical thinking. Concepts inherent to critical thinking represent the progenitors of true intellectual freedom - they are useful for accurately integrating information. Through the logical integration of information in a non-contradictory manner individuals becomes capable of discerning greater approximations of truth, while deepening their understanding of reality, and thus, their ability to operate within it, and in the most fulfilled manner. Learning informs the accuracy of an entity's models of reality, and in turn, more accurate models lead to more accurate and fulfilling orientational

decisions [that are more closely aligned with a desired direction].

Individuals must be free to think critically, which entails an environment where they are exposed to and can play with the tools necessary to think and experience freely. Critical thinking leads to intellectual self-reliance. Individuals must be given the tools through which they may become self-reliant, and internally stable. This might involve the facilitation of the adoption of a methodology, or supporting a self-reliant transition into a fully participating individual in the community once called a "rite of passage". Individuals have enormous innate potential to become self-reliant and self-directed when the conditions are amenable to such development.

Critical thinking is the art of non-contradictory identification and logical integration. The principle of non-contradiction is that one thing is not another thing at the same time and in the same respect. Critical thinking is the process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, and communication, and used as a means of arriving at a greater approximation of truth.

Logic is a guide for integrating and thinking "correctly"; without contradiction, thinking visually and systematically. There are no contradictions in nature; things are themselves, they are not [identifiable] otherwise. If they could be identified otherwise they would exist in perpetual contradiction. Could the harmony of nature sustain itself in a random world? Nature exists and there is no contradiction in nature. Nature and truth exist, and both have qualified limitations. Truth is connected into language through logic and verifiable reference. The deprivation of these understandings leads to many issues in society. Things are themselves, inherently. And, we have inherited a world of limitation for growth and experience.

Our words relate to concepts that are held in our minds and encoded into our material lives. Critical thinking involves the continuous process of trying to match up the unrealities of our minds with the to the realities that exist in the world. And, in some cases, we can use language to come to know things for certain. For example, some people might say, "well, we can't be certain the sun will rise tomorrow". Well, in fact, we can be certain that the sun will either rise or not rise tomorrow. We can have 100 percent certainty that it is either one or the other. And the probability that it will "rise" tomorrow is high. It is almost common sense; although we can always skeptically argue one way or another or develop universally abstract ideals that lead us away from that which has occurred and is occurring.

Herein, logical communication provides a means by which to anchor objective reality among individuals. This common point of approach supports individuals in comprehending the nature of their needs and responsibilities in a social context.

Why is it important to recognize contradictions? The

inclusion of a single contradiction in thought allows anything to be proven or justified under that false pretense. Fallacies and contradictions are counterfeits for reality, preventing the inquiring mind from reaching its destination of knowledge because it thinks that it has already arrived. This is the source of "assumption" and the role it plays in self-deception. Feeling that assumptions allow us some sort of freedom is a form of self-deception. Assumption fails to recognize the cause and effect reality of our decisions. Assumption allows the dislocation of these events from our causal activities. And, this opens up the potential for passive irrationality to fester into active irritation, which inhibits true justice and optimized thought. Assumptions that go unmentioned pollute our understanding, clouding our ability to see clearly and create efficiently.

Critical thinking reduces fragmentation in the integration and overall learning process. Further, it facilitates a cognitive environment where less contradictory, and more logical and reasoned connections exist. [Correct] Critical thinking is the most reliable guide to action humans possess. Thinking is a conscious mental process performed to solve a problem, arrive at a decision, or gain a new understanding through inquiry; and, it is the most reasonable and reliable way to test an emotion or intuition (as subconscious pattern recognition, completion, or generalization). Without intellectual integration intuition (Read: instinctive feeling) may drive us into chaos.

Learning and critical thinking involve more than just being able to read. Giving someone the ability to read (i.e., literacy) has nothing to do with their level of intellectual freedom (as the accumulation of understanding free from contradiction and authority). Literacy could even be said to be a form of slavery until the literate individual practices a form of critical thinking. Intellectual freedom necessitates the processing of information through one's own logical filters to remove manipulation. Without critical thinking Leo Tolstoy's reference to the printing press being a mighty engine for the dissemination of ignorance remains.

If "paradoxical thinking" and "authority" are given to children at a young age, then it is possible to gain tremendous power over how their minds will operate, and to direct how they adapt and respond to external stimuli. Of course, when it is normal to believe a particular way the questions stop flowing. It is only when someone starts questioning again that they may realize that there is little of cohesive or constructive value being communicated in today's early 21st century society.

In philosophy, an argument is the most basic and complete unit of reasoning. When a philosophical argument occurs between two people who maintain a nature of open and critical inquiry, then the intention of the relationship becomes one of arriving at a greater understanding of universal truth through cooperative integration and the removal of contradiction. Here, logic can be met with logic, while illogic/irrationality cannot.

8 Health and vitality

NOTE: *Without health, nothing else matters. Health is more than what you eat or how often you exercise. Health is [in part] a reflection of one's whole life and lifestyle. It is more than just the essential steps (or actions) to wellness. It is the energy and conducive environmental structure to live a full life. If you do not take care of your body and the environment, where are you going to live?*

A stable community seeks to maintain and restore a state of health and vitality within the individual, and among a population of socially connected individuals. Herein, maintenance and restoration are two naturally desired states that facilitate a homeodynamic balance that becomes waylaid under aberrant social and economic arrangements. Hence, the value system herein is designed to orient the community toward the optimal homeostatic (or homeodynamic) balance of our organisms, a state-dynamic of adaptive inner [as well as social and environmental] equilibrium - a state of self-re-generated health and vitality - a persistent state of energy to pursue a higher potential. Homeodynamics refers to the processes that maintain stability through dynamic interaction. Biological systems, for example, are dynamic networked systems that are continuously remodeling themselves. The idea of 'dynamic equilibrium' is sometimes more simplistically known as 'load-balancing'. Fundamentally, health is valued, because the better its health, the better it functioning. The completion of all human need, including habitat aesthetics throughout, is necessary for health and vitality.

"Homeostasis", one of the fundamental principles of physiology, and it describes the property of a system that regulates its internal environment so as to maintain a stable, adaptable condition within a set of required parameters for its survival. It is observed as "normal functioning" and manifests in an individual as harmonious and energetic feelings and behaviours. Ideally, health is a state of complete (or adequate) physical and mental independence in activities of daily living (i.e., spatial and cognitive freedom). In many ways, health is equivalent to freedom -- if someone has an illness or injury, then his or her freedom will be limited in contextual ways, including but not limited to: freedom of movement; freedom to maintain material fulfillment; and freedom from suffering. In a sense, freedom is meaningless if "you" have low or no health (i.e., health means/indicates freedom).

Health in general, and 'homeostasis' in particular, is valued because it establishes the basic foundation from which a biological organism pursues its potential(s). The prefix "homeo-", meaning like or similar (or "the same"), is used to indicate that the body's internal environment is maintained within a range of acceptable values rather than a fixed state. "-stasis", as the suffix, means "standing still". Hence, some physiologists argue that the term "homeodynamics" better reflects the small but constant

changes that continuously take place in the internal environment, as opposed to 'homeostasis', which erroneously implies a lack of change (and is considered more of a mechanical concept). Fundamentally, there is no static state in biological systems: a living system is a dynamic[al] system; it is dynamically self-organizing. Every dynamic system at a specific time increment has a specifically identifiable state. Therein, biological systems may maintain the same dynamics, but not the same state. In fact, biological systems are continuously dynamic, and they are not the same in the next unit of time; biological systems respond to signals from an environment; they adapt and survive. Fundamentally, we are all in a homeodynamic space that maintains our ability to survive and thrive, or become diseased and decayed.

Homeostatic processes exist to maintain a state of "health" in a system, and they are essential for the survival of systems [in a dynamic ecological environment]. Herein, health may be defined as the state where all the systems of a whole (e.g., the mind, the body - nervous, muscular, skeletal, circulatory, digestive, lymphatic, hormonal, etc.) are working in an optimal way [for the highest potential expression of embodied consciousness].

The state of "health" is composed of many different interacting and influential sub-states (and factors). Some of these factors are known and measurable, and others are not as yet, well defined, and so not currently measurable. Note that the term 'health' is similarly defined elsewhere in this document.

Health is a multi-dimensional concept that is usually measured in terms of:

1. Absence of physical pain, physical disability, or a condition that is likely to cause disease or death.
2. From a strictly medical perspective, health is the absence of [dis-ease] symptoms.
3. The qualities of an environment (including its epigenetic effects and expressions).
4. Emotional and mental well-being.
5. Social functioning.

Individual health status may be objectively measured by categorically, phenomenologically controlled observation and by instrumentation. Individual health status may also be assessed subjectively by asking someone to report their health perceptions in a domains of interest, such as physical functioning, emotional well-being, pain or discomfort, and overall perception of health. Subjective studies (e.g., epidemiological studies) may show correlation, but they do not prove causation. Correlation does not imply causation. But, each correlation adds to the case of there being more certainty that there is causation (each "coincidence" adds evidence to causation). But, there are tools that can be used to determine probable causation.

Health really is a form of freedom, to go places and

do things, the freedom to explore and participate in a commonly natural environment. And herein, we must ask ourselves, "How do we adapt and respond to changing circumstances in a healthy way?" Herein, 'health' arises from a process of [full] integration. How do you know when a system is not healthy? Possibly, when it is neither flexibly nor adaptively integrated into its environment. When integration is not happening, then there is a move toward chaos and rigidity, toward dis-ease.

The health of an organism can be severely compromised [by degree of insufficient integration and fulfillment] in two primary ways: firstly, when its physiology is endangered, and secondly, when it is unable to change state and adapt (e.g., when it can't mount a defense against an infection by inflaming). Humans have an innate drive to meet their bio-physiological needs, which maintain the organism's effective material survival. When these needs are satisfied humans are freed to focus on higher potentials of growth and adaptation. When they are insufficiently fulfilled, then individuals stop exploring their environment, and they are likely to become addicted and de-pressingly ill.

At the social level, 'health' includes the idea that a system has the functional feedback ability to respond in a rational and informed manner to an event, without [superficial] impulse. Impulsive [emotional] reactions are highly likely to generate conflict in a social environment, and will hinder healthy interrelationships. Reactive instincts cause individuals to housed in bodies with needs and a desire for fulfillment.

Where there exist healthy relationships there exist healthier people. "Interdependence" (i.e., mutual dependence) can produce healthy relationships, particularly when the dynamics are based on a common direction, orientation, and set of verified understandings. All of nature lives in interdependence and community; never in complete dependence or in total isolation, in "independence". Independence negates adaptation, and adaptation is a necessary condition for survival, particularly in social situations. Fundamentally, the isolation [of consciousness] is not useful in a community. Community is not a subsistence system, it is a fulfillment system. In the end, the realization is that we are all in this together and that we owe each other civility and an obligation to help one another, which is of benefit to all, and that is what a society is.

Most people think that activities such as fitness, contribution, and socialization imply health, but the truth is that they do not necessarily occur together. It is ideal to have both health and to experience these other indicators of well-being; however, if these other activities are pursued at the expense of health, then someone may not live long enough to enjoy their physique or their social environment. Early 21st century society is often focused on ~~treating~~ profiting off of disease without examining the causal system relationship themselves.

8.1 Health and inequality

"It is no measure of health (i.e., no sign of wellness) to be well adjusted to a profoundly sick society."

- J. Krishnamurti

In social scientific and epidemiological research the fact that for many health related outcomes there is a socio-economic gradient is not disputed. For simplicity let's just say that at the individual level income predicts mortality risk. The relatively rich live longer and the relatively poor die earlier. There is no longer any controversy that individual-level health disparities are related to differences (inequalities) in exposures to risk factors that are partly indicated by (inter alia, "among other things") individual level income differences. This in itself suggests that equalization of access to that which creates or otherwise facilitates well-being will likely have some effect on health disparities without requiring any commitment to a causal view about the direct effect of macro-level inequality, which will in turn be affected by such an equalization.

In concern to social stratification, there is a relationship to inequality and the rates of illness throughout the entire socio-economic pyramid, not just the people at the bottom. Clear and measurable differences in health exist based upon the economic state of a region.

8.2 Hormesis and stress of choice

NOTE: *Stress is not a "bad thing" in and of itself. In fact, the stress of challenge creates the chemical makeup for us to have new synaptic pathways. Humans need challenges, and if they don't have challenges, it is a problem.*

Hormesis is an adaptive responses of biological systems to moderate environmental or self-imposed challenges through which the system improves its functionality or tolerance to more severe challenges. Survival is a constant struggle between mechanisms of disturbance (damage) and mechanisms of survival (adaptation). Life is a constant motion between damage and repair of damage. We are always exposed to internal and external sources of damage. In our body, sources of damage include oxygen metabolites (e.g., ROS), nutritional metabolites (e.g., glyoxal, carboxylic acids, aldehydes), and chemical infidelity (mistakes, mutations, misfolding). These continuously create disturbance and damage in the system. Evolution has created a whole range of maintenance and repair mechanisms (or systems) for genomic stability, epigenetic stability, protein stability, macromolecular turnover, and free radical counteraction. There exists a dynamic between damage and repair for survival. In the socio-economic lives of our hunting and gathering ancestors it is likely that they experienced something akin to 'episodic stress' (wherein the stress/tension exists for a relatively short duration of time and then life conditions change and the

stress is reduced or null). In most of early 21st century society there is both 'episodic stress' and 'chronic stress', of which chronic stress is known to degrade the human system over time. Whereas 'episodic stress' is more hormetic in nature, 'chronic stress' (and artificial ambient stress) is more pathological.

When discussing health (and health maximization) it is important to also discuss that which is known as 'hormesis'. Hormesis is a transient stressor that stimulates something, causing adaptations that make it stronger and more resilient to stress. Exercise, for example, creates a transient burst of free radicals, which stresses out the body temporarily, and in response to that, the cells initiate a cascade of reaction that essentially make the body stronger. In physiological sciences there is a principal subject matter category known as 'disruptors'. Disruptors impact the regulation and balance of homeostasis. Therein, 'hormesis' is the biologic process that allows for a favorable biologic response on a cellular level to a small or low-dose exposure to a hormetic agent (i.e., to the disruptor or 'hormetin', to a stress). 'Hormesis' is an adaptively beneficial stress response. A good example of hormesis is exercise. In the right amount, it confers longevity and lengthens telomeres. In excess, it causes harm by [among other things] elevating cortisol levels and generating reactive oxygen species (ROS), which depletes stem cells. Essentially, the deliberate challenge of the homeodynamic "machinery" will transiently stimulate compensatory, adaptive, and reparative processes. Effectively, growth is inherent to challenge; but, when challenge becomes overwhelming then breakdown occurs. Another good analogy is the creation of antivenin to combat snakebite poisoning by exposing horses to tiny amounts of snake venom in their blood. The horses build antibodies to the poison. Their blood is later separated from the antivenin and is used to save human lives. Appropriately timed and performed exercise, particularly weight training, is a well-known hormetic stressor.

A little challenge causes a body to adapt and grow stronger, whereas chronic stress (and stress not under one's own control) degrades the system. And herein, it is important to remember that it is during the rest and recovery period that the beneficial effects (i.e., the adaptive re-structuring) takes place. During rest, the body is trying to find and generate an optimal survival strategy such that the next time it encounters the stressor it manages (or "handles") it more efficiently. The human body is a natural, self-regulating system.

Generally, hormetins may be categorized as (Rattan, 2008):

1. Physical hormetins, such as exercise, heat and cold (i.e., thermal hormesis), and radiation.
2. Biological and nutritional hormetins, such as infections, micronutrients, and intermittent fasting.
3. Psychological hormetins, such as mental challenge

and [un]focused attention (or meditation).

Hormesis, as deliberate challenging of the homeodynamic machinery, will transiently stimulate compensatory, adaptive, and reparative processes -- this is physiologic hormesis. A challenged system tries to counteract the challenge and derives a benefit. Mild stress, not chronic or continuous stress, is necessary and fulfilling. Hormetic challenge has beneficial effects. And, there must be a recovery period after the stress. The stress should not stay continuously at the higher level (because in terms of the energy dynamics of the cell, it overwhelms the cell). Just like exercise, the benefits come principally during the rest period. Then, the exposure has to be repeated -- there is a periodicity to the exposure and rest. Mildly and repeatedly disturbances create resilience - there are beneficial affects to some forms of challenge. **THE** body adapts to its circumstances and inputs; external environmental signals can re-configure an internal system.

Repeated mild *stress/tension of choice* can be beneficial. However, constant and chronic stress that is not under our own control is certainly harmful. When stress is of "your" choice and if "you" are able to manage this chosen stress, it may be adaptively beneficial. This is the phenomenon of hormesis, and hormetins are the conditions which cause hormesis. Essentially, stress can be useful, depending on the intensity, duration and frequency of the stress, upon restoration processes, and on the cost of exposure to the stress in terms of energy utilization and other metabolic disturbances.

It is important to note herein that details and context matter in biology, and in community, and that using ambiguous terms like "balance" can create more confusion (and sickness) than the "balance" which is being promoted. For example, if someone has a gluten sensitivity or an immune response to eggs then they should not be consuming these substances in any "balanced" quantity while they are found to be reactive. When dealing with immune intolerances and potent toxins (such as mercury, lead, and dioxin), moderation is a myth and "balance" is a meaningless term. Just as conceptual ambiguity can damage our intellectual faculties [when integrated], physical toxins [when integrated] can damage our biological faculties.

INSIGHT: *A guitar string that is completely untightened and relaxed makes no sound, but when it is loaded with tension it can be tuned to create exactly the right note a performer is looking for.*

9 Appreciation and compassion

INSIGHT: *Without compassion for the self there can be no compassion for others. In the act of helping and appreciating someone you help yourself. Gratitude keeps one resilient to obstacles and mistakes.*

Humans are more than simply social beings, they are so-called, 'pro-social' beings. In other words, they get happiness not just from doing things with others, but also from doing things for others. Therein, appreciation is a recognition of the quality, value, significance, meaning, or magnitude of people, relationships, and events, and it is a conscious and internally chosen experience of gratitude and thankfulness. The internal practice of appreciation leads to the expression of respect for the object of the appreciation (and vice versa). Herein, 'respect' is defined as showing regard and understanding for the worthy essential nature of someone or something. It is hard to empathize or care for someone when you don't understand what their needs are.

When an individual values the experience of appreciation in all moments of their life, then they are less likely to take that which they have for granted and become de-sensitized to the meaning of 'value' itself. Behaviors that may be named "vulgar" and "exploitive" are often expressed when someone is in a relationship and has very little appreciation for the other entity in the relationship. For example, an abundance of food can lead to gluttony if someone loses appreciation (or respect) for the source and nature of their abundance, and that which the abundance exists to fulfill. Also, tools can make us "lazy" when we lack appreciation for their source, their design, and their usefulness in fulfilling needs.

Appreciation is hard to have when someone lacks the understanding that they actually exist in an identifiable relationship with things outside of themselves in a common reality. Compassion starts with an understanding of the truth that there exists a sameness in one's connections with all others -- it is compassionate to hold all of our needs with equal care. In every relationship with another conscious and living being there exists the potential for compassion as the understanding of the essential sameness in the other and a recognition that the other [with whom one is in a relationship] has needs and desires that when fulfilled sufficiently facilitate greater states of well-being and creative potential.

Herein, functional relationships arise out of a state of appreciative compassion - thankful, non-exploitive relationships where common needs and desires are understood and movement toward fulfillment occurs. All functional relationships necessitate sharing and mutual respect, void of expectations and projections, which hinder an allowance for what presently is. When expectation is reduced, then an openly intelligent connection leads to networks of interconnected and

supportive functionally intelligent relationships. What is a community if not a network of intelligent relationships where sharing occurs?

Above all else, relationships magnify the human experience. Some groups of people get together and magnify lousy states; others support the evolving whole and share toward a higher potential state of existence for everyone. In particular, human relationships provide a feedback device for someone's behavior. Relationships are always giving us opportunities to grow and become even more compassionate reflections of ourselves.

All relationships represent an allowance of existence. And therein, the acknowledgement of existence is the rosebud of compassion. It is through unbiased understanding and open inquiry into that which exists that compassion for all things is developed. Herein, compassion is experienced as an unconditional understanding of our own and other peoples choices and situations.

The intention of compassion requires only the development and execution that intention with as much knowledge, understanding, and experience (or wisdom) as one possesses at the time the intention is translated into "compassionate action". Errors in human action are unavoidable, since individuals lack degrees of both omniscience and moral perfection, are an opportunity for further growth and the expansion of one's state of compassion.

Living in harmony (i.e., a harmonious dynamic) and sustainability [within an ecology] may be said to exist when we enjoy the same things that are also good for ourself and others.

Neither compassion nor appreciation involve opinion and judgment. Instead of shaping perception, as occurs with enculturation and judgment, compassion and appreciation are degrees of openness and "acceptance", of "non-attachment" and equanimity, to that which is. Judgment shapes perception and appreciative compassion is perception without pre-conception. Empathy comes through an acceptance of that which is without pre-conditions; and empathy between individuals generates trust in a social system. Essentially, empathy is how we experience the others as ourselves so that we can make connections and we can see the world as part of our common framework. Therein, empathy becomes our experience of the world as a common framework.

Some structures inhibit the experience and expression of empathic connections between individuals. It is unhealthy to foster such structures, and it is healthy to understand why. In the Community, appreciation is spread amongst cooperators (or "constructors"); there are no unappreciated "losers". It is not only what "you" can do, it is also about what "you" can do with others.

9.1 Restoring a structure of fulfillment through compassion

Is it possible for the structure of a socio-economic

system to cause the expression of particular social pathologies and associated diseases? In other words, is it probable that the structure of early 21st century society's socio-economic system is a strongly correlated factor in the social pathologies and diseases of early 21st century society? What if some of our fundamental ideas about society and community and social pathology are just wrong? What if blaming the "criminals" means we're blaming the victims [of at least a structurally violent system]? As a species on a finite planet we can no longer afford the luxury of arrogance. We know that violence during childhood elevates your risk of disease, child abuse towards others, and drug abuse, and there is even reason to suggest that such experiences as a child directly lead to these later in life behaviors.

Once we identify what safe and practical changes we can make to fulfillment in the community, then we may ask ourselves, "How can we move the community (or, the behavior of individuals) in that direction so that it becomes more the default rather than the exception?" Just because you know what to do doesn't mean you are always going to do it. Sometimes we have to put cues around ourselves to make it easier (i.e., more efficient); and believe it or not, that can be studied scientifically. What is clear is that we can't keep blaming those who inflict violence or have violence inflicted upon them. Most people in society want to do the right thing, but they have to know what that is, and it has got to work for everyone's fulfillment.

If social violence is nothing more than a proxy for insufficiently structured fulfillment, then what good does it do to punish those with the proxy. We need each other's empathy and compassion, and above all else we need individuals who are willing to consider that maybe "you" didn't let the system down, maybe the system of which "I was a part" is letting you down. We ought not substitute contempt for compassion.

10 Regeneration and sustainable production

A.k.a., Restoration and sustainability.

What is sustainable is not having unreasonable demands placed on a system or on one another. Natural systems have the ability to self-organize and heal themselves, and humankind does too if it participates with them and acts as they do (i.e., aligns with and applies natural principles toward the design of its fulfillment). We are a part of nature, and our human nature exists within a larger natural, living ecological system. Life and land are not commodities, but they are a whole system of life-giving and living processes. It is essential to understanding that we know scientifically that life-giving processes are stabilized within systems. Hence, sustainable (and stabilizing) design necessitates a movement towards the systematic whole. If a community relates its values to what nature tells anyone and everyone through the verifiable about the world (e.g., biomimicry), then individuals have the potential to align their relationships harmoniously with one another and with the greater whole to create true global abundance in human need fulfillment. At a material-level humans are [at least] biological systems, and a biological system that is neither sustainable nor regenerative will die and eventually become extinct. Something which isn't sustainable comes to an end. If we don't become sustainable then we aren't here any longer, at some point; and while we are here, our lives will be less enriched because of our unsustainable practices.

One of humanity's greatest responsibilities is to be good ancestors. If we are to be genuinely good ancestors, we must carefully nurture and protect the natural wealth of our global home. We must provide for current generations, but not at the cost of future generations. We must share our knowledge so that others can learn to care for themselves and prosper. And, we will express the values of generosity, openness, respect, and dignity.

*"Only after the last tree has been cut down, only after the last river has been poisoned, only after the last fish has been caught, only then will you find that money cannot be eaten."
- Cree Indian proverb*

Sustainability requires thinking on a temporal scale. A sustainable society uses its resources to meet current needs while ensuring that adequate resources are available for future generations by intelligently coordinating and organizing ecology (natural patterns), economy (coordinated fulfillment), and equity (mutual fairness/access through the fulfillment of all human need). 'Ecology' is the pattern of relationships between living things and their environment. Economy is the transformation of resources into needed services and goods. Equity is mutually shared access to services and goods.

Whereas the highest aim of **sustainability** is to satisfy fundamental human needs today without compromising the possibility of future generations to satisfy theirs, the goal of **regenerability** is to develop and maintain [living] systems that restore, renew, and revitalize their own sources of energy and materials. Therein, human sustainability is a pattern of human behavior of which the ideal form is the regenerative fulfillment of human needs.

There is a truism: "How we look to the future defines how we live today." Sustainability implies a time issue. Sustaining is what makes life on earth possible. A sustainable structure (e.g., building) distinguishes itself by how it is built. Humanity must be able to dismantle the building without losing more resources than were needed to build it in the first place.

The core principles of sustainability for humanity on planet earth are:

1. Every renewable resource must be used at or below the rate that it can regenerate itself. This is often called dynamic equilibrium.
 - A. This is a bio-physical condition for human sustainability.
2. Every non renewable resource must be used at or below the rate at which a renewable resource can be developed, or at the rate at which more of that resource can be mined (or otherwise, acquired).
 - A. This is a bio-physical condition for human sustainability.
3. The pollution stream must be emitted at or below the rate it can be absorbed or made harmless by the natural [ecological] systems.
 - A. This is a bio-physical condition for human sustainability.
4. Individual humans must feel that the distribution of resources is fair and equitable.
 - A. This is a social condition for human sustainability.

If there is some goal to remain flexible and to minimize the negative impact of changes, it is to be modular. Modular systems can be replaced. A module can be replaced with another duplicate module or with an updated module. Work in space has used this ability for years. The ISS space station is built entirely of modules.

Sustainability is an active condition of problem solving. Conservation alone does not produce sustainability. Problems with resources are not solved simply through conservation. A society can be destroyed by the cost of sustaining itself. Sustaining broken systems often requires more resources, and not less. To sustain is to maintain a desired state or condition. Therein sustainability emerges from peoples values -- people will work to sustain what they value. Sustainability is the ability to sustain that which is valued. What is sustainable

is what can physically and possibly persist.

Regeneration is the web-of-life itself upon which long-term survival depends. It is life support over time. And so, in the human and ecological context, that which is sustained (as a sustainable communion between humankind at a social scale and nature) does not come through endless employment, economic expansion and self-interested competitive advantage; what is sustained in the broad sense is the proper ongoing integration with this web-of-life, accounting for how the system supports or thwarts its function. Our ability to sustain and interlink with nature is a defining goal for our species. A proper pursuit of sustainability is within its proper ecological context, as the term has been largely co-opted, and hence, trivialized and misunderstood.

In another sense, "to sustain" is to preserve; yet, we as a community can do better than simply sustaining: we can give back, we can caretake, we can facilitate environmental and soil health and maximize human well-being. Together, regenerative solutions (i.e., sustainable regeneration, restoration services) allow for the co-evolution of the human species along with other thriving species on a single planet. Systems that are incapable of sustaining and regenerating life by themselves are by definition a system in decline.

Consider the following requirements for a sustainable society. First, everyone in the community has their basic and social needs met. Second, responsive adaptation is socio-economically acceptable. Third, the natural systems that support life on the planet and in the community are preserved. And fourth, technological systems are not divorced from ecological consideration (ecology > knowledge > technology). At the core of all principles of sustainability is a recognition of the largest order system. That system is a reference for all sustainable design. Essentially, sustainability involves the intelligent organization and usage (or "management") of the Earth's resources, via the application of a commonly effective and objective approach for the benefit of all individuals, species, and living-systems in a common environment. That which becomes our resources (or material economic inputs) are part of a living ecological system. Therein, an unsustainable ideology is one that inherently leads a person or group to unsustainable and protectionist practices, and to the commodification of nature.

Sustainable systems integrate the needs of society with the integrity of nature. A system that is no longer integrating needs is unsustainable; it is a system out of alignment with nature. An unsustainable system will either transform or collapse, and this includes social and economic systems. It is possible to meet the challenges of changing conditions and of looming transformation by developing new and more environmentally relevant worldviews, organizations, processes and technologies. The weakening of an existing system is not only a time of great danger, but a time of great opportunity.

From a strictly economic perspective, the idea of "zero marginal cost" is the most sustainable state because

it allows for the design and production of goods and services with the minimal amount of energy, labor, time and capital, while optimizing [through emergent technical efficiency] the output.

Being sustainable is not enough; to sustain is to just maintain a flat line. It would be optimal if something was given back to regenerate the life process -- to caretake and to improve the health and functioning of the environment, and of ourselves. The aim of caretaking (in this context) is to make the world a better place for human life and all life, to be "good" ecological stewards.

Regenerative design goes beyond sustainability. Instead of trying not to damage an environment it seeks to improve the healthy cycles of an environment through caretaking (a.k.a. care-taking) such that the needs of a living system are restored, renewed, and revitalized with greater efficiency and effectiveness. Nature is the only known standard of regenerative design; a common and highly generalized example of which is the water cycle - first it rains, the water collects into rivers, streams, the ocean, then the water evaporates back into clouds before raining back down. This completes one round of an endless and highly complex closed-loop cycle. Species don't survive in the long run by exploiting their environment for profitable income, commodification, or for any other "wealth extracting" reason; instead, they survive in the long run by care-taking and improving their habitat.

Commodities are bartered, sold, traded, and aggrandized [in the marketplace] where there is little to no thought or respect given to ecological impact and long-term sustainability. And often, commercial entities present a marketed pre-tense of thoughtful ecological action and social respect, but in reality there is not transparent action, there is not ecological respect, and there is not social consideration. Instead, there is what is known as "greenwashing", and businesses have become extremely, scientifically sophisticated in their ability to create a "green" perception of their identity in the minds who come into contact with their propaganda, some of which they may have even digested themselves.

When ecological resources become commodified by profit-engineering entities in the marketplace, then truthful interrelationships between the individual and their ecological life-ground become socio-economically severed (or at least sufficiently distorted to prevent likely recognition). Often, the market pursues profit irrespective of the damage it does to ecological and life-ground systems - the market encodes otherwise. When economic services are provided by profit making entities (vs. a socially participative community), then the products of their engineering, their economic goods and services, will align with their ecologically disconnected orientation. Fundamentally, businesses are profit engineering organizations; they turn naturally common resources into commodities and then into exchangeable capital. Is "your" economic system engineering systems for profit or for systematic

solutions to human needs. And, human needs require regenerative fulfillment by natural services if they are to facilitate the expression of a higher potential experience here in our world, which is something business cannot provide.

The ultimate objective of maintaining regenerability as an organizing condition is to foster a well-functioning alignment between individuals and the dynamic capacity of the environment's life-supporting ecosystems. This alignment represents a homeodynamic balance (or 'health') in the interaction of a population with its environment. It is this specific balance which is also the focus of a meaningful definition of 'sustainability' - thinking today as if tomorrow matters. There is a term in the Scandinavian dialect that carries the idea that it is preferential (or moral) to behave in a manner wherein one contributes enough and takes away enough for the community to continue; in brief, the word translates to "the right amount is best" -- the word is 'Lagom'.

INSIGHT: *Nature develops regenerative systems, it does not develop "sustainable" systems. When humanity builds, it would be wise to build in line with nature so that humanity builds regenerative systems, like nature. This idea of engineering system in line with nature is known by many names including 'biomimicry' and 'synergistics'. It is easy to be wasteful in times of perceived abundance without an appreciation for the source of abundance. In nature, when left alone, order arises. In truth, 'sustainability' is the only true form of "social security".*

10.1 Permacultural abundance

INSIGHT: *The idea of permaculture maintains the understanding that ecosystems, and in particular, their design, have different potentials [for producing health and abundance].*

The first thing that comes to mind in an environmental assessment on the regeneration of a local landscape is the quality of the soil. **Permaculture** is a vision of regenerative abundance where communities provide for the materials they need to survive and thrive using sophisticated ecological understandings blended with [engineered] design to create productive holistic animal-plant landscapes. Permaculture is a means of attaining essential human needs through methods that work with nature rather than against it (and it has been practiced for thousands of years across the globe). The idea of permaculture is to design a natural service environment to meet human needs while retaining, restoring, and improving the health of the ecosystem through ecological principles and relationships. Like every other element of this social system design, the underlying philosophy of permaculture is that we are a part of the natural environment and not separate from it, and that we must work with nature and its processes, rather than against it.

There is a fundamental relationship between

individual freedom, the fulfillment of human needs, and the health of the ecosystem (or the 'lifeground'). Joel Salatin aptly states, "A community that can feed itself is free. A community that cannot feed itself is not." A community that isn't able to nourish itself lives in dependency of whomever is providing for it, and therefore, it is not only not free, but not sustainable. Conversely, a community that is able to provide for itself through naturally regenerative services does not exclude itself from other (or external) sources of nourishment, and yet it is free, sustainable, and independent. Through this type of interrelationship there exists the potential for abundance.

The three very basic permaculture principles are:

1. **Let nature do it***, and optimize within nature.
2. **Integrate** compatible functions.
3. **Plan** spaces and zones, and maintain awareness of the emerging context.
4. **Soil test regularly**, because that is the best indicator of restoration of the ecology.

** The idea of "waste" as something which is to be thrown away and has no use in the cycle of life does not exist in the natural world. Hence, the permaculture principle, "produce no waste."*

Also, permaculture maintains the notion of leaving an area better than it was found, of 'caretaking' the Earth. And, some social organizations and conceptual modes-of-thought cannot integrate the very idea of permaculture for they do not orient their society, or even the individual, in this intentional direction.

Abundance (as an orientation) enables the intentional fulfillment of needs in living ecological systems. True advances at both an economic and social levels of a society promote the state of appreciative-abundance, which is represented by the condition that everyone in a community feels that they "have enough", and are enabled to live a self-directed and meaning-filled life. Abundance breeds a sharing-mindset through the satisfaction of primal needs and an environmental allowance for (or facilitation of) the individual opening to the realization that they are part of a greater whole. Essentially, abundance is an issue of access[ibility]. And, in an information system, it is an abundance of access to information about the system (and transparency of the system) that promotes sustainable resource perception, access, and usage.

The impulse toward abundance as a state of *fertility*, *prosperity*, and *plentifulness* is a perfectly natural and intelligent desire, for it provides opportunities to expand into life's higher potentials. Humans, like many other mammals, naturally collect and store valued items, conserving against the future. If the question "what shall we eat, drink, and wear?" compel any state of community to react immediately, then it has no time nor inspiration for advance. Yet, when a community designs and applies

systems that maintain the condition of abundance [and reserve/redundancy] through sustainable and regenerative designs, then the necessity for reaction diminishes and individuals have the time, energy, and space to contemplate and to progress.

Most environmental problems are fundamentally moral problems. A society with environmental "issues" is a society with moral issues; it is a society out of orientational alignment with itself and its ecology. We have the ability and intellect to design a fulfilling environment and lead enriching lives. Anything less is a measure of illusions grip on us. Then the question becomes, how much illusion can the world suffer before nature snaps in half?

INSIGHT: *Abundance is only useful when developed out of wisdom, for as Heraclitus once stated, "Abundance of knowledge does not teach men to be wise".*

10.1.1 Biological diversity

The most biologically diverse ecosystems are also the most stable. If a blight were to attack and decimate a single species of tree in a diverse ecosystem, it removes a minuscule fraction of the overall biomass, food and nesting source of the total. However, as we move toward the poles on this planet, we tend to have large covers of few species, and when we lose a single species we have a disruption of the whole ecosystem.

MAXIM: *A community isn't sovereign until it regenerates its own seed.*

10.2 Technological automation

*"Technology is a resource liberating force (or mechanism); it can make the once scarce, now abundant." [How might technology facilitate abundance?]
- Peter Diamandis*

Automation can provide a service to the users as well as to the environment. Mechanization may "produce" a portion of our food while also caretaking the ecological environment. And, this may be done in place of some portion of the most banal, repetitive and undesirable technical human labor. Humanity can achieve appropriate abundance by using machines to do a part of the work. Therein, automation allows greater service with greater accuracy and optimal resource usage.

The purpose of technology, as a labor saving device, is to free labor (as undesired repetitive effort) for the meaningful. Or, said another way, technology exists to free labor from repetitive effort for meaningful fulfillment. Essentially, through automation humans labor less and have the opportunity to participate more. As a community, we seek a human-centered approach toward our sustainability - increasing sustainability together with abundance in the fulfillment of our needs. We value *natural processes* and *automated systems* in

effectively and *efficiently* maintaining states of material abundance. Through these systems and processes the Community reduces the fear of insufficiency, while providing for the needs of individuals. In particular, the application of automation to undesired and banal labor frees the individual from mundane and arbitrary occupational roles, which are often intrinsically meaningless to the individual (though may have acquired extrinsic meaning to them over time).

Some essential questions we must ask ourselves when discussing technological abundance include:

1. How do we frame these extraordinary developments in technology in such a way that they enhance and engage the flourishing of the human race? We create tools to enable us, yet, what are we enabling ourselves to do even more of?
2. Do we want a future where technology frees us from “work” (in its pejorative) or do we want a future where we are in fear of losing our “work”?
3. Are we designing tools to be used in the interest of the human community? Is that our reference-framework? What do we understand tools to be used for?
4. Why don't we use robots and automation technologies now to do the most unpleasant tasks that society requires? What tasks does a community actually require, and what tasks are required to keep an aberrant and unfulfilling system in operation?
5. Does “work” have to be a pejorative?

We automate so that we have more time to develop our higher potentials as human beings. We automate because we value efficiency and we recognize that there is meaning in our lives. We design technologies to make our lives better off. We can do more fulfilling thinking and things when we have the time and survival-certainty to do so. We desire less doing and more thinking [about optimized cooperation] -- a more automated autonomous (AA) world. Essentially, automation is the setup of more efficient pathways [in the fulfillment of our purpose].

The same technologies that displace labor in modern societies could be applied to free individuals from a state of war-like competition and meager survival [over currencies, resources, and ultimately, life]. Automation can be applied to reduce repetitive work load while increasing the available time for leisure, learning, play, and growth. Therein, lives become less like drudgery and more “liveable”. Repetitive and mundane jobs are also the easiest to automate. The technology available at this very moment could be applied to replace nearly all of the banal and repetitive economic activity humans do at the present.

In early 21st century society people get used to

technology in dismissive ways, and that is what makes the incredulity of the future outlast the amazing leaps and bounds that would have proven that incredulity wrong, over and over again. Those who do not understand the fundamentals of the technologies they use tend to ignore the consequences, implications, and benefits of “their” technologies; they don't recognize the fact that more and more “impossible” things have been made possible through knowledge acquisition and technological application. They don't realize technology as representing a movement toward an increasingly thought responsive environment.

Herein, automation is seen as favourable to humans; it is not seen with fear because of its potential to replace commercial labor “jobs”. Rational humans have a desire to replace banal and unfulfilling work with automation, for they recognize the value of efficiency in the fulfillment of their needs and its relationship to their freedom.

Also, technical efficiency in the form of automation enables a degree of safety in what might otherwise be a risky fulfillment processes. The use of robots in the process of mining Earth minerals might be one example of said automation, or safety airbags in automobiles. It would be wise to apply technology to the banal and repetitive technical efforts that compose an economic system; and hence, prevent unnecessary “human error” (i.e., “tragedy”) from ever occurring in the first place. A useful economy would apply technological innovations, particularly automation, to technological service systems for the benefit of everyone. Therein, “jobs” that people do not want to do, or that involve physical risk, can simply be automated.

If individuals desire to “self-complete” economic tasks, then technology will only be applied to those tasks as a redundancy measure. In community, participation in an economic activity (or “job”) involves intentional, participating volunteers; individuals who find fulfillment in the effort applied toward the activity and/or its result. The application of participative automation is essentially the freedom of choosing work that would be quite unsatisfying to the person if they were forced to complete it. Effectively, technological automation allows for a reduction in the necessity of human labor.

There is “work” that is fulfilling and accomplishes the goals of individual conscious beings, and then there is “work for the sake of work” [as a form of self-sacrifice and the re-cycling of competition]. ‘Work’ takes on a whole new meaning when someone is doing something that is primarily intrinsically motivated wherein the reward comes from the enjoyment of the experience itself and the potential for self-growth. In community, we make our work our play and our play our work. The notion of “working for a living” is inhumane considering all the technology that has been given to us by prior human generations. Technology fundamentally changes the labor market (i.e., technological unemployment is a reality).

Community seeks to automate laborious and banal tasks [where such solutions are possible and desired]

that are a drain on human potential. What use is technology if it does not make us, as individuals, more free? The human brain automates mental processes to free someone's limited conscious attention capacity for the meaningful. Why should we not do the same with our material service systems? The intelligent application of technical efficiency in the form of automation has the potential to orient society toward even greater social stability. From this value-view, it is negligent for a society to waste individuals' tremendous creative potential on repetitive, monotonous tasks that drain their life force and could be automated. Mechanization (or technical automation + human effort) is more productive, efficient, and sustainable than human labor by itself. And, full automation is even more productive. Machines do not need vacations, breaks, insurance, pensions, and they can work 24 hours a day, every day, to provide for the needs of the Community. In community, automation and mechanization are means of abundance; whereas in the market they are means of saving money and increasing profits. The relationship and result simply depends on the value orientation of a society. Some societies automate for profit, and others for fulfillment.

The intelligent implementation of automation technologies requires the designing users to ask themselves with each design step, "Am I doing this in a way that is going to free me from having to do it again in the future?" And that means building processes and developing systems and workflows so that after "I" am done doing it the first time it is "automated", or simple to repeat in the future [for myself and for others]. Hence the clarification: working "on" the system rather than "in" the system.

INSIGHT: *If human labor is necessary and it is not performed, then the system(s) for which human labor is needed will degrade/destroy. If a wage is necessary and there are no jobs from which a sufficient wage can be acquired, then the system(s) for which a wage is needed will degrade/destroy.*

10.3 Technology and access to human-need fulfillment free of cost

Never forget that technology is embedded within society. The question is, do "you" have a society that facilitates and allows individuals to do more with less people (to automate tasks), or do you have a society where people are dependent on jobs and buy access to [human need] fulfillment at a price. Fundamentally, there will exist a different societal result (i.e., a different society) when productivity gains are shared. Life is not only about what is technically possible, it is also about social relationships, which strictly influence what is technically possible.

In the market, business does not want to create an abundance of access. In the market, abundance means lower profit. If business were to create an abundance of access to any product, the typical result is a "flood of

the market" with product, and a consequential lowering of the price of the product. Farmers do not want to create an abundance of food or they would be out of business (or make less profit than they already do). Energy companies do not want to create an abundance of energy or they would be out of business (or make less profit than they already do). Technology companies do not want to create durable and modular products or they would have less business. Medical companies do not want a healthy population or they would have less business. It is certainly in the interests of profit-motive power establishments that abundance be avoided at all costs.

Without a value system aligned to a higher potential machines may provide abundance, but will ultimately leave everyone in want (or "craving"). More than machinery, we need humanity. More than cleverness, we need kindness and gentleness. Without these qualities life will be violent and we will repeat mistakes without integration. The very nature of inventions like the Internet and the telephone cries out for the very "goodness" in humankind, cries out for the unity of everyone. We have the knowledge to create machines as well as universal abundance and a fulfilling organization.

We have to be careful of what we innovate and to that which we apply our cleverness least we conceive and innovate things we cannot spiritually, morally, ethically or physically metabolize. No one is a cog in someone else's machine. No one is a "human resource"; in reality, you are never obsolete. Humans are not capital to be managed, and natural services are not resources to be capitalized upon and commodified, if human fulfillment is the direction desired for society. When sorting people and other life into resources, some societies pay no attention to the thing they are sorting them from.

A system of political governance combined with monetary market economics will characteristically exist to manage human capital, along with commodifying everything available, generating disastrous incentives for bad behavior in the process. Such a system will not generate states of fulfillment, and within such systems technology is likely to increasingly be used by commercial entities to thwart human fulfillment for the very continuation of those who benefit off "the back of the system". And therein, 'human resource management' is always accompanied by the necessity for 'perception management' [due to the conditions imposed on the "self" by the "manager"] -- In other words, human management involves perception management, which is basically expressed as propaganda, public/personal relations (PR), and advertising & marketing.

Marketing and advertising exist primarily to influence for the purpose of profit. What is the use of "marketing" if not the creation of demand and need for something an entity in the market is going to sell. In part, marketing is designed (or engineered) to make people adopt conducive attitudes, associations, and feelings that facilitate (i.e., make easier) the purchase of a product (or experience) in the market. Many industries, the beauty

industry in particular, actually seek to make people feel unhappy or inadequate so that they will buy the [beauty] products. In the market, demand [in part] refers to the consumers' perspective. Essentially, advertising is supposed to drive demand (sales, market share) for the advertiser who has a product for sale. Advertising is inducement to demand; producers have produced some commodity to sell for profit in a market, and now, they need to propagandise (a.k.a., advertise market) in order to get people to buy, and better yet, demand, the product. A business must create or otherwise "drive" demand and consumer perception (of themselves and of society), because it is the societal population that is buying their product. In the market, a business might have a great product for real socio-technical efficiency or safety, but if there is no demand, the business dies (and so too can the productive idea). Therein, fear, uncertainty, and doubt are the sales tools of the "elite" (or "leaders") in the market.

"Torches of Freedom" was a phrase used to encourage women's smoking by exploiting women's aspirations for a better life during the early twentieth century first-wave feminism in the United States. Cigarettes were described as symbols of emancipation and equality with men. The "Torches of Freedom" slogan is an iconic and larger scale example of an industry that manufactured demand. The orchestrated "event" was a marketing campaign designed to re-frame people's reality such that a group of people (women) would purchase a product (cigarettes) they previously weren't purchasing. Consent can be manufactured and associations can be engineered. Who creates the pictures and concepts in our head, were they organically inquired, discovered, and integrated, or have they come through slogans and drip fed by State and industrial education (and media) systems. If you know someone is going to respond to a stimulus, then you can direct them, basically. And in particular, if there is a "culture industry" or there are "culture leaders" in your society then you may want re-evaluate in a more discerned manner the socially accepted (or acceptable) contents of your mind. Advertising & marketing is social engineering in its pejorative, and it is part of the "culture [creation] industry". It can, all too often, become a preoccupation with things that mean nothing in terms of human fulfillment and sustainability, and which only seek to cloud and dull the mind [of the engineered subject] leading consciousness further away from truth, discernment and intelligence.

Advertising & marketing is a form of social engineering. In its pejorative, social engineering is the sophisticated manipulation of the natural human ability to trust for profit or competitive advantage. For instance, marketing by the oil and gas industry in recent years has created the false impression in the eyes of the public that said industry is in fact in the sustainability industry. Fundamentally, people can be socially engineered into believing things and doing things (such as buying things) they would otherwise not believe or do/buy. Market interest is significantly subjective. Market desires can be

contrived. And, market demand can be manipulated.

In *The Nag Facotr*, Lucy Hughes states:

"You can manipulate consumers into wanting, and therefore buying, your products. It's a game."

"Torches of freedom" was a public relations scheme. Other terms for public relations (or "PR") include: disinformation, perception management, social engineering, propaganda, and advertising & marketing. It must also be admitted that the term 'public relations' is sort of "Orwellian" in its phrasing: it sounds quite nice, it has the word "relations" in it, which causes us to think of relations (possibly 'family relations') and it has the word "public" in it, indicating lots of people and a sense of togetherness. However, what is really being spoken of when the term 'public relations' is used is 'propaganda', which is the name of the book given to Edward Bernays' instructional work introducing 'public relations' to the world. In black and white Bernays says that controlling the public is doable and desirable, which he describes in the book "Propaganda". Of note, Ivy Lee and Edward Bernays also invented the concept of the 'press release' - of which all mainstream media news services use to shape the content of their "news" (Read: amusement). Philosophically speaking, amusements involve the outsourcing of one's own thinking to others. The nominal definition of amusement is: a [negate] + muse [to think & meditate] + ment [suffix]; "the absence of thought".

In *Propaganda*, Edward L. Bernays states:

"The conscious and intelligent manipulation of the organized habits and opinions of the masses is an important element in democratic society. Those who manipulate this unseen mechanism of society constitute an invisible government which is the true ruling power of our country... We are governed, our minds are molded, our tastes formed, our ideas suggested, largely by men we have never heard of. This is a logical result of the way in which our democratic society is organized. Vast numbers of human beings must cooperate in this manner if they are to live together as a smoothly functioning society. ... In almost every act of our daily lives, whether in the sphere of politics or business, in our social conduct or our ethical thinking, we are dominated by the relatively small number of persons ... who understand the mental processes and social patterns of the masses. It is they who pull the wires which control the public mind."

Propaganda was used to turn a needs-based global culture to a wants-based culture. People were convinced to shift their focus from that which they needed to live, to "consumers" who are obsessed with fulfilling their every want and naive to their real needs. And, this was done by design, primarily through the work of Edward Bernays. He created the field of "public relations",

which was previously known as “propaganda”. The term “propaganda” took on a highly negative connotation after the Nazis used it in its extreme to manipulate the opinions of the masses in an overt way. It effectively got cleaned up and renamed by Bernays.

Bernays started off working with different businesses and then began working with governments as well. “The Century of Self” is a three part BBC documentary on this very subject. The documentary reveals that so much of what we take to be normal everyday activities and purchases (normal and natural[ly developed and evolved]) were actually created by design. One might come to realize by watching the documentary that a lot of things one thought were unique to oneself or one’s culture, that instead, many of these things are actually a product of market, media, and government manipulation for their own agendas. Herein, one might ask oneself, “How much of a product am I of market, media, and government manipulation?” Many of the choices we thought we were making independently were actually made for us by others.

Sigmund Freud said that people have unconscious motives and drives. Then, Bernays (the nephew of Freud) said people have all these apparent unconscious motives and drives, and so, the lesson to learn from that is that people are fundamentally irrational and incapable of making sensible decisions by themselves. Hence, they need a special class of professional opinion managers, like Edward Bernays, to tell everyone what to think; otherwise all these crazy people will be thinking for themselves and you will have chaos.

The two primary marketable purposes of “public relations” are:

1. To sell a product.
2. To divert attention away from something and toward something else. Therein, industry has an incentive to act as a gatekeeper to the access of information.

In a market, public relations becomes the buying of positive influence. Wherein, propaganda can be bought and sold on the market like any other good. In a competitive market individuals and market entities look at information and technology with [at least] dollar signs; wherein, information and technological ownership are used to “turn a profit”. Establishment structures will naturally emerge under such environmental conditions to control or otherwise engineer technological scarcity to promote their own profit.

The use of technology does not necessarily “build the market” or “develop the State”; yet, it will do so if it is socially oriented and encoded to do so. Technology can dominate as well as care-take. It can facilitate our fulfillment and care-take our natural habitat; or, it can misalign with nature and dis-orient us away from our fulfillment. The application of technology without a recognition of common human need and environmental

consideration (+ ecological care-taking) is likely to generate, or at least facilitate the developed persistence of, dominance and subjugation structures. Without our technical reality (and the totality of what that means) in our frame-of-reference, then we might just be duplicating more of the status quo, more of what already is [not really wanted].

Humans have an odd, though understandable (due to present conditions) habit of referring to things that other humans make as “artificial”. When other animals make something it is just called natural, but when humans make something other humans have a tendency to call it “man-made”; a term that has a distinct association with that which is also “artificial”. Can humans not make natural technologies also? Can we not fulfill our needs through the application of technology in natural ways? We do not use the same language when referring to other organisms that engineer technology from within their own conscious decision/need space. We do not apply the same thinking to bees when they engineer the technology of their bee hives. We do not call things made by bees, bee-made and maintain the presumption that what they have made is synthetic, artificial, or “not real”. We do not call technological structures made by birds (i.e., nests) artificial or damns made by beavers synthetic.

We are as part of nature. The belief that all technology and all technological interfacing with the natural environment is harmful, unnatural, and/or inflicts unnecessary suffering on the environment is often held by those who prescribe to the “anarcho-primitivists” train of thought. Historically, such people have been known as “Luddites”. It is important to recognize that our technological knowledge and capabilities can facilitate our fulfillment as well as facilitate our care-taking with (or of) our natural ecological environment. If communities began to design distributed service technologies that were effectively fulfilling their needs in a manner aligned with natural technical principles and an environmental care-taking philosophy, then why should these too not be called natural.

It is important to recognize that the industrial landscape sets the economy and the environment in opposition to one another. It would be wise to have a decisioning system that doesn’t set the economy against the environment. But, as it stands in early 21st century society people are destroying the environment to make money, and to survive.

“We are absolutely right in recognizing this nonsense of earning a living. We keep inventing jobs because of this false idea that everybody has to be employed at some kind of drudgery because, according to Malthusian-Darwinian theory, he must justify his right to exist. So we have inspectors of inspectors and people making instruments for inspectors to inspect inspectors.”
- Buckminster Fuller

10.4 Sustainability and sustainable systems

The following section is highly adapted from Capra (2012).

The concept of sustainability has often been distorted, co-opted, and even trivialized through its use without the proper ecological context. That which is sustainable in a “sustainable community” is not economic growth, but the entire web of life on which our long term survival and well-being depends. In other words, a sustainable community is designed in such a way that its ways of life, organizations and structures, and so on do not interfere with nature’s inherent ability to sustain life. And, the first step in this endeavour, naturally, needs to be the inquiry into an understanding of how nature sustains life. And, it turns out that this involves a new ecological understanding of life, and a new kind of thinking - thinking in terms of relationships, patterns, and context. And indeed, such a new understanding of life has emerged over the last century. To sum it up, at the forefront of contemporary science the universe is no longer seen as a machine consisting of several elementary building blocks; instead, science has demonstrated that the material world is an inseparable network of relationships, patterns of relationships. Humankind has discovered that the planet as a whole is a living self-regulating, living system.

The view of the human body as a machine held by Descartes, and other scientists and philosophers centuries after him, and of the mind as a separate entity, is now being replaced by one that sees not only the brain, but also the immune system, all tissues, all cells and consciousness in the body as a living cognitive system.

Evolution is no longer seen as a competitive struggle for existence, but rather a cooperative dance in which creativity and emergence are the driving forces. And with the new emphasis on complexity, networks and patterns of organization, a whole new science of qualities is now slowly emerging. One of the most important recognitions in this new understanding of life is the recognition that networks are the basic pattern of organization of all living systems.

The network is a pattern that is common to all life. Ecosystems can be understood in terms of food networks, that is networks of organisms. Wherever we see life we see networks. These living networks are called “functional networks”, that is, connections between various life processes that form a network pattern. In a cell, for example, these processes are chemical reactions among the cells molecules; in a food web the processes involve feeding on and eating one another, and in both cases the network itself is a non-material pattern interconnecting these processes. A closer examination of these living networks over 30 years has shown that their key characteristic is that they are self-generating, in a cell all the biological structures,

the proteins, the enzymes, the membranes and so on, the DNA, are continually produced, repaired, and regenerated by the entire cellular network. Similarly at the level of the multi-cellular organism the bodily cells are continually regenerated and recycled by the body’s metabolic network, so living networks continually create or recreate themselves by transforming and replacing their components. This lies at the very core of the new understanding of life. And since a network is a pattern of relationships it is evident that understanding life in terms of networks requires that we learn how to think in terms of relationships, in terms of patterns, in terms of context; and this thinking in science is known as systems thinking or systemic / systematic thinking.

Systems thinking emerged in Europe in the 1920s and 1930s from a series of interdisciplinary dialogues among biologists, psychologists, and ecologists (ecology being a new science in the 1920). From the very beginning, systems thinking has been an interdisciplinary effort. In all these fields, scientists realized that an organism, an ecosystem, and also a social system (social networks) are all living systems. A living system is an integrated whole whose properties cannot be reduced to those of smaller parts. The systemic properties are properties of the whole, which none of the parts have. So, systems thinking involves the shift of perspective from the parts to the whole. For example, if you ask yourself, “What is stress? Or, what is health?” These are questions about systemic properties; the stress of an organism is not the sum of the stresses of the molecules. The mass of the organism is the sum of the masses, but the stress of an organism is a systemic property. In a community, fulfillment is a systemic property.

To promote this shift of emphasis from the parts to the whole, the early systems thinkers coined the phrase, “The whole is more than the sum of its parts”, which became a sort of slogan for the systems [thinking] movement.

In what sense exactly is the whole more than the sum of the parts? The answer is: relationships. All the essential properties of a living system depend on the relationships of the systems components with each other and the relationships of the system as a whole to surrounding environmental systems. Systems thinking means thinking in terms of relationships. Understanding life requires a shift of perspective; not only from the parts to the whole, but also from objects to relationships. And, this is type of thinking is a serious challenge for most, particularly for those who were educated in science, for those who were taught science we taught that in order to be scientific you have to measure something, you have to weigh and quantify it. And, that even spilled over into the social sciences, for instance, there is a well-known saying in management, “What can be quantified, what can be measured, can be managed”.

So, what do you do with perceptible relationships, how do you manage relationships. You can’t measure them, but you can map them; you can visualize a map of how things are interconnected. So, there is another shift

that goes with the shift from objects to relationships, it is a shift from measuring to mapping. That is to say, it is a shift from quantities to qualities. The early systems thinkers in the 1920s and 30s identified these basic concepts to describe living systems as integrated wholes, concepts such as: organization; pattern; complexity; the idea of emergent properties; the notion of living systems as self-organizing; the concept of the ecosystem; and the associated notions of ecological cycles, food webs, and so on. These are the basic concepts. By the end of the 1930s, most of these key concepts had been identified and defined, then, the 1940s saw the formulation of actual systems theories. This means that the system concepts were integrated into a coherent conceptual framework, into theoretical frameworks describing the principles of organization of living systems.

When you looking at the history of systems thinking in standard textbooks, you find that the Austrian biologist Ludwig Von Bertalanffy is commonly credited with the formulation of the first such conceptual framework, which he called General Systems Theory. Most people today when systems thinking is mentioned will think of general systems theory by Bertalanffy. However, 20 to 30 years before Bertalanffy, before he published his first papers, Alexander Bogdanov, a Russian medical researcher, philosopher and economist, developed a systems theory of equal sophistication and scope, which unfortunately is still largely unknown outside of Russia. Bogdanov called his theory 'tektology' (or techtology) from the Greek word *tekhon* meaning "builder". It stems from the same root as "architecture", meaning the "master builder". Essentially, tektology can be translated as, "the science of structures". Bogdanov's main goal was to clarify and generalize the principles of organization of all living and non-living structures. Techtology was the first attempt in the history of science to arrive at a systematic formulation of the principles of organization operating in living and non-living systems. It anticipated the conceptual framework of Ludwig Von Bertalanffy's General Systems Theory, and interesting, it also included several important ideas that were formulated four decades later in a different language as the key principles of 'cybernetics' by Norbert Wiener.

The stability and development of all systems can be understood according to Bogdanov in terms of two basic organizational mechanisms, formation and regulation. The dynamics of formation consists in the joining of systems (or complexes) through various kinds of linkages, which Bogdanov investigated in great detail. He emphasized in particular that a *tension* and *reconciliation* between "crisis" and "transformation" is central to the formation of complex systems. Bogdanov showed how crises manifest as a breakdown of the existing systemic balance and at the same time represents a transition to a new state of balance. He also defined categories of crises, and with that he anticipated the concept of catastrophe, which bifurcated and became a key concept of complexity theory. Bogdanov techtology anticipated not only general systems theory in most detail, but also

cybernetics and key aspects of complexity theory. The view of living systems as integrated wholes led some scientists of the late 19th and early 20th centuries to extend their search for wholeness to the entire planet, and to see the Earth as an integrated whole, a living being. Living systems are self-organizing networks whose components are all interconnected and interdependent was expressed repeatedly by the early systems thinkers.

Complex systems are non-linear systems. Fractal geometry is a part of non-linear dynamics, of complexity theory. Ilya Prigogine in Brussels was one of the first to apply these theories to living organisms. He found that living organisms were able to maintain their life processes under conditions of non-equilibrium - thermodynamic and chemical non-equilibrium. In another words, in a living organism there are always processes happening. Energy and matter comes from the outside, is absorbed, there are structural changes, there is development, evolution, there are many chemical processes. There never is a static chemical equilibrium. Prigogine became fascinated with these systems far from equilibrium. Non-linear thermodynamics is often called emergence. It is one of the hallmarks of life. Creativity, the generation of new forms is a key property of all living systems. All dissipative structures have the potential to evolve. And, not all dissipative structures are alive. Yet, evolution potentially occurs in all dissipative structures.

Sustainable community must be designed in such a way that its ways of life do not interfere with nature's ability to sustain life. To do so, we must first understand how nature sustains life. Sustained life is a property of ecosystems and sustained fulfillment is a property of social systems, rather than individual organisms or species. The Earth's ecosystems have evolved certain principles of organization to sustain the webs-of-life. Knowledge of these principles of organization, or principles of ecology, has become known as ecological literacy. To understand the basic principles of ecology and to live accordingly is to act with ecological wisdom. Matter cycles continuously through the web of life. The energy driving the ecological cycles flows from the sun. Diversity ensures resilience. Life, from its beginning more than three million years ago, took over the planet by networking, by cooperation and the formation of [integrated] partnerships. We become ecologically literate once we understand the processes and patterns of organization that enable ecosystems to sustain life, we also understand the many ways in which our human civilization, especially since the industrial revolution, has ignored these ecological patterns and processes, and has interfered with them. And we will realize that these interferences are the fundamental causes of many of our current world problems. Thinking systemically, we recognize that the major problems of our time are systemic problems, which means that they are all interconnected and interdependent; and to solve these problems, therefore, we need systemic solutions.

As a community we can turn around the interconnectedness of the world's problems to our

advantage so that one action can solve several problems at the same time. We have the knowledge and the technology to build a sustainable future, what we need is a social value re-orientation and will-power with conscience (not political leadership).

NOTE: *Humans are here because of what nature provides them. Humanity ought to seek an understanding of nature and to living within its regenerative bounds. Resources and their usage when handled improperly by a civilization can culminate in some large problems despite technological advancement.*

11 Openness and sharing

"Flows of energy through open systems tend to drive them to states of higher organization. Open systems are any bounded systems that can exchange energy with their surroundings. We can call this the principle of driven self-organization. If the principle of sufficient reason is the paramount explanatory principle in nature, and the identity of the indiscernibles her prince, the principle of driven self-organization is the good angel who does the detailed work in myriads of stars and galaxies to ensure a diverse, complex universe."
- Lee Smolin, "Time Reborn"

Openness and sharing lead to new forms of organization and are valued for their characteristic ability to maintain environments that improve the quality of our coordination, the accuracy by which we arrive at decisions and solve problems, and the effectiveness of our designs in facilitating fulfillment. The concepts of openness and sharing play an essential role in a *functionally volitional* and *operatively participatory* environment. Herein, they facilitate the adoption of systems and approaches that focus on solutions and are in alignment with an open and shared focus, a common purpose [and pool of common heritage resources]. They are concepts that lead to the idea of 'inclusive-by-design', and the by-product of this form of design is organisational and social cohesion. Openness and sharing are enabling such that their existence leads to the potential existence of more complexly coherent systems of organization.

Systems must necessarily be open in order for the highest level of efficiency, freedom, and justice to exist. If a system is not open, then it is "secretive", and as discussed earlier in this specification, secrecy will generate a structure antagonistic to freedom, to efficiency, and to justice. Openness and sharing [through feedback] are a basic requirement for the conditional existence of efficiency. When they are applied in an organized manner they reduce duplication and increase cohesion. Further, openness is an instrumental condition necessary for maintaining justice. Openness requires justice to prevent self-serving agendas and secret bias, and it provides for equitable and effective fulfillment; justice requires openness to avoid outdated solutions or ideological blinders, to avoid the formation of hierarchy in place of shared access.

A system's openness is characterized by its **interoperability** and source [code] **transparency**. These characteristics are necessary of any system that seeks to maintain fulfillment-oriented value conditions, such as that of equality in access. The lack of these attributes will limit information exchange and make it difficult to measure the effectiveness and performance of all other conditions both within the system and in the systems interrelationship with an environment, which may be useful by an authority for social control, but is not useful for a community. The exclusion

of interoperability and transparency will always be perceived negatively by the users of a system as it represent a restraint on the usage of and access to a system (qualified by perception management, of course). Basically, their exclusion represent a reduction in the ability of the users to direct the future of the system that they use, which is likely to create a social power disparity. Their exclusion also represent a multi-issue danger to the users of such a system. To remove transparency and interoperability from users of a system would mean to replace the users full participation in the system with something else (possibly profit or surveillance or manipulation, or all three). At the social level, without the full application of interoperability and transparency, then competition (vs. interoperability) in conjunction with ownership/profit/deception (vs. transparency) will be rendered into the social and economic systems of a society, and there will no longer exist community. In concern to engineering, transparency reduces the potential for subjective projection (of bias) into a socio-technical design.

QUESTIONS: *Why would a society not want information about a disease shared both transparently and globally? Why would a not want information about societal and habitat production (economics systems) to be shared both transparently and globally? Who has the freedom to restrict the freedom of others? Who wants the freedom to restrict the freedom of others? Who would act upon the freedom to restrict the freedom of others?*

In communication, transparency is defined as the receiving of information that doesn't transverse a censor or is knowingly communicated falsely (e.g., lies and other deceptions). Transparency is also an organizational state - it occurs due to the way in which the system is set up and designed, or more accurately, cooperated with. Transparency dynamics require intentional design and cooperation by intelligent social beings. If the necessity for intentional design goes unrecognized and cooperation is not an embedded value, then transparency becomes difficult. And, when transparency becomes difficult in society, then social hierarchy is likely to form. With hierarchy comes competition. With competition comes deception. And, with deception comes behaviors that generate conflict and psychological dissonance.

The degree of openness of a system may be assessed by looking at its **accessibility** and **responsiveness**. If an individual, for example, can obtain information about a particular technology without any form of restriction (based upon permission, price, status, or association), then that information is more open (accessible & responsive) than if, for example, a subscription is required to obtain access or if the information were only available using a proprietary software program. Any proprietary technology gives the user near zero trust, through confidence in understanding its operation. As a result, the user is forced to put all of its trust in the

private owner(s).

The notion of 'accessibility' comes with the question, "How accessible is a system to its users?" Alternatively, the notion of 'responsiveness' asks the question, "How responsive is the system to the needs of its users?" Also, accessibility and responsiveness involve the concepts of *distribution* and *redundancy* for purposes of *recovery* in the case of an unexpected failure of the system. Responsiveness [in part] asks the question, "How open and accessible is a system when it experiences a problem?"

The idea of participation [in society] is similarly related to openness. If an individual can make his or her own contribution to the progression of information, and can use his or her unique insights and experience to modify, re-purpose, and redistribute it, then that information is more responsive, and thus, more open, than if the information is "read only" or "plausibly deniable" (Read: scientifically unverifiable).

Openness is a principal condition for a system to remain in a state of dynamic equilibrium with its environment through the sensation of new information. Openness has epistemic benefits; it makes it possible to construct conditions favourable to knowledge discovery, and thus, the arrival of truly informed solutions. A lack of openness and transparency means that scientific problem solving and information discovery is constrained to those who work in secret or who typically fail to collaborate with a larger community and leverage the entire accumulation of collected knowledge available. This is such an important statement that it bears stating another way: The result of a lack of openness is that problem solving activity is constrained and fails to adequately apply the power and resource of the system-community. Hence, without openness there is not a systematic solution-orientation. Openness and unrestricted information sharing are critical to scientific and social progress at the level of an information community. Deception and obfuscation at the social level, at the level of material resource, and within the individual also, is costly to our fulfillment, our well-being, and our very survival.

INSIGHT: *In large part, market entities do not want the population sharing, because sharing induces the condition of abundance, which reduces commercialization and profits.*

A community is [in part] characterized by the application of openness to information, to systems and services, and to the commons [of the real world]. Herein, there exist several forms of openness, including: freely available access to information; the community and its systems are transparent, interoperable, accessible, and responsive; and, material goods and services are openly accessible and shared. In a community, openness represents:

1. **The social domain:** freedom to use; freedom to contribute; freedom to share; transparency of needs; transparency of resources.

2. **The technical domain:** open functional specifications and standards (use of open standards and interoperability); open developmental specification standards (use of open source); open research, knowledge, and technological development.
3. **The ecological resource domain:** open access to goods and services from a common pool of ecological resources and collaborative commons services.

The P2P Foundation maintains a mindmap structure describing openness and its application to society. The visualization contains 8 aspects of processes representing the cycle of reproduction and growth of openness in our societies (Bauwens, 2010):

1. **Aspects of openness** - the requirement and expectation of inclusivity or open access. For example, the requirement to participate or contribute for work to be completed; the demand on the part of people for transparency and shareability.
2. **Enablers of openness** - definitions and standards representational of openness. In the market-State, this includes licenses and standards that are open.
3. **Infrastructure of openness** - technologies that allow everyone to contribute and produce in an open manner. For example, open collaborative technical platforms, open communications software and knowledge repositories.
4. **Open practices** - behaviors and procedures that reflect openness. For instance, sharing and releasing information in an open manner.
5. **Open domains of practice** - behaviors and procedures that reflect openness which are embedded in domains of practice. For instance, domains of practice, such as scientific research, technology development, or education where openness is encouraged and promoted.
6. **Open products** - this is essentially item # 2 (infrastructure of openness), but is more specific in that it refers to specific hardware and software systems that are open, such as the Linux operating system and Apache servers, or the hardware systems produced by Open Source Ecology.
7. **Open access (open standards)** - this refers to releasing content freely to the public at no cost and with limited restrictions with regards re-use, modification, and re-distribution
8. **Open consciousness** - this refers to the consciousness/mental state of individuals, such that they are mentally open to new information and desire to share. It also refers to the knowledge of how sharing benefits everyone.

9. **Open movements (market-State only)** - social movements specifically dedicated to increasing 'openness' are also tackling openness as a social awareness concern. For example, P2P Foundation.

In an open system, anyone (conditionally) can use and contribute to the system, and all changes go to the mutual benefit of the everyone [due to the way in which the system is designed]. Mutuality (as mutual gain and benefit) recognises that a sustainable world can only be achieved through the sharing of a common pool of resources (or mutual participation in a common, living ecological system). And, an open system requires an open and collaborative approach to the nature of its design if it is to remain open.

When the idea of openness is applied to information technology, then it acquires the labelled, "open source". The concept of open source (free-shared) maintains at least three characteristics (all without the requirement of exchange or currency cost):

1. The free and open access to material.
2. Freedom to redistribute material.
3. Freedom to reuse material.

With closed and "secure" content (i.e., "protected content") the "author" (or, owner) of the content is the sole creator and owner of said content. With open content the "participative creator" is in a state of collaboration with those who have come before as well as the community of users of the content. The community of users and the "participative creator" are all creators and to an extent, accessors (or "owners"), of the content. An open system is a closer approximation to the existence of every living systems (in nature), and closed content goes a long way toward limiting the evolution of a community and causing unnecessary inefficiency (and suffering) in the world. Closed content does not account for the fact that the "participative creator" of the content would have been unable to create the content in the first place were it not for their prior learning, informed by the earlier work of many socially participative others. Fundamentally, systems either controls users (e.g., proprietary software) or users control systems (open software).

An important thread that connects these various meanings [of openness] is the idea that by reducing barriers, and sharing what we learn and create, the systems that we are a part of will work more efficiently, fulfill our needs more effectively, and align more closely with our desired direction. Openness and sharing are essential elements for a culture of emergence where individuals design for adaptation and the fulfillment of common needs through a common pool of resources (i.e., a 'commons').

As individual human beings "we" must remain open to new knowledge, understandings, and interconnection for without openness our systems and "our" psychology might become stuck in an ever deepening rut. Herein, the very idea of "openness" allows consciousness to see

that it is in a rut.

When someone thinks of openness they might also think of their biology and the human body, of a particular structure. The human body is an “open system” and thrives because of its openness. It is structured “to be” open. The human body is constantly exchanging things through valuable interrelationships. Whether it is oxygen and CO₂, or nutrients and waste - the body cycles - resources in and waste excreted. Human biology requires openness to live.

In philosophy, openness is the degree to which someone is open to the realities of life, to the truth of that which happened and is happening. More specifically, openness is the degree to which a person:

1. Is willing to face reality as currently perceived.
2. Is willing to recognize that there may exist limitation in perception as well as an ability to derive more accurate evaluations of life.
3. Is willing to see reality as it is and reduce contradiction
4. Refrains from forming answers until the answer is clear.
5. Acts in accord with one's current understandings.
6. Is compassionate in all one does.

At the level of someone's personal experience, openness is the degree to which a person:

1. Has imaginative capabilities.
2. Has broad intellectual curiosity
3. Values and respects oneself and others.
4. Is open to re-examining closely held beliefs and values in the presence of new information.

Openness within and between individuals builds equality and trust in their relationships, and therein, it also maintains the qualities of honesty and integrity. Sharing deepens relationships, literally. In community, we are all privy to information about the operation of the community.

The more you know about someone or something, the more likely you are to be “in synchronization” with them, and hence, the more efficient and effective the entire relationship. Personal relationships in synchronization are likely to be experienced as supportive and based upon mutual trust. Relationships with nature based on [brain] synchronization are likely to enhance learning. It is important to note that when openness is applied at social-level organization, then it is qualified by respect for an individual's desire for privacy and quietude, for personal restoration, which is a human need.

Openness is a word that denotes opportunity and possibility. Openness and sharing are enablers of participation. When sharing occurs on an individual level, collaboration at a community level becomes possible. The application of the values of openness and sharing have the potential to create a socio-economic

system with a common approach to decision-making at a community level rather than management of individuals by a centralized authority (possibly, through a security enforcement system). By making all knowledge, ideas, and research open and accessible to everyone, everyone has the opportunity to be engaged.

Humans have a natural desire for access to experiences and material in which they have an awareness and interest. By its very nature, sharing implies and enables access, and thus, the issue of sharing will never go away, for human curiosity will never go away. Hence, it is surprising how many people do not realize the damage done to society by restricting and penalizing those individuals who still maintain a natural desire for openness and sharing - all forms of sharing. There are no pirates of information and knowledge, there are only “criminal” inhibitors of sharing. The value of sharing is summed up quite nicely in the following statement of gratitude: “Everyone thanks everyone for sharing in the community”. Humans have a primal instinct to share. If the instinct is blocked it will lead to repression and other troubling states.

At the organizational level of a community the concept of openness involves four principal sub-concepts:

1. **Collaboration** - openness in the sense of the boundaries of organizations becoming more porous, fluid and open [interoperability].
2. **Transparency** - the communication of pertinent information to everyone in the community. The organization itself becomes “naked”. If you are going to be naked it is important to have good value and parts. You must have values, emergence, and integrity as part of your structural makeup, your “DNA as an organization”, because if you do not then, trust does not exist. Metaphorically speaking, sunlight is the best disinfectant ... and we need a lot of sunlight in this troubled world. Transparency is about the accurate and complete communication of information. Transparency becomes a means to optimal production (Read: productive/abundant fulfillment). Additionally, transparency allows for auditing at scale; and hence, greater trust at scale.
3. **Sharing** in access to our common heritage and to all information has the potential to “create a rising tide that could lift all boats”.
4. **Empowerment** - that which empowers the participation of the greatest number of people. The distribution of knowledge and processing is a powerful form of organization for it leads to the potential for the sharing of improvements to all the systems used by the community. As knowledge becomes more distributed there is a concomitant distribution and decentralization of power that

takes place, a disaggregation of power between groups of individuals and an aggregation of power within the indivisible individual. An open world brings forth the freedom to express one's power in a higher state of creation.

Humankind now has access to technologies that extend its functions "deeper" into the material environment. For example, the printing press gave future generations direct access to the knowledge of prior generations. The Internet gives us direct and instantaneous access to the intelligence contained in the cranium of other human beings on a global basis; we are an age of networked intelligence.

Bees come in swarms and fish come in schools. Starlings come in murmurations. Predators are chased away by the collective power of the starlings as they fly in what are known as 'murmurations'. In the murmuration there is "leadership" (as in, stepping out to go first), but there is no one "leader" (as in, authority). The murmuration functions according to the four sub-conceptions of openness previously discussed, which are generators of a courageous individual. The individual birds [somehow] understand that their interests are in the interests of the "collective" group, the 'murmuration'. Essentially, to be open is to remain open to answers that support us in the evolution of our fulfillment, or in protection from a predator [through the courage of individuals].

Where there exist [market] entities (e.g., businesses) that are afraid to share information about their services, often stating, "we don't want to share too many of our secrets", then where is the fulfillment? The secretive withholding of information about (and around) the services that someone uses is inoperative for creating a fulfilling environment. There is neither fulfillment nor trust when there are secretive entities that contract with one another [because they do not trust one another] and are afraid to share information about their past, current, and future products. Basically, competition in the market place reinforces mistrust.

INSIGHT: *When things are hidden, they can't be healed.*

12 Cooperation and collaboration

MAXIM: *Common sense brings common actions. When useful information and tools are available to all self-directed individuals, then conclusions will coalesce, a common direction emerges.*

The human species reproduces itself through cooperative effort (also known as collaborative effort). Cooperation literally means "working together" (from the Latin "co", together; and "operate", to work). It is a value [construction] process of two or more people engaging in an activity for shared purpose or gain [by mutual benefit], supported by *communication* and *coordination*. In other words, cooperation is the act of working together for common gain to achieve more than possible individually. The words cooperation and collaboration maintain a similar conceptual meaning. Collaboration and cooperation are sometimes used as synonymous terms; though herein, when two or more people are working together to cooperatively create something, then the word collaboration (co-labor) is a more ideal fit. Effective collaboration begins with a common vision and a conducive value system, and it ends (or begins again) with a distributed network of participation. In this model, collaboration involves mutual commitment [as a member of a system's team]. Essentially, collaboration belongs to teams (or groups), while cooperation is a general value orientation typical of individuals in a system or network. The distinction herein is that cooperation is more of an orientational value state-dynamic, whereas collaboration identifies a distinction in the work (or labor) of individuals who are working together.

Cooperation at the societal scale inherently necessitates the existence of a commons - a shared information environment and a set of resources accessible to all members of community, facilitating collective action and mutual benefit. This concept of a commons extends beyond mere physical spaces or tangible resources; it encompasses knowledge and digital spaces, serving as a foundational element for collaborative endeavours. "Pooling" resources is the most efficient way of operating together for global human need fulfillment.

INSIGHT: *In community, there is no competition in access to life, technology, and exploratory support services.*

Cooperation is an essential humanizing experience that predisposes participants to a benevolent view of others, while creating environments of encouragement and support, promoting more fulfilling learning experiences, and enabling the coordination of activities toward a desired objective. Cooperation opens a whole new world of adaptive opportunity. This has clearly been the case when molecular processes teamed up to form cells, when cells teamed up to form multicellular organisms, and when humans teamed up to form

organized functions in their societal systems.

Life, from its beginning on this planet more than three billion years ago, took over the planet by networking, by cooperation and the formation of [integrated] partnerships. Cooperation is widespread throughout nature as a common survival strategy expressed at many levels of life from bacteria to complex living organisms. It is present in the social structures insects and it is universal in mammals. The Earth itself could even be perceived as a cooperating and living system made up of interrelating elements that form a unified living and whole system. The evolution of life occurred in a biologically cooperative way at the cellular level when life was just forming on Earth. When the lower biological units began to cooperate they started to form increasingly complex structures, lifeforms.

Life cooperates, and cooperation among organisms of the same species [and between species] offers a clearly observed survival advantage. The evolutionary advantages of cooperation are significant. Wherever evolution is able to exploit these advantages by organising cooperation, it will do so. Any organisms, whether of the same species or not, can benefit from the evolution of relevant cooperative relationships. Whatever the evolutionary challenges faced by organisms, they can be met more effectively through cooperation [in the integral and synergistic fulfillment of needs]. At a fundamental level, if it is true that we are social beings with social needs, then cooperation is necessary for social fulfillment.

The advantages of cooperation continue to apply no matter how large the cooperative organisation becomes. In other words, progress in cooperation structurally reinforces social benefits [in the fulfillment of needs] the larger the network becomes. The advantages do not cease once a cooperative organisation reaches a particular size. Increases in cooperation deliver further evolutionary advantages as growth occurs. Increases in the scale of cooperative organisation did not stop providing advantages once cooperation reached the scale of a single cell, or the scale of multicellular organisms, or of human villages. In all these cases, the potential benefits of cooperation between organisations of the largest scale continued to drive the expansion of [potential] benefit.

A group survives according to its members' abilities and desire to cooperate for common ends aligned with natural processes. Systems exist because of internal cooperation. And, what better example of a cooperative system is there than the organization of the socio-economic environment around fulfilling the desire of individuals to do that which is most meaningful and appreciatively desired.

Almost everything someone uses and depends on in their everyday life is produced and brought to them by the coordinated actions of many other people. Almost everything made by humans is produced cooperatively (by degree and context). Herein, cooperation involves a necessity for teamwork, and teamwork involves technical

cooperation (as collaboration), which is required to maintain the functioning of a community.

NOTE: *In Community, information is held in the commons and we collaborate freely.*

Those who maintain a cooperative mindset may know that “win – win” is a better way to live, but persuading, campaigning, cheerleading, and manipulating other people to be more cooperative and collaborative is not a systematic solution to a general structure that maintains a state of opposition to cooperation. Instead, the needs of others must be sought/brought fulfillment (survival, safety, self-esteem, a sense of belonging, etc.), or they will not feel the value of *wholeness, togetherness*, and *interconnection* that leads to true cooperation - integration and not separation. The forced fun and manufactured moral of corporate “team building” events can wear thin on many people. Corporate team building is often used to keep workers on-task and committed to their work. And, these events are no solution to systemic, structural opposition to social cooperation.

For the purpose of semantic clarification it is important to note that the words cooperation and collaboration both have negative nuances in common parlance. For example, when a competing camp “collaborates”, then there may exist “collaboration”, but there is not trust. And, when the apprehended man “cooperates” with the police in double-crossing his partners for a shorter sentence, then he might be said to have “cooperated” [under duress]. There is also the common phrase in war and in competition that, “he was hanged for collaborating with the enemy”. In their negative, “collaboration” (without trust) and “cooperation” (under duress) are used to mean working with an “enemy force” or “competing party”. These negative nuances are not conceptual components of the value conditions of cooperation and collaboration discussed herein.

As a community, we cooperate to more greatly understand ourselves. We don't lose our individuality; we still have our individuality, we are just part of something bigger. Cooperation does not have to mean the loss of our individual freedom by being part of something bigger. Instead, we gain freedom, we have more options; our decision space grows, not shrinks, as we become an individual [part] of something bigger, a larger community of individuals. When “we” cooperate together it doesn't mean that “you” or “I” become a slave to a larger organism; instead, it means that together we get a larger decision space. We have more choices, not fewer.

INSIGHT: *In society, cooperation between individuals leads to the creation of technologies that further facilitate that cooperation.*

12.1 Competition

INSIGHT: *When we realize that we share one earth we may come to understand that competition is obsolete.*

Competition sets individuals in opposition to one another. As a value state, cooperation exists in contrast to competition. Competition is the struggle between and within species for survival, and it too is widespread throughout nature. However, complex biological entities are in fact wired for connection and cooperation; although, their competitive drives can be triggered and reinforced under a structure that necessitates (and incentivizes) gaming behaviors.

Cooperation connects deeply into the “social” body of humans, wherein the more connected we feel to others the healthier our expression and the happier our experience. Society, in general, is full of the evidence of this need for connection: from books to the social media phenomenon, from public events to group activities, and from knowledge advancement to technological infrastructure. There is a general social nature to everything that humankind does. Cooperation is a fundamental necessity for maintaining stable human arrangements, while a spectrum of counterproductive and destructive actions, behaviours, and “attitudes” arise out of competitive environments. Some societal systems incentivize deceptive behavior, which creates instability in the system.

For any given task, there are basically 3 ways to perform it: (1) with other people; (2) apart from other people; or (3) against other people. If the task is done with other people, in the purest sense, then cooperation exists. The purest form of cooperation says that “I can succeed only if you succeed too, our fates are linked and we sink or swim together”. In a sense, that is descriptively accurate of our entire world, but it is not always true of individual tasks. The second possibility is a type of individualistic model where someone performs a task totally removed from others doing it, so any given person's success at the task is unrelated; one person's success and another have no connection to one another. There are learning-oriented and creative-oriented tasks where the individualistic model is more useful. And, the third possibility is that the fates of individuals are negatively linked so that one person can succeed only if another fails, and vice versa (i.e., competition [in fulfillment]). Many of the tasks performed in modern culture, at home, at work, in the market, at school, at play, and in modern life in general are set up not necessarily, but artificially, in such a way that most can succeed only at the price of other peoples failure.

Resources cannot possibly be utilized in the most efficient and effective manner when there is competition over their acquisition and usage. Further, socio-economic competition incentivizes anti-social behaviors and opens a path for advantage over others. Such a state is highly likely to incite conflict, and conflict brings catastrophe to both sides.

Fundamentally, even though cooperating with other participative users in a society doesn't guarantee things are going to be great, being under the power of societal competition pretty much guarantees that things are going to be bad (for most/many people).

NOTE: *What was the first game you ever learned? Was it “musical chairs” where “n” children were scrambling for “n-1” chairs. In the game of musical chairs children walk around a set of chairs to the sound of music and when the music stops everyone rushes to sit in a chair; but, because there are always 1 fewer chairs than children, one of the children is “out”. The music is then put back on and another chair is removed, and when the music stops again another child is “out”. This process is sickeningly repeated until at the end you have one chair with one child on it, triumphant, smug, the “winner”. And everyone else excluded from play, unhappy, “losers”. That is how you learn to have fun in modern culture. And, it is a prototype of artificial scarcity that people in early 21st century society have been conditioned into accepting. The standard form of the game of “musical chairs” exists in contrast to the game of cooperative musical chairs, where you take chairs away and the challenge is to fit everybody on minus 1 chairs each round so that children have to figure out and work together how to fit everyone on one fewer chair; and there is no such thing as “out” or “loser”.*

It must be acknowledged that advances can happen in the “heat of competition” that would not have happened (or, not have happened as rapidly) otherwise. It is also easy to introduce previously existing, but not yet released, technologies to the public during states of competition. The desire to do well in competition can cause individuals and groups to work extra hard and make significant advances. The desire to share discoveries from a pre-discovered source, over time, can lead to important advances reaching all of humankind. Herein, information sharing between competing entities during, these competitions, is important and ought to be done.

12.2 The three central arguments

INSIGHT: *Cooperation lowers entropy in a [social] decision space, whereas competition increases it.*

In general, there are three central arguments against competition and they revolve around:

1. **Psychological health** (self-relationship);
2. **Relationship health** (social-relationship); and
3. **Performance motivation** (system result) as motivation to do one's best.

NOTE: *Community engineers “win-win” solutions.*

12.2.1 Psychological health

INSIGHT: *Scientifically speaking, there are “competing” centers in the brain and you can be materialistically oriented or relationship*

oriented, but you can't really be both at the same time.

First, competition has a clearly damaging effect on the **psychological health and self-esteem** of individuals. Competition is to these components of the individual as sugar is to teeth -- it rots psychological health and self-esteem. The meaningful distinction herein is not between those who "win" and those who "lose". In terms of psychological health, the meaningful distinction is between those who have to compete and those who are blessedly free from having to compete.

To the individual, competition teaches that "I am only as good as my last victory, that my sense of competence, and thus, my confidence is contingent on my having defeated other people" -- esteem becomes artificially circumstantial. When someone "loses" it feels lousy, and that lousiness can turn in to a form of self-corrosion. But, even when someone "wins", it is a shot of adrenaline and other hormones that do not last long, and one falls back to baseline (or below), and then one needs more and more victories to try and recover that initial euphoria, which is not unlike developing a tolerance to a drug. Competition, regardless of the results in any given encounter, encourages us to doubt ourselves and to believe that we are never ultimately successful or fulfilled, and must always try to beat other people, which over time creates a reinforced perception that competition is "necessary". And for some people it does in fact become a necessary "pick-me-up". To try and feel better about ourselves by "winning a prize" is like trying to slake a thirst by drinking salt water: it is not just unhelpful, it makes the problem worse. So, the more you compete the more you need to compete in order to feel satisfied, and the more likely you are to feel that competition is of the utmost necessity.

Therein, socialization into a competitive society at an early age appears to produce people who don't really care about anything until it turns into a competition; for they only recognize as meaningful that which occurs under the state of competition.

Researchers have found that competitive structures reduce generosity, empathy, sensitivity to others' needs, accuracy of communication, creativity, and trust. Also, competition makes self-esteem precarious and conditional: one's value is likely to become contingent on how many people one has beaten. Competition is a damaging force that is divisive of effort and leads to an extremely unhealthy mental attitude in people. Research finds that children who have been conditioned to compete against others are less trusting. Why would you trust others if you keep finding yourself in activities where others' success comes at the price of your failure? Conversely, cooperation is known to encourage trust, sensitivity, open communication and coordination, and ultimately, helpfulness.

What does it mean to apply the general concept of competition to a system? If competition, as a value orientation, is being applied to a system, then it is being

applied to the structure of the system. What does it mean to apply competition to the structure of a society? Herein, the problem is [in part] with a structure that sets people against each other. When is such a structure ever likely to be beneficial psychologically or interpersonally?

When people say they "are really competitive" they are in fact admitting to others that they have a psychological myth roaming around their psyches. Notice how such people do not claim that they desire excellence for themselves or that they are deeply motivated; instead, they are actually saying, "I am not satisfied until I have defeated other people". That is a sign that there is something terribly wrong with them, psychologically. Modern culture valorizes competition instead of identifying it as a flaw in the social structure. Therein, the cloaked message is repeated over and over again that the only way to do anything is to try and make other people fail. The lesson taught ad infinitum is that it is necessary to "win" and not "fail"; that other people are not to be worked with, but to be worked against. If competition were "just a part of human nature", would it be necessary to have such continuous conditioning, and a socialization structure to mould people in this way (i.e., into slaves to competition)? Or, are cults, businesses, and governments trying to do so without even making it plain that it is one of their structural goals (and value encodings).

CLARIFICATION: *To 'conspire' is to plan in secret when under the condition of competition. In early 21st century society, everyone conspires. In community conspiracy is irrelevant and unnecessary.*

12.2.2 Relationship health

INSIGHT: *The human body does not compete with itself. The brain does not compete with the lungs. The lungs do not compete with the liver. Instead, they use their 'variety' (a cybernetics term denoting the total number of distinct states of a system) of different system states to find an dynamic equilibrium for the benefit of the whole system.*

The second effect is that of competition on **other people and on relationships** where competition teaches one enduring fundamental message: "Other people are potential obstacles to my own success". They are not potential friends and allies and helpers; they are potential rivals whom "you" must best. A competition-based value orientation states, "I succeed if you fail" -- it is fundamentally a win-lose structure. And, there is a stronger version of it, "I succeed only if I make you fail." This is overtly visible in professional organizations (e.g., professional sports, industry, and market employment) where competition facilitates "in-group" teamwork and "out-group" aggression, which is useful for in-group profit. Within such an environment, not only is it irrational to help someone whose success might require your failure, but competition creates a climate in which

such help is unlikely to occur in any case.

For instance, organized professional sports are similar to nationalistic soldiering on an authoritarian team with a leader who coerces and manipulates through appeals to emotion and appeals to authority in return for spectacle and reward. It is a militant environment where the coach is the authority and players on different teams attack each other.

The greater the competition the more society sees the predictable effects of competition on human relationships: the aggression; the "cheating" and "crime"; the self-destructive behavior (especially in sports); the envy of winners; the contempt for losers; the reserve and distance an individual finds himself or herself in while holding others at arm's length; the isolation and loneliness; and the fear that is generated in the experience of separation. These consequential[ly structural] effects occur over and over again, and whenever they flare up into truly ugly behavior society blames the individuals who were forced to compete, for not knowing how to compete "properly", for not having been taught [or engaging in] "sportsmanship".

There is no such thing as a 'class' of criminals and to imply so is to paint a polarised/black and white picture of the classic 'good vs evil' battle. We're creating enemies by believing they exist. Enemies only exist in our heads, become "enemy" is a concept. Thus the real-world comes into view where what is observed is "hurt believing people, hurt people" and "terror creates terrorists". Terrorism, by definition, is using an action to cause terror for any purpose. People who relish dishing out punishment, and criminals who don't care who they hurt, are just 2 different sides of an environment of scarcity (where it is better to use violence than starve), where each side sees themselves as avenging angels and the other side as heartless devils. Both sides crave power, are willfully ignorant, violent, apocalyptic and see the world in a simplistic orientation-toward-self way. If there is no criminal class, then there is no need for a State.

Structural social competition does not, in fact, "bring out the best in us" and "push us farther and faster" than we are ever able to motivate ourselves. Instead, it induces psycho-social stress, and a regenerated probability of fear, greed, and social aggravation. In competition we are threats to each other -- we see each other as a threat to an achievement that only one of use can achieve.

Competition generates artificial distinctions and separations among a society. And, it makes it difficult to determine whether the advice (or feedback) we receive is for our benefit, or does it primarily serve someone else's interests. Competition cloaks agenda and conceals malicious intent.

A community does not need the concept of "sportsmanship" when individuals are playing cooperative games. This isn't to say that sportsmanship is not necessary; instead, it is to say that the concept has no meaning. It is the equivalent of the non-existence of the concept of "theft" in a society where there is no personal

property and where everything is shared and accessible. When humans have access to the necessities of life, then they do not steal. If you don't understand that, imagine a community living near a waterfall with lots of fresh water. No one comes at night and "steals" water. Therein, the concept of "theft" has no meaning, or is re-defined with a distinct context, such as the appropriation of land into property as 'theft'. Similarly, in a community, the concept of "sportsmanship" has no meaning. The concept has no meaning for there is no norm telling you what you are otherwise supposed to do. It is like cities where there are no "jaywalking" rules; the idea of jaywalking has no meaning because there is no rule that says you are only supposed to cross at intersections. Most concepts are contingent on some other thing people have accepted, whether they realize they have accepted it or not. For example, the concept of "blasphemy" has no meaning if you don't believe in a "divine authority". The concept of "leisure" has no meaning unless work is alienating. Maybe even the concept of "attitude" has no meaning when individuals are intrinsically fulfilled and not extrinsically coerced. Is "sportsmanship" an "attitude"? Is fulfillment a[n attitudinal] direction? And so with cooperation, the idea of "sportsmanship" is not merely unnecessary, but without meaning. In community, what is the real point of cooperating as a "team" if just for the purpose of defeating another group of people who are cooperating as a "team"? And for the most part, this is as close as most people get to real world cooperation in early 21st century society.

A good shot in tennis by definition is a shot that the other person can't get to in time and return properly. So a player's goal at each instant of play is to make the other player fail ... as in war. Some people then erroneously suggest, "well, play tennis where you aren't trying to make the other person fail, but you are trying to play your very best". Such a statement is nonsensical, for such a game would not be tennis, it would be another game, perhaps with two rackets, a ball and a net, but not tennis. If the rules of the game, literally or conceptually, demand that individuals work at cross purposes, then the changing of "attitudes" about the activity is not sufficient. The structure of the activity must itself be changed. Some structures inherently set individuals against one another (e.g., the business/economic market), not because the individuals are neurotic or malicious or sadistic, necessarily, but because the rules of the game (i.e., the structure) demand that they view everyone else as obstacles to their own success, which will inherently generate secondary psychopathy (Read: sociopathy) in most individuals given sufficient time. Competition fractures trust and support in an interrelationship. If the resolution of a game dictates awards, rewards, trophies, prizes, medals, certificates, or some other form of recognition that has been decided in advance that not everyone can get, then the message is clear, everybody else around is there to be beaten. Therein, each individuals job is to beat everybody else. Full stop.

Research into the effects of competition finds that

when people are led to compete they are less able to perceive how the world looks from someone else's point of view, which psychologists call "perspective taking". Therein, they are less likely to have sympathy, empathy, compassion, and visceral resonance with others. They are less likely to help people in need. They are less likely to recognize evidence in a situation of disagreement (i.e., they are less likely to inquire openly and actively). And, they are less likely to communicate objectively and accurately. This is not because of personality differences; this is because of structurally conditioned differences. One study mentioned in Alfie Kohn's book, *"No Contest, The Case Against Competition"* (Kohn, 1992), found that you could tell how ungenerous a child was in his or her relationships just by how competitive the child's father was. Just living with someone who is competitive is enough to make children selfishly self-interested - desiring rewards at others expense.

A wide variety of studies confirm the logical argument that competition sabotages relationships and undermines self-confidence, while impeding fulfillment and long-term interests [particularly in learning]. These and many other destructive outcomes (e.g., envy for winners, contempt for losers, aggression, hostility, and suspicion) damage the stability of a community and contradict multiple other conditions valued by this social design. And, a diminishing "attitude" toward cooperation clearly emerges as the degree of competition increases. In many ways, there exists a choice of mindset: are we going to remain in a state of fear, fight and compete, or are we going to help ourselves by helping one another?

Alfie Kohn, a sociologist and author of multiple works on human nature and behavior, presents some salient arguments in his well-researched book *"No Contest, The Case Against Competition"* (Kohn, 1992). Therein, Kohn analyzes hundreds of studies conducted over a sixty year duration that compared cooperation with competition. His findings concluded that both, in business and in education, cooperation consistently out produced competition. He writes how "[in competitive societies] we are encouraged to pit ourselves against one another and taught that competition is a prod to productivity, a builder of character, and an unavoidable part of human nature." (Kohn, 1986) Kohn goes on to show that, "Any win/lose structure is psychologically destructive and poisonous to our relationships, while a little [competition] is not as bad as a lot, evidence and logic suggest that none would be better still." (Kohn, 1993)

Much of the discussion on competition is based on the belief that there is nothing a community can do about it anyway because competition is just "human nature". However, there is no evidence to support this belief, and there is considerable evidence to challenge it from scientific research into [at least] evolutionary biology, cross-cultural anthropology, and the learning / performance sciences. The research can all be summarized in a single sentence by Alfie Kohn, "We compete because we are raised that way, not because we

are born that way. It becomes very convenient for some to then go on to say that they have no responsibility for changing their [and our] practices because competition is innate. This is not so. The belief that we have no choice about being competitive is [untrue at the least and potentially deceitful at the worst]." Many people confuse how the world really works with how they have been brought up to perceive the world to work. Competition is not a necessary part of human life, just like standardized tests and grades are not a necessary part of learning, and business is not necessary for the economic fulfillment of human needs.

There are many other works that examine the effect of competition versus cooperation on the individual, on society, and also, among other species. Lynne McTaggart's book, *"The Bond: How to Fix Your Falling-Down World"* is one of them. The findings she outlines in the book are consistent - the optimal amount of competition is "zero", and species that cooperate are more likely to survive. McTaggart's research found that even "friendly competition" between sports teams and within companies had downsides. Competition generates anxiety, it promotes the production of stress hormones, and most importantly of all, reduces the probability that cooperation will occur later on. McTaggart states, "we are in a constant relationship with everything and everyone ... we must share and recover wholeness in our lives if we are to survive and flourish".

MAXIM: *Competition begets competition, cooperation begets cooperation.*

12.2.3 Performance motivation

APHORISM: *In competition, the depression of another is the price of another's exhilaration. One's misery the occasion for another's rejoicing.*

The third effect is that of **competition on performance motivation**. The claim that competition motivates people to do their best is unfounded. The middle of the road approach says:

"Maybe competition isn't so good for how we feel about ourselves, but when we are trying to win we are much more likely to achieve great things. If we weren't competing we would all just stagnate in a pool of mediocrity."

Some people say that all societies need a middle of the road position when it comes to competition: a position of "balance" - not too much competition, but not none at all. Unfortunately for those who promote "balance" in competition, the research finds that competition not only isn't necessary for excellence, typically its absence is necessary for excellence. At best, competition provides no advantage. The research clearly shows that not everything that is bad when done to excess is "ok" in moderation. Some things are bad because of what they are (their structure), not just because of how they are being done or overdone as the case

may be. Some orientational structures are inherently and fundamentally unfulfilling, regardless of whether they are done to a minimum, done to “moderation”, or done to excess. Competition is one of these fulfillment-destructuring forms of social organization.

Studies find that the more focused an individual is on getting a prize the less likely they are to take “risks” and challenge themselves, to play with possibilities and potentials, because they don’t want to do anything to jeopardize their status of getting the award. An ‘award’ is a ‘reward’ that everybody can’t get, so it adds the arsenic of competition to the strychnine of rewards (or rewarding extrinsic motivators). Setting people against each other to try and identify the “best” undermines the quality and creativity of human performance.

There are perceptions of self-interest that shut out rational and sustainable self-interest. For instance, the perception that competition is in one’s own self-interest is antagonistic to cooperative coordination (or collaboration) at a social scale. For many tasks in the real world, what conduces to excellence is collaboration, and not competition. Together, all of us are smarter than any of us. The *synergy* of all individuals applying ourselves is greater than any one individual applying himself or herself. A well-functioning group is often, though not always, able to produce better results than the most expert member of the group could do on his or her own. The most effective means of producing or creating is ruled out in a competitive environment because sharing negates the success[ful winning] of the person who has solved a problem. And, this is why [in part] the market-based economic system is not an efficient economic system for it inhibits sharing behavior and generates unsustainable perceptions of self-interest.

Competitive market entities rationally “stifle” their competition to protect their market share. Markets can be controlled. Some market entities are always likely to take advantage of human whims and instincts [for their own commercial benefit]. Those market entities with the organized capability of controlling human whims through knowledge, deception, property, or force are likely to take [competitive] advantage of such opportunities. Competition’s very structure maintains destructive consequences. Competition decomposes community. And, competition for survival [in any manner] is a recipe for disaster.

Just as competition isn’t good for our mental health, and just as it isn’t good for our relationships, it isn’t even good for our individual performances. One obvious result of competition is anxiety. “You” are naturally under a degree of stress and anxiety when you are told that you have to compete, or to be the best, and stress and anxiety tend to get in the way of thinking well and performing well. Yes, challenge is necessary for learning and for growth, but it is not accurate to say that without competition there will not exist challenge. It could even be said that competition is a destructive form of challenge.

When competition engages self-preservation, then

competitors are unlikely to back down, to consider and re-orient, for they have engaged their basic biological reflex responses, their egoic attachment to identity, their financial survival, their trauma and their drama. Competitors become “invested” in something which is actually impermanent (i.e., they become “investors”). Therein, adaptation (as a measure of performance) becomes inhibited and growth potential becomes stifled. Basically, adaptation isn’t supported by the structure of a competitive socio-economic system [in part] because it cuts off the sharing of feedback [as well as trust in the “feedback” itself].

Also, non-cooperative approaches almost always involve the duplication of effort (i.e., inefficiency), since someone working independently must spend time and energy on problems that may have [unbeknownst to them] already have been encountered and resolved by someone else. This leads to the creation and eventual expansion of a bureaucracy (i.e., the duplication of unnecessary efforts at a social scale). In the area of scientific investigation, scientists sit on important discoveries, sometimes for years, prior to publishing them because they do not want their competitors to acquire the same new knowledge. The potential for an overall effective performance becomes reduced through competition.

Noam Chomsky observed,

“The smart way to keep people passive and obedient is to strictly limit the spectrum of acceptable opinion, but allow very lively debate within that spectrum, even encourage the more critical and dissident views, that gives people the sense that there is free thinking going on, while all the time the presuppositions of the system are being reinforced by the limits put on the range of debate.”

What do people in early 21st century society call learning from one another in school? There is a common word for this, and it is called “cheating”. It is even more interesting that when the word “cooperate” is used in most schools, it is used to mean obedience; it is used as a euphemism for mindless obedience, not real cooperation.

APHORISM: *Deceptions is considered a good strategy in war.*

12.3 The acceptable positions

INSIGHT: *The ultimate potential of cooperation is the restoration of [common]unity. Community is our most informed model of cooperation.*

There are two acceptable positions in most of modern societies about competition:

1. **Unqualified endorsement** - competition is what made this land great; competition is what

motivates people to do their best; competition builds character and we need to start them when they are small; it is a dog-eat-dog world out there and so we might as well make it a dog-eat-dog world with little children too; and if you don't like competition there is something wrong with you (you are either scared of it or you can't handle it).

2. **Qualified endorsement** - maybe we have gotten carried away with too much competition; we do it too intensely; we do it with children who are too young; but if we don't get carried away, if we keep things in perspective, if we do it appropriately, then some competition is useful, productive, and so on.

Those are the only two respectable positions in most early 21st century society concerning the topic of competition. But, there is no evidence to support the idea that competition is ever the optimal arrangement for children and adults at work, at home, in learning, in play, or in any socio-economic context in general. Why would society ever set a social arrangement up so that one individual or group can succeed only if others fail. When does that ever produce optimal results compared to pursuing tasks independently (and then sharing) or cooperatively. The idea of social cooperation is generally a heretical position in modern culture. Regardless of what most people happen to think, the research is clear, the optimal amount of competition in any socio-economic environment, especially those involving children, is none.

A socio-economic system based primarily on competition might evolve into a free-market where all things are capable of being commodified in a state of competition with other commodifiers. In a market-based paradigm, cooperation is not an acceptably reinforced position. A monetary economic system forces the masses to compete with each other for limited resources (some of which are truly limited and others artificially engineered into limitation). Alternatively, a socio-economic system based primarily on cooperation might evolve into a distributed resource-access system, where cooperation and a sense of unity are ever present in the fulfillment of needs. Competition based systems can move toward unification also. When they do, they create a centralized system of power that constantly seeks profit at the expense of others for the further consolidation of power through the removal of competition via gaming strategy. As long as a population maintains a competitive orientational state, then at scale, a socio-economic system shaped around global economic control will emerge naturally.

THE ARGUMENT OF THE MISINFORMED:

"Competition for market share spurs innovative technologies that lower the cost of producing increasingly amazing technological services to the entire public." ... one might well question this statement.

12.4 Competition consolidates power destructively

NOTE: *With transparency, humans governing other humans becomes difficult. Information [as data] becomes relatively worthless when the source is obfuscated, and hence, the data cannot be confirmed or validated. All adaptive networks validate information packets. If society is an adaptive network, then it is valid to maintain transparency.*

Competition fosters self-interest above all else. In a competitive social power structure it makes logical sense that some groups will eventually rise to extreme wealth and power thereby becoming de-facto "rulers of the world". After all, individuals need to spend money to make money, which means that those with the most money will always have a much easier time making more of it than those with no money. It is hard to "pull yourself up by your own bootstraps" when one can't afford the metaphorical boots or the straps. Therefore, competition generates a kind of economic dictatorship as a mathematical inevitability that humankind has been approaching for centuries and culminates in the formation of a "revolving door" State. Therein market entities compete to position themselves inside the State for their own benefit, of which, regulations and other State resources may be used to reduce the competitive landscape for their own competitive advantage. In early 21st century society, the laws are often written by the corporations, and the lawmakers are playing their role, pretending to regulate while following through with the act. While a group with great economic power is not by definition a "government" in the traditional sense, it nonetheless has the same effect as one - the ability to exercise great power over the lives of a large number of people and subjectively handle (or direct) a large number of resources. With great economic power comes great social power.

In a community-type society, there are no "competing providers" who can restrict the flow of information and the equal sharing of resources; everyone is a potential provider and everyone is a user (i.e., everyone is a "pro-cumers", a producer as well as a consuming users). In a community-type society, the societal systems are transparently designed by the community of using producers (a true open source society, or open society).

Competition creates the incentive to think of "loyalty" in terms of [personal or in-group] exclusivity and not [global] inclusivity. Such a fragmented way of thinking is unlikely to convey a means of solving systematically generated and structurally reinforced problems.

Money is power [over others]. This is especially true in a capitalist system with a privatized means of production, hierarchical employment, and wage labor. When an employer tells his employees what to do, that is an example of an exercise of power. Generally, the

power over specific individuals is a function of wealth discrepancy, information asymmetry, and the victim's desperation.

Politics and markets priority encode the value of competition over cooperation into the social and economic structures of a population. In modern market society most people are excluded from participation in decisions that involve a wide variety of important aspects of their lives. Notably, businesses and governments dictate the terms of participation in society. Individuals inculcated into a competitive-based society rarely learn how to learn, they rarely learn how to maintain a state of fulfillment, they rarely learn the differences between needs and wants, and they regularly become dis-connected from their true intrinsic selves; instead, they are conditioned to accept the belief that competition for infinite want and hierarchical social influence is the goal of life [and that "wealth" comes in the form of material acquisition and power positioning]. When competitiveness prevails, then hierarchies and subjugation flourish [at the expense of all humanity].

When competition becomes structured into a society it tends to form a hierarchical and authoritarian culture based upon domination and control. Economic systems oriented toward competition, and hence, domination (and social control), are significantly distinguishable from relationships based on mutual benefit and accountability. These two orientational directions (or conflicting values) could possibly be represented as continuum.

Is your environment hostile at the social and macro levels? The pressure and stress that come with having to prove your worth daily in a competitive environment generates social hostility, and it is a form of "structural violence". A market-based economic system is structurally violent [in part] because of its inherently competitive nature. In some societies, social class inequality is structured to the extent that some individuals have less of a right to life (as need fulfillment) than others. This unfair and unnecessary structural violence is a major source of "crime" and stress and behavioral conflict in early 21st century society.

As a species, many humans in the 21st century are literally unable to afford their own progress. It is not rational to compete; it is only reasonable to unite in fulfillment. Cooperation presents the potential to create a successful and coordinated survival strategy, and humanity owes its evolution to its pro-social abilities to work together as a population (i.e., as a community). The necessity to compete leads to the necessity (or incentivized impulse) to gain competitive advantage over others out of fear of scarcity, or real scarcity, in one's own achievement and satisfaction. Trading and gaining without relevance to human needs, ecological sustainability, and truthful social progress is not human progress.

Yes, there is competition in nature, but to organize a group of individuals around the value of competition has serious consequences for the stability and ultimate

fulfillment of those individuals. Mutual aid and cooperation within and among species actually does tend to be the rule rather than the exception. And, even when there isn't active cooperation there tends to be an avoidance of active competition. Dominance hierarchies and pecking orders do exist within many species such that an individual in the species has a sense of what his or her place is. These static orders reduce the need to compete with other members of the same species. Migration is [in part] about avoiding competition - if there isn't enough food for all of us here, some of us will go over there so we don't have to compete. The idea that nature is "red in tooth and claw" is an outdated view. And, the expression of a dominance hierarchy and pecking order appears within species with a specific need and decision space; a space much reduced in its awareness than that which humankind is presently capable of working with.

The phrase "survival of the fittest" was apparently not uttered by Darwin; it was uttered by Herbert Spencer, who is said to have corrupted Darwin's thinking to justify withholding "aid" from the neediest people. Instead, Darwin actually said that natural selection means that whoever is best able to adapt to a changing environment is more likely to be around to reproduce. He did not specify the method of adaptation, which is now known to involve cooperation more than competition.

When people talk about "competing and winning" in the market, they are referring to the pursuit of what is considered "success" within that economic system. Individuals compete against other individuals and organizations of individuals, striving to achieve certain goals or outcomes. The concept of winning in a market-based socio-economic environment encompasses achieving desired results, such as profitability, market dominance, and personal advancement. In this context, the notion of winning implies outperforming others or attaining a position of advantage.

The question arises as to who or what is being defeated in this competitive scenario. Within a socio-economic framework, winning often entails outperforming or surpassing competitors, which may result in their diminished market share, decreased influence, or even their exclusion from the market altogether. Competition at a social level can give rise to certain associated behaviors. Induced behavioral attributes include, but are not limited to: unhealthy ambition, innovation over others, serious risk-taking, and short-term decision-making. Additionally, gaming behavior and competitive advantage come into play. Gaming behavior refers to tactics or strategies employed to exploit loopholes or gain an unfair advantage within the rules of the competition. Competitive advantage, on the other hand, relates to gaining better people, materials, or information over competitors.

It is important to consider the potential consequences of a society that embraces competition as its socio-economic foundation. By accepting competition as a fundamental principle, a population may experience

consequences, including inequality, exploitation, and a focus on individual gain at the expense of common well-being. It is essential to recognize that all individuals are interconnected within a larger ecological system, where their actions and influence interact and have an impact on others. Fundamentally, all individuals are part of one ecological system of interacting influence.

A social system based upon the concept of competition will inherently generate the experience of scarcity, war, crime & corruption, inefficiencies, environmental harm, and a hostile social environment. And, past a point it will serve as a great hindrance to continued human progress and survival. Competition is inefficient and destructive - it is a force that increases entropy in a system.

The everyone-for-themselves paradigm, which maintains winners and losers, and arises out of a competitive environment, is adverse to a systems approach that recognizes interrelation, and thus, the necessity for cooperation of all elements that make up a system. If one element of a system begins to compete or attempts to dominate another element the system itself becomes unstable and begins to break down. In principle, all components of a system must work together to maintain the whole system. The human form is an organisation of about a million billion cells. These cells are specialised into many different types that team up to form systems. In the human system, the functions of the cells are produced by the cooperative activities of many specialised and differentiated components. Essentially, a community-type society is a large cooperation structure that is made up of individual cooperators.

After reading up to this point some people might state, "well, that all sounds nice in theory, but in the real world, its utopian, idealistic, and unrealistic". These challenges are once again addressed below:

1. Individuals, particularly children, get more than enough experience with competition without artificially adding more. Video games, television, and playful sports are just a few examples. It is the truly cooperative activities that are in scarce supply.
2. In a competitive society it is very helpful to have people reflect on that aspect of society. It is important to present information about competition just as one would present information about substance abuse or reckless driving, so that individuals are capable of recognizing it and thinking deeply about its premises. But, when people in early 21st century society say "society needs to teach children about competition", what they are really suggesting is that society needs to immerse children in competitive activities, which is a very different thing. Said form of immersion is more akin to socializing them to uncritically accept competition as inevitable or desirable. That is very different than helping them to think about the idea of competition, what they are doing when

they are competing, and the life ramifications of a competitive social and economic environment.

3. The acclaimed benefits of failure in competition are overrated. People who suggest that competing and losing is "good for you" because it leads you to pick yourself up and try harder next time are individuals who don't spend that much time observing the results of competing and failing, and they seem not to have great memories about their own childhood. The research finds that failure, typically when experienced by youth, teaches youth that they don't have the competence to succeed, and by internalized consequence, they become less likely to succeed next time. Being unsuccessful, which most people are in competitive encounters, is rarely useful in helping people to become more successful at the activity, let alone more excited about doing it.
4. Even if you disagree and think that failure can be useful. Failure doesn't necessarily entail losing, which is failing at a public activity so that someone else can succeed. Just as winning and succeeding are two different things, so too are failing and losing. There is no evidence that the particular version of failing known as "losing in a competition" provides any advantage in terms of children's ultimate development and should not be equivocated with the "challenge of learning".
5. Some people say that individuals, particularly the youth, "better just get used to competition for society is going to make them do it anyway [when they are older]". Not only does this sound a bit ominous, but what such a statement is essentially saying is that "people are going to do unpleasant things to you later so we have to prepare you by doing unpleasant things to you right now while you are here. Yes, competition destroys self-esteem, yes it undermines relationships, yes it gets in the way of excellence in many activities and it makes people less excited about the activities themselves, but people are going to make you compete later so start suffering now". When said, the statement isn't generally put quite the way it is worded above, but it is not that far from the actual rationale that people invoke.

Fundamentally, it is unwise to write the notion of competition into our conception of self (at any scale).

APHORISM: *Secrecy is security, and security is victory [in socio-economic competition]. Secrecy among a commonly interconnected population leads easily to maladaptive control by preventing the exposure of hidden agendas, and through breeding distrust, suspicion, and paranoia in the world*

13 Intrinsic motivation

A.k.a., Internally motivated behavior, self-determinism theory (SDT), self-determination, self-integrating response, intrinsic value.

Intrinsic motivation is a basic requirement for human need fulfillment. Essential for both survival and overall well-being, there exists an inherent motivation or drive (a.k.a., intrinsic motivation) to meet and fulfill fundamental human needs. Intrinsic motivation refers to behavior that is driven by internal states or internal rewards. In other words, the motivation to engage in a behavior arises from within the individual because it is naturally satisfying to you. Intrinsic motivation is a type of motivation based in people's natural interest in various activities that provide novelty, challenge, and other desires. (Deci et al., 2010) Intrinsically motivated behaviors are those that are performed out of interest and require no "reward" other than the spontaneous experience of interest and enjoyment. (Deci, 1975) When intrinsically motivated, people behave freely and willingly with no external or intrapsychic prods, promises, or threats. Csikszentmihalyi (1975) described these behaviors as "autotelic," meaning, as the word implies, that they are self-directed. Intrinsic motivation entails curiosity, spontaneity, and interest. It is readily evident, for example, in the play, exploration, and mastery strivings of children and in the delight that accompanies those behaviors. (White, 1959) Fundamentally, society can be structured to support people's own motivation and growth. The way to facilitate maximal motivation in people in the education and contribution (duty) phases of their lives is to create an environment that allows individuals to feel complete in their psychological needs for autonomy, competence, and relatedness (and, purpose).

Daniel Pink (2011) popularized the values of autonomy, mastery, and purpose in his book, *Drive: The Surprising Truth About What Motivates Us*. Therein, Pink presents the research that creative thought and action require something of more substance than punishment and reward (i.e., extrinsic motivation). Rewards undermine the intrinsic, inherent motivation all humans have naturally to begin with. Offering rewards and giving them after a behavior is a process of controlling another. When people come to feel controlled, they lose their own inherent motivation (i.e., their intrinsic motivation). Pink provides evidence that science has known this to be true for almost fifty years, and that in tasks requiring creative and autonomous thinking, incentives do not work at a practical level. In fact, incentives hurt productivity. Reward moves the focus from the 'task' to the 'reward'; hence, their studied hindrance of creative work. There are a lot of studies on the topic of effort with payment (extrinsic motivation) and without payment (intrinsic motivation). With payment, people think significantly about the reward. They are much less efficient at the task, because they are think about the reward while

completing the task -- they are thinking more about the reward than the task. Herein, it is easy to realize that the effectiveness with which someone does something is the primary intrinsic driver (i.e., motivator), not the amount of it done.

Pink (2011) explores the deep human need to direct our own lives, to learn and create new things, and to do better by ourselves and our world. This need is known as *intrinsic motivation*, and it is found at the juncture of three outcomes: autonomy; mastery; and purpose. Fundamentally, the understanding that Pink arrived at is that humans are capable of reaching their higher potential under conditions (both internally fostered and external structured) of autonomy, mastery, and purpose. Pink demonstrates that true values within humans are not penalty-centred, but rather centred around the notion of freedom-of-contribution.

Autonomy is a vital value. People want to feel that they have the freedom to choose what they do and how they do it. Mastery is an equally important value - to have enough access to information, experience, time, and energy to really feel that one masters and succeeds in resolving desired tasks, and learns desirable things. Purpose involves the idea that there is meaning, intention and sense of intimate relationship in what we do.

NOTE: *Consider how habitat design involves regenerative design and intrinsic motivation involves the regeneration of desire, curiosity, and interest.*

13.1 The intrinsic motivation values

A.k.a., The intrinsic values, intrinsic motivation value sub-coordinates, intrinsic motivation sub-values, self-determination theory values.

The primary self-directed value coordinates for adaptive fulfillment (in terms of intrinsic motivation) are:

1. **Autonomy** (self-determination).
2. **Competence** (mastery, knowledgeable & skilled, high ability).
3. **Purpose** (needs, goals and results).
4. **Relatedness** (connectedness) and **mindfulness** (mindful relationships) are a corollary to the prior three.

NOTE: *It is wise to remain aware that the values of autonomy, mastery and purpose are not considered in high regard nor even applied in early 21st century society, based at every level on socio-economic extrinsic carrots and sticks.*

Together, these values facilitate the structured expression of a self-directed state of motivation within an individual (i.e., intrinsic motivation). These value conditions might also be referred to as the necessary organizational "prerequisites" to [intrinsic] motivation

and self-stable internal development. In other words, they are orientationally stabilizing value states for the adaptive self-direction of consciousness and the development of a personality that expresses the qualities of self-esteem and self-efficacy [in its relationships with that which exists].

These values represent conceptual coordinates, and when rendered together, they maintain the potential for maintaining a self-directed and highly creative learning environment. Herein, it is in the desire for autonomy of experience [in the verification of existence], a mastery of the self [through accurate identification], and a meaningful purpose [to consciousness] that mutual coordination [of relationships] and “self-evolution” resides. These values are the progenitors of all true learning and adaptation, and they represent the expression of creatively inquired thought and a desire for constructive action. They are a necessary environmental orientation for the continuance of a purposeful and self-directed community, a community expressly moving toward its higher potential.

The values of autonomy, mastery, and purpose form a conceptual structure that allows [and maintains a decision space] for the free flow of inquiry, integration, adaptation, and decisive action within a larger cooperative system, the “uni-verse”.

It is important to note herein that in self-determinism theory (SDT) these values conditions are considered basic psychological needs. Therein, basic psychological need satisfaction is assumed to represent the underlying motivational mechanism that energizes and directs people's behaviour. (Deci et al., 2000) Psychological need satisfaction is regarded as the essential nutriment for individuals' optimal functioning and well-being, as water, minerals, and sunshine are essential for plants to bloom. (Deci et al., 2000; Ryan, 1995) In SDT, three basic needs are distinguished: the needs for autonomy, competence (or mastery), and relatedness (or purpose). (Broeck et al., 2010)

Hence, at the social level of organization these concepts represent values, but at the level of the self (in self-determinism theory) they represent basic psychological drives (or ‘needs’). Fundamentally, movement toward the fulfillment of these needs (as ‘intrinsic motivation’) requires a conducive environment [with a specific value orientation]. Together, the organization of the environment and the [e]motive desire to fulfill these needs facilitates community integration and environmental adaptation.

The motivation of individuals among a population could be categorized in the following ways:

1. **Intrinsic motivation (intrinsically meaningful motivation, self-determined)** - motivation to fulfill human needs and internally set goals. Intrinsic motivation is motivation without the pressure of coercion or extrinsic reward. Intrinsic motivation is

self-determined.

2. **Extrinsic coercive motivation (controlled motivation)** - for instance, “We are doing this, if you don't do this, or you do this other thing, you will be hurt/punished.” Coercive motivation is motivation determined by an external authority.
3. **Extrinsic reward motivation (controlled motivation)** - for instance, “We are doing this, if you do this, we will give you access or money.” Reward motivation often includes an a lot of coercive motivation; because, “if you do this, you will get the reward, but if you don't do this, you will be punished with less.” Reward motivation is motivation determined by an external source.

Note: *Controlled motivation is motivation by force or seduction. And, there are a range of harmful consequences that come along with motivating people extrinsically (through rewards and/or punishments).*

People who are intrinsically motivated actually work much harder and smarter than those who are extrinsically motivated, because you are doing some activity for some goal that is directly cared about and immediately rewarding, because it is pleasurable. Intrinsic motivation involves self-direction, empowerment (self-responsibility, behavioral change tools), and socially cohesive cooperation.

INSIGHT: *Community needs people who can think and create independently. Community is a system that facilitates the development and sustainment of these qualities. Here, the idea is to find activities that inspire “you” and that “you” like doing.*

13.1.1 Autonomy

As an organizational [value] dynamic ‘autonomy’ represents the freedom to choose what “you” do and the environmental availability of having stuff to choose from (i.e., opportunities). Unlike self-determinism theory (SDT), which refers to the subjective experience of psychological freedom and choice during activity engagement, the definition of ‘autonomy’ as a value orientation refers to autonomy as a task characteristic. In other words, is the task freely chosen, and is there independence and discretion by the individual in scheduling the work and [by degree] determining the procedures used to carry it out? Herein, autonomy means allowing others to control how they organize and exert themselves, or work and learn. It is a form of pro-social motivation. In reference to task opportunity, autonomy also refers to whether or not the task is available to the individual desiring to complete it. (Hackman et al., 1976) In the sense of the value condition of freedom, autonomy is allowing others [the freedom] to take their own decisions, and not try to control the decisions of others. When there is autonomy frustration, people feel trapped, conflicted and/or

pressured.

Humans are naturally inclined to act on their inner and outer environments [when opportunities are available], engaging in and sharing of activities that interest them, which naturally involve progress toward personal and interpersonal coherence. In reality, we do not have to be pushed or prodded to learn and to act. Learning is a natural and freely expressive process, it does not require a forced or otherwise coercive relationship. Learning is intrinsic to conscious experience, although the drive can become inert under sufficiently adverse conditions [by degree of individual sensitivity to those conditions]. The blossoming and cyclical sustainment of a desire to learn comes from within the individual; it is intrinsic to adaptive organisms.

Autonomy may also be discussed in terms of how to avoid infringing on autonomy, which can be an extremely subtle act. Anytime someone is asked or commanded to do something, then s/he loses autonomy [by fractional degree over time]. An extreme case would be that as soon as someone is asked to do something, s/he becomes agitated and dismissive about doing it — even (or maybe especially) if s/he was already going to do it.

In SDT, autonomy represents individuals' inherent desire to feel volitional and to experience a sense of choice and psychological freedom when carrying out an activity. (Deci et al., 2000; deCharms, 1968)

As a state of the being of the self, autonomy represents an individual's desire to be self-directed - to direct one's own life, behaviors and experiences. It is the felt experience of a sense of volition and psychological freedom. It is a component of self-directed freedom.

Autonomous motivation (or "intrinsic motivation") has proven to promote greater conceptual understanding, enhance persistence at challenging activities, generate higher "productivity" performance, reduce burnout, and increase levels of psychological well-being. In a community it involves the effective organization of *task*, *time*, *technique*, and *team* to maintain an environment where individuals are free for the meaningful. For there to exist any form of meaningful engagement, there must exist autonomy. Autonomy in the expression of an individual's highest creative and exploratory potential, which is essential for optimal well-being in any culture. Hence, autonomy must necessarily include the autonomy to verify the identity of existence for oneself, which means that there needs to be a baseline quality-of-life that facilitates equal access to learning experiences.

It is relevant to note here that although autonomy, as an intrinsically motivated task characteristic, contributes to feelings of psychological freedom, people might also experience autonomy satisfaction when they depend on others and even when they follow others' coercive requests, orders, and commands. For example, employees (Read: someone extrinsically motivated) may follow-up a "request" from their supervisor (and thus fail to be independent), but nonetheless act "willingly" because their supervisor provided them a meaningful rationale for doing so. (Soenens et al., 2007)

13.1.2 Competence (or mastery)

NOTE: *'Competence satisfaction' allows individuals to adapt to complex and changing environments, whereas 'competence frustration' is likely to result in a sense of helplessness (poor self-efficacy) and a lack of motivation. (Deci et al., 2000)*

Competence is the urge to get better and better (i.e., improve) at something that matters, with the potential of mastering it -- it is the opportunity and freedom to build deep competency and expertise, and ultimately, the optimized efficiency of intentional movement. Competence (mastery) is an emergent continuum in itself leading from basic competence through to the highest level of competence, 'expertise'. Expertise is complimented by the autonomous expression of the self to consistently inquire and to learn new things - getting better through practice and more refined through discerned openness - constantly evolving and improving. When there is competence frustration, people can feel like a failure.

The need for competence is defined as an individuals' inherent desire to feel effective in interacting with the environment. (Deci et al., 2000; White, 1959) From the perspective of the self, it involves self-development as becoming more knowledgeable and/or skillful. It involves curiosity and exploratory motivation, and it requires that the 'self' actually *do* things and *use* things (as well as experience some degree of challenge) in order to develop itself. As individuals, we develop greater self-esteem through the mastery of (and competence at) challenging tasks, which requires environmental opportunities, internal goals, and social support (Read: social coordination). The drive toward competence and mastery involves the propensity to explore and manipulate the environment, and to engage in challenging tasks to test and extend one's skills.

Herein, outcome expectancies and self-efficacy represent *acquired cognitions* with respect to one's capacities to successfully accomplish specific future tasks. Whereas, 'competence satisfaction' refers to a more general, affective experience of effectiveness which results from mastering a task. Despite these conceptual differences between self-efficacy and the need for competence, both are likely to be correlated at the empirical level. (Broeck et al., 2010)

Mastery also describes the pleasure someone gets from doing what they love and following their passion. This can be seen when someone is so absorbed in a task that they are in "the zone", or what is commonly known as experiencing a state of 'flow'. 'Flow' is a term used to describe the state of body-mind when time seems to disappear and an individual is immersed fully in an enjoyable task [that movements become near effortless]. At its peak, expertise becomes an empowered state of intentional flow.

Without focus and self-discipline, without entering a state of flow, there is no mastery and no development

of a skill (i.e., no “art”). Herein, it might be wise to reflect upon “art” that is displayed and sold for its shock value and the dramatic emotive reactions that it can draw out of a crowd versus are as a skill. When skill is removed from art, then “art” becomes almost patronizing. For instance, the “liberating arts” were originally supposed facilitate a free movement into ever greater states of flowing mastery.

13.1.3 Purpose

INSIGHT: *Motivated people like to get better at things. When people are curious or otherwise self-motivated, they will even do tasks for free.*

Purpose is the yearning to do what we do in the service of something larger than ourselves - to do that which is intentionally meaningful. It represents an understood connection and relatedness to something greater, which arises through the relation of meaning. Purpose provides a context for autonomy and mastery wherein it engages intention and focus.

Purpose addresses the situation that even when we get what we want (i.e., achievement), it may not be what we need (i.e., meaningful fulfillment). Intentions can orient away from fulfillment, and they can orient toward it. A purpose represents a known direction, a direction upon which intention is placed, and an understanding of why it has been placed along that direction. When understanding accompanies intent, then there is likely to exist fulfillment, but when intent is devoid of understanding, then there is likely to be deception and suffering. When there is purposeless frustration people feel bored and lazy.

QUESTION: *If that purpose which intent is placed upon isn't a higher potential of existence and of fulfillment, then what is it?*

13.1.4 Relatedness

INSIGHT: *Treating people with dignity means treating them as ends in themselves, rather than as simply means.*

The need for relatedness is defined as individuals' inherent propensity to feel connected to others, that is, to be a member of a group, to love and care and be loved and cared for. (Baumeister, 1995) The need for relatedness is satisfied when people experience a sense of belonging and develop close and intimate relationships with others. (Deci et al., 2000) In any society it is important for people to be mindful of what they are relating to, how they are relating, and why they are relating. When there is relatedness frustration people feel lonely and left-behind by others.

13.2 Intrinsically and extrinsically driven motivation

NOTE: *By working for others [for extrinsic*

reward] individuals drain their own passions. Therein, pressure from authority is not motivation; it is coercion. Doing something for either reward or to avoid punishment is a form of external social control. Further, to obey or to be punished is not respectful of the conceptually conscious beings that humans are.

Intrinsic motivation relies on the fostering of existing internal sources of motivation rather than driving motivation externally (i.e., extrinsic motivation). Extrinsic motivation refers to behaviors that are performed instrumentally to attain some specific extrinsic reward, externally desired outcome, or outside behavioral reinforcement. Generally, extrinsically motivated behaviors are ones that would not occur spontaneously and, therefore, must be initially prompted by a reward contingency or other instrumentality. When we are intrinsically motivated we pursue tasks for the love of them alone. With this understanding in mind, motivation may be perceived as a continuum from amotivation (no motivation) through to intrinsic motivation, with extrinsic motivation in between. (Deci, 2004)

Extrinsically motivated work is inherently alienating. The worker does not feel intrinsically connected to the work. Where there is only extrinsic motivation, the worker does not feel a part of the work, and the human need for contribution is not fulfilled. And hence, a reduction in joy [in life]. Control through extrinsic motivating factors deprives the individual of appropriate self-autonomy. The subsequent repression and denial of the conception of a set of discoverable needs (intrinsic drives) further inhibits motivation to cooperatively get needs met.

One typically delightful example of intrinsically motivated behaviour is children playing. In play, children are often wholly absorbed in activities, experiencing a sense of interest and joy as they manipulate objects and explore new environments (as they discover and work with what they have discovered); therein, children are in a state of flow, which early 21st century society jerks them out of with its structures, institutions, and limiting [cultural] beliefs - through socialization and normalization to conditions which are aberrant to normal intrinsic functioning.

Through the naturally autonomous act of play, children learn. Community can be designed to facilitate the emergence of systems that maintain a state of flowing experiential engagement with existence, and it does this [in part] through the structuring of meaningful interrelationships between the lives of participating individuals. Everyone has the capacity to learn through play. Play represents a mechanism that we maintain throughout our lives, and through which we can come to verify existence and integrate our experiences into ever greater folds of potential exploration and creation. However, this mechanism can become obfuscated. In early 21st century society it is often obscured through internalization of an external conception of limitation, such as when our autonomy has the appearance of, or has been quite literally, taken away.

Play the near opposite of extrinsic motivation and reward. Extrinsic reward diminishes intrinsic motivation and creative problem solving. (Deci, 2004) According to the research (Pink, 2011):

1. Extrinsic motivators work only in tasks requiring repetitive and regimented mechanical skill. These are technical tasks that could be automated.
2. Once a task calls for even a rudimentary amount of cognitive skill, a larger reward often leads to poorer performance.
3. Extrinsic motivators, which Pink refers to as “if-then” rewards, often destroy creativity and performance. They are likely to create dependence.
4. The key to “high performance” isn’t rewards and punishments, but rather it is the individual experience of intrinsic drive - the desire to do opportune things because they have meaning.

Extrinsic motivation, when driven by the classic contingencies of food and financial reward, grades, and arbitrary punishment is often experienced by the individual upon which the contingency is being heaped, as force and control - that is, people feel pressured through the seduction of rewards or the coercion of threats, to do a task. Over time their behaviour tends to become dependent on the contingencies, so they do not do the behaviours if the contingencies are not operative. In other words, when the extrinsic motivator ceases to be present, the behaviour will cease to be present; and, this has extreme consequence in the case of life-long learning. Rewards and punishment in learning (i.e., schooling) essentially de-couple the learning process from desire the natural desire to learn [and couples it to authority]. Wherein, individuals are no longer self-directed and become more obedient to authority.

We do not need extrinsic incentives to develop and “evolve” ourselves. The science clearly shows that extrinsic motivators act destructively toward a host of individually and socially beneficial qualities, not the least of which is that of creativity and efficiency. Extrinsic motivators represent a decrease of efficiency because they are more often than not applied in an environment where information is purposefully withheld or otherwise obfuscated (e.g., schooling).

Unleashing one’s passion for their interests is the key to “success”, not dangling a carrot and threatening a stick. People are conditioned in early 21st century society to believe that without force there would be no learning and no effortful work toward economic and social “development”. Not only does the application of extrinsic motivators show a lack of social intelligence and an ignorance of our scientific understandings of our own motivations, but it concurrently shows a lack of respect and dignity for those to whom which it is applied.

Humans will resent the stick, even when it is threatened, but never used. Carrots and sticks lead to short-term gain (i.e., industry profit) for long-term pain

(i.e., ecological stability and healthy functioning). Pure, deep engagement and intrinsic motivation fulfill human beings. Fundamentally, human beings have the potential to enter into a state of fulfillment when they are engaged in activities that are desired.

The harm that a carrot and stick philosophy does is much more impactful than any minor progress it might enforce. It is better to:

1. Put detailed feedback signals in measurement systems (and not in incentives);
2. Focus on what is desired in a way that engenders intrinsic motivation; and
3. Put in place an “approximately aligned” system focusing on fairness, and not on external incentive.

Fundamentally, “toxic external motivators” such as arbitrary threats from authority, financial incentives, grades, or other sticks and carrots, are detrimental to long-term, self-motivated behavior. As Edward Deci concludes in, *Why We Do What We Do*, intrinsic motivation is natural to humans, but it is a fragile flower: it requires an atmosphere that nurtures our needs for autonomy, mastery, and purpose.

As a community, we understand the need for enabling the natural motivation and learning processes of individuals, and thus, empowering their creativity and their curiosity. We understand the need to show each other the tools with which we can all use to improve ourselves. In community we seek to direct our own lives, build deep competency, and develop meaningful connections.

As a society, do we want the things individuals desire and fear used as levers of control, because that is what punishment and rewards achieve. Punishment and rewards teach acquiescence to power, to the idea that “might makes right”. Is that a good lesson for anyone? Who says, “you’ve shamed and punished me into a more empathetic and diligent mindset.” None of us enjoy the things we desire used as levers to control and social engineer our behavior. And fundamentally, rewards are things we desire being used as levers to control our behavior, some with more damaging consequences than others.

NOTE: *Intrinsic motivation provides momentum for further learning as well as greater confidence in learning. Wherein, the curiosity of consciousness drives exploratory behavior.*

13.3 The mechanistic (behavioristic) perspective

Under the mechanistic perspective, once “objective” data have been collected, theory becomes the process of offering a plausible and testable explanation for the observed behaviors. Mechanistic theoretical interpretations take two forms. In one case, they link one or more primary qualities of behavior to specific

antecedent conditions. For example, the child behaves in a certain way because of the way the parent behaves (i.e., conditioning), and the adult works harder because the company rewards productivity with salary increases (i.e., extrinsic motivation). In the other case, internal mechanisms are hypothesized as a mediating link in the chain between antecedent cause and subsequent behavior. These internal, mediating events are not seen as causing the behavior in the same way as above (the efficient cause), but rather, they are the physiological, neurological, or genetic factors that make the behavior possible (Read: a material cause). In either case, a direct link is made between the cause and the effect.

To the simplistic mechanistic perspective, the secondary qualities of emotions, motives, aspirations, etc., are often of little interest to mechanists, because they are less easily observed or reliably inferred, measured, and located. Mechanists would not argue that people do not experience these things. However, they argue that secondary qualities are best studied and understood by focusing on behavioral change and the efficient and material causes of this change.

This issue is noted here because the systematic reduction of human behaviors to antecedent causes has been attempted by all social sciences in the twentieth century and has produced their dominant paradigms (Skinnerian behaviorism and Prussian schooling, as just two examples). Skinnerian behaviorism and the Prussian schooling model (i.e., the behavioristic approach) focus on extrinsic motivation over any form of intrinsic motivation.

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TABLES

Table 20. Value System > Intrinsic Motivation: *The self-determinism continuum.*

	Non Self-Determined		Semi Self-Determined		Full Self-Determined	
	Amotivation	Extrinsic Motivation				Intrinsic Motivation
Regulatory style	Regulation	External Regulation	Introjected Regulation	Identified Regulation	Integrated Regulation	Intrinsic Regulation
Source of motivation	Impersonal	External	Somewhat external	Somewhat internal	Internal	Internal
Motivation regulators	No intention Incompetence Lack of control	Compliance External rewards or punishments	Ego-involvement Approval from others	Valuing an activity Endorsement of goals	Congruence Synthesis with self	Interest Enjoyment Inherent satisfaction

Table 21. Value System > Intrinsic Motivation: *Intrinsic and extrinsic forms of motivation.*

Source	Type	Accounting	Societal Structure
Intrinsic	Self Motivation	Human needs	Contribution structure
Extrinsic	Coercive Motivation	Punishment	State structure
Extrinsic	Reward Motivation	Reward	Market structure

The Social Approach of a Community-Type Society

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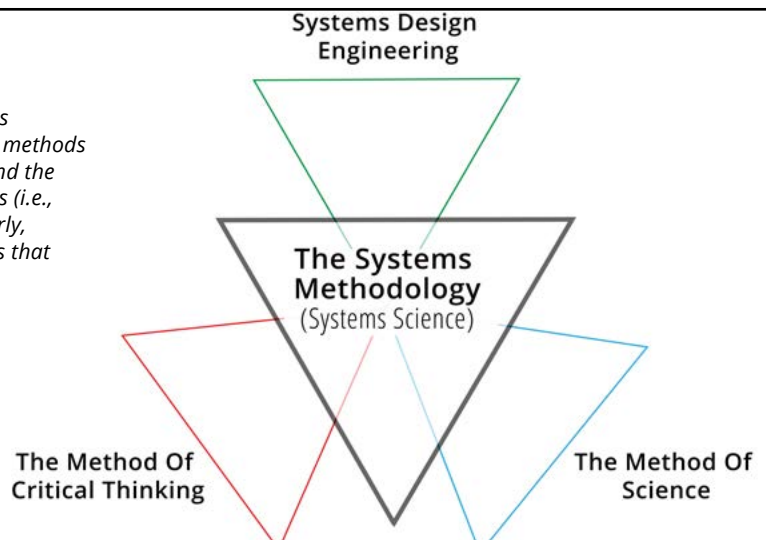
Abstract

All information with a social reference may be approached in such a way that the result is more information coherence. All directions (solutions) are approached (resolved) through the selection of methods (tools) that are intended to reduce uncertainty and incoherence. Given the totality of the methods available, it seems optimal to select a set of methods that align with a basic patterning language, the systems methodology. There are methods that reduce uncertainty (e.g., experimental science) and there are methods that increase understanding (e.g., rational science). In order to develop a unified societal approach, a unifying set of methods is required. At the individual level there is critical thinking, at the social level there is rational explanation, and at the technical level there is experimental validation. Critical thinking is required to reduce conflict during self-integration; rational explanation is required to reduce conflict during social-integration; and experimental validation is required to reduce conflict at the societal level.

Hence, the necessity to develop and construct a societal-level community.

Graphical Abstract

Figure 18. *Systems science becomes systems engineering, the methods of science, and the methods of logical/critical thinking. Critical thinking and the methods of science are systems-type methods (i.e., can be applied for systems purposes). Similarly, systems engineering is a selection of methods that account for system generation.*



1 Introduction

INSIGHT: *Through a common, coherent, and verifiable approach humanity can come to better understand itself, and better organize for everyone's fulfillment.*

A community-type society utilizes the following methodology and methods, which are mutually informed and formalized. Together, the methodology and methods detailed herein are known as “an approach” -- they are essentially thinking tools (or, tools for better thinking). (Dennet, 2013) The approach herein describes the way in which a community-type society describes the world and resolves the problems encountered while individuals are acting together within it. This approach is subdivided into three related methodologically understandings (or, tools):

1. The systems methodology (the systems approach)
2. The method(s) of science (the scientific approach)
3. The trivium method of critical thinking (the critical approach)

Together, the approach leads to the discovery and operational integration of patterns of information useful for mutual, global human fulfillment. Wherein, the systems methodology concerns patterns, the methods of science concern discovery, and the critical methods concern integration and unification.

The **systems methodology (a.k.a., systems science, the systems approach, etc.)** is the principal conceptual logical language/linguistic filter through which a population perceives and conceives of reality, and with which it may construct a [creatively synthesized] decision space with the ability to integrate discoveries, deal with uncertainties, and act intelligently upon the real world for everyone's mutual fulfillment. It is through thinking systematically that patterns and relationships appear that allow for an integral approach to action. Systems science is the science of the complexity of a whole in its actual operation; as opposed to science as a reduction of the whole to its parts to see how the parts act in isolation. Systems thinking is the semantic structuring used to communicate geometric thought and manifest geometric conceptions. A systems methodology logically selects for methodical approaches that are systematic in their form - they logically follow systems-based principles. In other words, the two sub-approaches selected for, are thus necessarily, systematic in their form.

The two systemology selected methods are **the method(s) of science and the critical method (a.k.a., the trivium method and critical thinking)**, which represent the two primary approaches by which individuals inquiry, acquire, verify, and integrate knowledge [in a systematic form], and through which everyone may all evolve a more accurate and fulfilling semantic structure.

As a population's understanding of the natural world

evolves, so too will its methodologies and methods, and the language through which it perceives and understands itself in the real, natural world. Through the use of these holistic investigatory/refinement processes individuals do not “make their conclusions”; instead, they arrive at understandings by examining the information available, and integrating it in a systematically adaptive and non-contradictory manner. It is this approach that brings coherency, clarity, and focus to a decision space and to action - to how a population designs and re-designs systems to fulfill its needs.

Overall, this common approach might be considered an “impartial” approach, for its application diminishes attachment to anyone or anything that emerges as an identifiable diminisher of human fulfillment. When applied as a single unit it may also be said that it is a “person independent” approach, and not an administratively bureaucratic (or “political”) approach (i.e., it is apolitical). It is not an approach that relies on a single person or social power hierarchy; instead, it is an approach that maintains an essential alignment with the Community's orientational value system. The approach is basically a universal meta-language that allows people who speak different practiced methods to speak to each other. It is a common ground that allows variation.

The application of inquiry as described herein leads to an accurate clarification of reality, and not attachment to anyone's subjective reality. The methodology and methods represent a means for perceiving greater states of commonality between all individual humans. Here, the population of a community-type society recognizes that clarity is the basis for quality [relationships], in reality. It is with clarity and coherency that one acts with [social] conscience, and without cause for fear, guilt and shame of any kind.

Everyone may live a better life through a better [common] approach to perceiving and shaping the material world. A comprehensive and integrated approach is an essential design element in the re-iteration of a real world community. Humans have been shaping the physical environment on Earth for thousands of years, and have become particularly skilled at it the last 100 years. Humanity can now use what has been acquired and what is known to shape a better and more fulfilling world.

Fundamentally, a community is a lifestyle-based approach [to life]; hence, the totality of the understandings and approaches described herein become necessarily integrated into a life (and lifestyle), which is in part reflected by the organization of a society's social, decision, lifestyle, and material systems. It is always wise to question claims of understanding and utilized approaches, which can be very difficult under some societal contexts, wherein they are [purposefully or otherwise] not made explicit.

The formalized methodical approach described herein is designed to facilitate everyone's fulfillment, while resolving human belief, personal projection, bias and opinion, and conflict through the arrival of

accurate understandings and optimal decision [space] designs that select-out decisions aligned with a stated purpose. The approach detailed herein is a tool for the cooperative creation (i.e., “co-creation”) of a regenerative and fulfillment-oriented human community.

There exist a multitude of tools in the world. But, for any given task or situation there are a finite number of tools that will generate a desired outcome (e.g., a higher potential of common fulfillment). Hence, there are a limited number of “right” tools [for any given context or problem]. And, if the right tools aren’t in the hands of individuals, then individuals are likely to become someone else’s tool, or the tool of authorities. A community needs the right tools in every individual’s hands if it is to sustain an environmental system that facilitates the development of individuals’ inner higher potential among a community that facilitates or hinders their potential.

Some tools are flashlights and others are maps - some tools help one discover and observe what is there and other tools help one navigate through what is there. Essentially, useful tools provide the ability to navigate freely (i.e., to navigate a territory with freedom because one can see a map). Herein, tools can help to convert even the most painful of experiences into wisdom. And, these tools must be accessible to (or “given to”) everyone so that everyone can [literally and figuratively] lift.

Individuals can evolve themselves and self-direct their own lives if they have the appropriate tools. Without tools [and an appropriately designed structural environment] people fall right back into the exact same behavioral patterns to which they had been conditioned and are habituated.

The approach detailed herein might also be considered from one final perspective. It represents the drive toward the state of a clear and coherent mind, a mind without contradictions - a mind capable of navigating a common territory for its own fulfillment. The conceptual-linguistic tools described herein facilitate a state of mind where all the information in the mind is a part of a whole (with little or no contradictions). And, when cognitive dissonance appears a mind must have the tools to investigate it, to open the “gift” [of dissonance] and discover its contents. Cognitive dissonance involves the experience of information that contradicts (i.e., is not / cannot be integrated) with a pre-existing (or “pre-set”) worldview. This is why the systems-view is a different type of “paradigm” -- if it is to even be called a paradigm. The systems approach represents a view toward open and active integration through inquired discovery -- it is not a philosophy, it is philosophy.

If a community is to survive and thrive, then these tools must be made explicit. In truth, there are so many aspects to developing as a full human being that guidance facilitates one’s fullest fruition (or expression) into a highest potential human. Most people in early 21st century society do not get that guidance, and hence, it is up to them to try and uncover it for themselves. The tools

presented herein provide a structure for informing one’s own guidance system so that it points in the direction of one’s own, which is ultimately, everyone’s, fulfillment.

The approach described herein is ultimately useful in transcending variants of opinion, politics, affordability, or any -isms. Instead, life is understood in terms of living systems that make up an integrated whole. Life is a seemingly infinite regression of nested systems, a seamless unity of which none are “free and independent”, patterned throughout nature as [interconnecting networks of information; the “matrix”]. All organisms are systems composed of systems connecting to form systems.

Individuals may follow this approach because they want their internal model of reality to match the actual reality as best as possible. This is important because every belief someone has affects many other beliefs which are also had; hence, the saying, “I want to believe as many true things and as few false things as possible.” Herein, individuals need both parts of that statement. Beliefs inform values, which inform actions, which have consequences for oneself and for everyone else [in society]. If society is operated based upon a flawed model of reality, then individuals are going to make bad decisions, and reap the consequences of that across the society.

1.1 Methodology versus method

The terms ‘method’ and ‘methodology’ are sometimes used as though they were synonyms – they are not. They may be similar in that they are tools in the form of processes and filters through which objective reality is perceived and acted upon. However, the two words carry two separate and distinct meanings:

1. ‘Methodology’ is the study of methods and is the rationale, philosophical assumptions, veracity, or logic underlying a process and the selection of a method(s). Adding the suffix “-ology” to a word implies the underlying logic or logos of a word. When it is added to the word ‘method’ it implies the underlying logic and selection of a method. Logos is Greek for “logic of” (e.g., biology, psychology, methodology).
2. A ‘method’ is a specific process or set of techniques for accomplishing or approaching something. Thus, a method is an ordered way of doing something, a process or procedure. Strategies for gathering data and means of testing hypotheses are methods, not methodologies.

This passage from the American Heritage Dictionary (1992 edition) clarifies the difference:

In recent years ... “methodology” has been increasingly used as a pretentious substitute for “method” in scientific and technical contexts,

as in “The oil company has not yet decided on a methodology for restoring the beaches.” This usage may have been fostered in part by the tendency to use the adjective “methodological” to mean “pertaining to methods,” inasmuch as the regularly formed adjective “methodical” has been pre-empted to mean “orderly, systematic.” But the misuse of methodology obscures an important conceptual distinction between the tools of scientific investigation (properly “methods”) and the principles that determine how such tools are deployed and interpreted — a distinction that the scientific and scholarly communities, if not the wider public, should be expected to maintain.

1.2 The importance of organization

INSIGHT: *A common ground, consensus reality, must exist for the organization of a community-type society.*

Organization creates an infrastructure for the facilitation of individual and social development toward a higher potential state of fulfillment. Therein, organizational tools can facilitate integration and adaptation. In concern to information, organization refers to placing information into a visual structure. It leads to the ability to process data (or experience) in a useful way. This is particularly important at the social level. A community-type society involves everyone in the society sharing a similar model while participating constructively together for mutual fulfillment. Therein, a consistent method[ology] is productive for dealing with and organizing information and activities.

Both a methodology and a method are a type of model. A model is a structured means of storing and working with information. Models are useful for integrating information and identifying connections. Therein, structure aids in handling larger and more complex information sets. Structures with more coherency extend a populations potential. And herein, appropriate tools facilitate in the freeing of oneself from illusion and artificial limitation.

Social organization and re-organization enables effective social cooperation and positive social change. Therein, organizational differentiation is the unbundling and re-arranging of activities within an organization. And, integration is re-grouping and re-linking them. The need for integration arises in the face of environmental complexity, diversity and change. The need for organizational differentiation enables flexibility and adaptation.

Many organizations in modern 21st century society, even those that appear to act beneficially, divert the mind from seeking and understanding a more truthful (Read: real world) position, to instead, support their particularly limited positions. Organizations turn “evil” when the organization starts to serve itself instead of serving all. The most notable examples of these forms

of organizations are public relations firms, political strategists, all forms of advertising and marketing, lobbying firms, charities, special interests groups, the media, etc.

1.3 Unity of approach across society

Unity is simply a natural outcome of increased interconnectedness. Having a society that is essentially alike in its social direction, values, and approach is not a good and useful thing, if not a necessary component of a functioning interrelationship. It is valuable to have a common approach to systems that could benefit humanity's common fulfillment in a common existence. Among community, it is possible to observe both the uniqueness and interconnectedness of every individual. And at the social level, it is possible to observe the unity by which socio-technical problems are approached and resolved.

A unified approach is required to sustain a common navigational trajectory across all of humanity. A single way thinking and of approaching information is essential to make everyone more successful across the [societal] team/group. A community-type society utilizes a common structural approach, a common semantics, and common kinds of models. This commonality allows for an efficient means of communication across members, and facilitates the common understanding of anyone's work. When there is a common understanding surrounding anyone's work and its application to society, then work is also traceable back to a purpose or structure.

A systems thinker looks at all of the pieces of an engineered object, and not just one piece. If a system's engineer is wrong, then people may be hurt, and or, die (or at a societal level, people may suffer unnecessarily). It is possible for engineers to produce faulty engineering and to operate socio-technical objects and technologies in a faulty manner. If an engineer does not have the design right, or operation right, or is not really objective to all useful information, then the system that the engineer is building will have a higher likelihood of failing or operating unexpectedly. There is one thing humanity ought to be certain around, and that is the engineered societal system that it has built itself within. A community-type societal approach facilitates humanity's certainty about its societal system as it conforms to a set of expectations about the cause and effect nature of a natural [law/reality] system.

INSIGHT: *Similarity may be beneficial, and contrast and variety may lead to growth and expansion. Therein, dissonance is acknowledged in its ability to produce a movement toward resonance and change [if approached appropriately]. And, harmony is acknowledged in its ability to reduce conflict and amplify fulfillment.*

1.4 Approach avoidance

INSIGHT: *One will never fully discover who one is, or one's potential, unless one continually re-arranges one's thinking to accommodate new evidence through new experience.*

Procrastination is a form of approach avoidance [complex] wherein someone wants to do something but is avoiding doing it. However, forcing someone to do something, and then, when they become lax in doing it, claiming that they have a "procrastination problem" [and labelling it as such], is disingenuous.

Although identification facilitates contextualization and may lead to greater clarification (and better decisioning), "labelling" can have its own tyranny -- labelling can be disabling. In truth, individual identity is partially fluid and responsive to the circumstances of which it becomes aware. It is a reflection of an individual's experience in and at the moment. Herein, labelling can become a false identity (e.g., "my town", "my county", "my State", my "team") and create layer upon layer of illusion and confusion.

Yet, there is a body of knowledge that views the world systematically and adaptively, and where labels are known to have the great potential for misdirecting people from perceiving and thinking systematically -- for following human constructs out of alignment with truth as opposed to following the further emergence of natural evidence. What is wanted as a mutual approach, is a clear perception that is being dealt with is a system, and not with bits of systems.

2 The systems methodology

A.k.a., The systems approach, systems science, systematic approach, systems thinking, pattern thinking, intelligence thinking.

The systems thinking methodology (or systems methodology) is a perspective, a specialized language, and set of cognitive tools through which it is possible to view the world and come to comprehend how parts of a whole relate to and influence one another. It is sometimes also called "systems theory", the "systems worldview", a "solution-orientation" and the "systems paradigm". Systems thinking is a way of understanding reality that emphasizes the relationships among a set of parts, rather than the parts themselves. Systems thinking is a set of cognitive skills that can be developed and applied to more precisely understand and create within a real world. Systems thinking enables someone to solve novel problems, identify root issues, acquire comprehensive understanding, and change the world with certainty and mental power. Based on a field of study known as "system dynamics", systems thinking has practical value in describing the natural world, and it is a requirement in the engineering of functional technologies. The systems methodology includes a specialized language and an approach to modeling and problem solving that recognizes that problems cannot be solved in isolation and apart from their impact on the rest of the system; and that the attempt to craft isolated solutions that ignore existent identities and interrelationships only leads to greater problems elsewhere. The systems approach results in a depiction of the underlying knowable information structure driving a problem [involving the system and its environment]. An emergent systems approach facilitates human understanding and development of what is possible, to serve human fulfillment and to caretake the ecological lifeground. Systems thinking is concerned with understanding and interacting in ways that are structured upon the principles and concepts of the systems "paradigm". Every paradigm structures itself along its own principles and concepts.

A "paradigm" is an interlocking set of ideas that seem to support themselves, claiming to refer to the way things are truly ordered and organized [in reality]. A paradigm is represented by the dimensions of a context (or "field"), as limited by parameters that inherently predict one's perception of reality within that context of experience. A paradigm is generally a definition of one's perception of reality according to its limitations. Wherein, perception can be expanded and constrained. Some paradigms exist in a less aware state, a constrained state of perception, and behave in a manner that reinforces that state [of limitation]. In these cases, paradigmatic tools often become weapons for use against one's own true fulfillment. The participants in a paradigm, who do not recognize systems thinking, are unlikely to know and to understand that they are in a paradigm. When

“you” grow up within a paradigm, there are some very fundamental things about that paradigm that become imprinted upon “you”. “You” become influenced by and the product of those ideas. Those concepts become the grid – the framework, the reference – through which “you” operate and, at some level, assume to be right.

Systems thinking considers the similarities between systems in terms of a set of common systems concepts, principles, and [contextual] patterns. In systems thinking context matters. The systems methodology is a language, a “mindset”, for understanding how things work that extends beyond discrete and isolated elements to look for patterns and underlying relationships. Figuratively speaking, “it is a means of connecting dots”. Implicit in this worldview, this rationale, is the understanding that interrelationships form into living and emergent ecological systems, which are responsible for the manner in which the natural world operates. At the planetary level, the level at which humans populate the planet, the systems methodology perceives the Earth as one finite, dynamic and integrated living system-design.

A systems approach to societal problems looks at root causes and resolves an executable solution is a synthesis that intends to model the way the world actually (i.e., factually) works, or could work, and is most likely to produce optimal, global human need fulfillment. Herein, the systems methodology gives a way to see through chaos and randomness, and understand complexity and probability, by exploring the properties, dynamics, and interrelationships of [ecologically] nested real-world systems.

All questions about the universe are asked within the bounds of a set of understanding of the universe's organization. Humanity currently perceives the universe as organized at the highest level, like a system, and thus, the methods that are used to answer questions about the universe, and lives within it, follows a systems-based approach, which is a paradigm (if it is to be called such). When the statement, “Tell me more about the universe and the principles [scientific/technical], concepts, and patterns of which it is composed”, is proposed within the bounds of systems thinking, then the response is a series of emergent systematic processes (i.e., the methods of science) by which the observer can come to actually know more about the universe and its principles. Similarly, when the statement, “Tell me more about how the universe may be more approximately and certainly observed”, the response is another systematic process (i.e., the method of critical thinking). Critical thinking exists to resolve (or remove) contradiction and clarify discovered relationships, and thus, improve alignment with objective, universal reality. Both of these sub-system methods are selected for by the logic of the systems methodology, and they enhance the predictability of the outcome(s) of decisions - they facilitate a more certain [system] state-dynamic of existence and make everyone more comfortable with any uncertainties. They are applied to increase human certainty of the world and human fulfillment within the world, which is seen as an

emergent system.

Uncertainty often breeds fear, inhibiting an informed response and leading to hasty reactions. It is possible to clarify and remove uncertainties by applying a method(s) for discovery, dissonance removal, and integration. A consistently verifiable method leads to greater consistency of thought and action in life, and eventually to a consistent socio-economic process for organizing humanity's highest fulfillment.

We can only concede to the obvious: that just about everything in the world [where a relationship exists] would seem to be some sort of system. And, this understanding transforms our perception; it becomes a universal worldview. What is the difficulty with having a homogeneous worldview toward everyone's higher potential well-being and human fulfillment in a “universe” of expanding knowledge? This is “big picture” thinking; this is the integration of all aspects of the self; this is thinking “outside of the box” or “lateral thinking”; it is a form of universal creativity and the dimensional understanding of patterns. This capacity resides in everyone, it just requires a [more] truthful (and honest) environment in order to emerge as an approach to the organization of society.

“Why questions about objects called systems cannot be answered by the use of analysis. Answers to why questions are called explanations, and the product of explanations is understanding. Science produces no understanding, it produces knowledge and verification. Because the product of analysis is how things work, never why they work the way they do, a new way of thinking was needed to provide explanation, and therefore, understanding. Explanations always lie outside of the system being analyzed, never inside it. Analysis has you in the system, identifying how it works and providing knowledge, but not understanding. Synthesis provides explanation to the behaviours of a system.”
- Dr. Russell Ackoff

To understand any system, including the system of systems thinking itself, one must understand that an information supra system (or “supra-set”) cannot be defined from one of its subsystems (or “sub-sets”) -- it is logically impossible. In ‘systems thinking’ this is an axiomatic principle. The subset does not have the information inside of itself to define the superset; the subset is a creation of the superset. A subset is only a partial component of the larger set.

Systems engineering is the core application of the system approach that focuses on how to design and operate complex systems; systems engineering concerns itself with component parts and also with the whole system in order to ensure certainty. As such, it is sometimes referred to as a holistic approach because it considers the whole.

INSIGHT: *The balance between overestimating*

a problem and underestimating a problem involves systematic critical thought, which requires detachment from belief and presumption about the nature of the system.

2.1 What is a system?

NOTE: A system is unifying by its very nature; a system is a unified structure of parts.

A system is defined as an interacting or interdependent group of items forming a unified whole to achieve a common goal. A system is a network (set or group) of connected, interacting and interdependent components (elements or parts), including their relationships and qualities, which work together for a purpose, and form an integrated whole. In other words, it is a functional, physical, and/or behavioral related group of regularly interacting or interdependent elements; a group of elements forming a unified whole. Each of the interrelated components of a system has a clearly defined [conceptual] boundary that works toward the attainment of a common [system's] goal by accepting inputs and producing outputs through an organized and structural transformation process. Therein, 'feedback' is data about the performance of a system. And, 'control' (or 'logic') is the component that monitors and evaluates feedback and makes any necessary adjustments to the input and processing components to ensure that a proper output is produced (i.e., an output aligned with the system's goal(s)). A system accepts inputs, over which it has no direct control, and transforms them into outputs. In the simplest terms possible, systems are used to process signals [from an 'environment'] to modify or extract information. The components of a system cooperate for the overall, mutual objective of the whole.

In this way, a system is observed as a triad of [axiomatic] concepts unifying concepts:

1. **Interconnectedness (group-ing/ed, collection).**
2. **Relatedness (purpos-ing/ed, function).**
3. **Wholeness (complet-ing/ed, integration).**

A system is something that can be understood [by consciousness] visually. Here, the system principle for clarification and understanding by consciousness always is:

1. "You" must define; you must always complete the definition step to have a complete definition of a system.
 - A. It is essential to define objects and concepts, comprehensively,
 1. to communicate effectively and efficiently about a goal,
 2. to reduce social conflict and misunderstanding,

3. to reduce the introduction of bias into a design.
 4. to develop any skill, or complete any operation, effectively and efficiently.
2. "You" must visualize; you must always complete the visualization step to have a complete understanding of a system.
 - A. It is essential to visualize a system, conceptually and objectively, comprehensively,
 1. to understand and explain a system,
 2. to safely design a system,
 3. to work with a system,
 4. and to adapt and troubleshoot a system.

Systems can accomplish things that would be impossible if the same elements were put into random relationships, or no relationships at all. It is the wholeness, the relatedness, and the interconnectedness of design that the systems approach is recognized and we become capable of modeling our community and our world with greater accuracy and fewer logical [systems] inconsistencies. In our community, we define variables, and none can be defined more than once. Equations must be unambiguous and less capable of being "interpreted". Units of measure should be on both sides of the equation. And herein we see that the benefit of a model is that it can be refined to make the structure of the system that it models more realistic, robust, and in alignment with a goal.

All systems are parts of larger systems, and every system is defined by its function in a larger system [of which it is a part]. Every system is contained in a larger system, and its role of function is what defines it. For example, in early 21st century society a car is part of a society's transportation system. The transportation system is a system for transporting people and resources safely and efficiently from one location to an intended destination; and, it functions in a relationship with the social system (which conceives of it) and the economic system (which produces it) of that society. Systems thinking is a universal process for understanding how component parts relate to each other within the whole. A system is [by part] a whole.

It is from the axiomatic concepts of systems (wholeness, relatedness, and interconnectedness) that a series of systems dynamics forms the basis of every existent system. In the real world, there is a complexity of these relationships.

The concept of wholeness is important. If the forms in the background of the world were not coherent, rational and connected, then the visible, actualized world would be chaotic. But, the visible world isn't chaotic; it is "lawful" (or principled, ruled). It is rational and appears to follow "one discoverable mind". Wherein, reality is an objective absolute that [at least] exists as a whole, and knowledge is gained through resonance and experience of reality itself [without self-delusion]. There is a standard for reality - there is a system of reality. And herein, our

perception of reality can be worked with through the application of logical reasoning to thinking in whole systems.

Every system (or “designed object”) can be divided into three high-level, integrated ontological categories. In object design (Read: the design of objects), the three categories are generally: Function (F); Behavior (B); and Structure (S). In systems design, the three categories are generally: Structure (S); Process (P); and Function (F). The two sets of categories are basically equivalent with the noted understanding that ‘processes’ appear to observation as ‘behavior’.

Hence, the design process for a system must involve these three concepts:

1. **Structure:** The architecture of the system designed to transform information for a purpose. The structure is the components of the design object and their relationships. A system is a structured form of organization.
 - A. **Category:** Parts of a system form the base of every system. Categorical thinking mirrors the reality of an [interconnected] static-state system.
 - B. **Ordering:** Parts of the based are connected into a flow visualization, forming the base of a moving (dynamic-state) system.
2. **Process:** The occurrence of an operational transformation (or event). A process produces a behavior [for a specific function]. The behavioral process(es) represents the attributes (or “qualities”) that can be derived from the designed object’s structure. A system is a form of organization that includes at least one process.
 - A. **Specification standard arguments (design specification pattern statements):** statements descriptive of specific configurations of the movements of objects.
3. **Function:** The objective [purpose or goal] for the transformation within and overall existence of the system. A system is a functional form of organization.
 - A. **Intention functional arguments (directive pattern statements, goal statements, objective statements, value statements, human requirements, human service needs, etc.):** statements of what ought to be complete to complete a need/goal.

As a functional form of organization a system is not just a collection of random things; it is an interconnected set of parts (or “elements”) that is coherently organized in a way that achieves or fulfills something.

Every system [as a concept] involves the following four

functional properties:

1. **Property (it is essential):** An essential property of a system is that it cannot be divided into independent parts. Instead, its property [as a system] is derived out of the interaction with its parts and not its parts taken separately. This is another way of stating that a system is a single whole; or, a system inherently involves the concept of wholeness.
2. **Function(s) (it is critical):** Some functions are critical in a system. In an automobile, the functioning of the motor is a critical function to its operation within a transport system. The functioning of the sound system and windshield wipers are not essential to the basic functional operation of an automobile.
3. **Parts/Elements (of the system):** Every system involves three distinct parts: inputs; processes; and outputs. These parts are connected via some internal logic. Systems are surrounded by an environment (a supra-system). And, functional [living] systems include a feedback mechanism for the adaptation of the system to a dynamic environment. Environments form the context within which any system exists, and energy, influence, and signals might be able to flow across the boundary of the system from any environment to alter the balance of any part of the system.
4. **Behavior (geometrically structured):** A system represents a geometric structure [of thought]. Herein, behavioral traits are grown from the dynamic interplay of [systems] states, which are sub-composed of processes known as ‘process states’. Buckminster Fuller (1928) defines synergy as the “behavior of whole system unpredicted by the behavior of their parts taken separately” - more recently this has become known as emergence (or “emergent behavior”). Geometry is the study of structure, and the relationship between objects (and points of perception) within space. Fundamentally, the function of a system cannot be fully known until the structure is known; because it is the structure that produces behaviors.

INSIGHT: Systems, which are effectively networks in themselves, can join together to form a network of systems, which is a system in itself.

In a sense, all real systems are networks for parts, and are a collections of [components and interfaces]:

1. **Nodes (a.k.a., entities)** - are objects (e.g, people, places, things) or concepts. A node is a self-contained entity that participates with

other entities. Nodes in a system [network] are composed of matter and/or information, and are connected to each other via linkages of matter, electromagnetism ("energy"), and/or information. Networks are constructed of nodes, which are individual components or elements that have their own individual functions and identities. Nodes have global characteristics, including: identity, functionality, connections (with identities and functionalities themselves), local rules, and states. A network is just the nodes and interfaces. All nodes have:

- A. **Identity** - unique locatable sign and/or attributes that differentiate one from another.
 - B. **State** - the current condition, configuration, status of a system at a given time. Nodes have states, a status.
2. **Linkages (a.k.a., connections, linkage interfaces)** - are the [inter-] connections that bind all of the nodes together. Linkages are relationships. Linkages transmit one or more of the following between two or more nodes; matter, energy, or information (signals). The linkage that transmits (matter, energy, or information) is between two or more nodes. There are one to one linkages and also many to one (one-to-many, centralized) linkages. All the information you consume on a daily basis is a many-to-one connection. You producing a video and sharing on your online social profile is a one-to-many linkage. Electrical utility power generation is a one-to-many linkage. Harvesting fruit from a tree is a one-to-one connection. The connection between a fuel tank or battery and a motor is a one-to-one connection, where the battery wired-interconnection transmits energy directly to the motor and the fuel tank's fuel line transmits matter in the form of fuel to the motor. A complex airplane may have multiple engines and multiple tanks interconnected, forming a several-to-several (many-to-many) interconnection.
3. **Boundaries (a.k.a., node interfaces)** - are the sphere of influence or impact of a system. Here, at the boundary is some influence that impacts system behavior and changes. The boundary is the domain that has direct (or, the most) influence. In some cases, the boundary of a system is material, and in others, is conceptual (informational). Nodes, linkages, and so do systems, themselves, have boundaries. A boundary is the edge of a [network] system; the demarcation (concept-information or shape-object) that separates a system [network] from the environment. An the interface with the environment, a boundary is where a system's

environmental behavior is expressed from and through. Interfaces are the interconnections between all nodes and linkages in the network. Interfaces have and allow types of connections. Interfaces are connections between nodes in the network. Interfaces are connections and signals between nodes in a network, where nodes are linked. Interfaces have/allow types of connections, have directionality, have inputs and outputs, behaviors, transformations, constraints, and protocols. A system's boundary can change over time to become more or less of any of the following boundary characteristics, and the change could be beneficial or harmful to the system (i.e., the boundary characteristics of systems are):

- A. **Directionality** - indicates movement through an interface (Read: the boundary).
 - i. One direction.
 - ii. Both directions.
- B. **Movementality** - indicates ability to move through the boundary.
 1. **Rigid (i.e., inflexible)** - a hard delineation of the boundary that normally takes physical or definitional form.
 2. **Flexible (i.e., giving)** - a boundary that can move without breaking. For example, a friend group is a flexible boundary. A flexible boundary is one where the boundaries are constantly being updated.

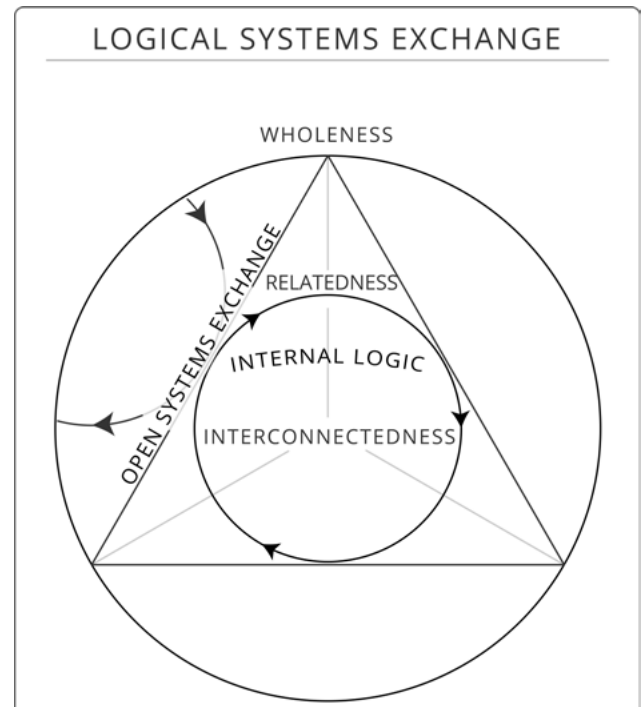


Figure 19. Axiomatic systems concepts.

3. **Fuzzy (i.e., uncertain)** - a boundary that "depends", is vague, or more conceptual, or has a lot of unknowns.
4. **Porous (i.e., permeable)** - is a boundary that allows other system into, and through, it. **Permeability** is the extent to which the elements (of matter, energy, and/or information) can cross a system boundary. For example, a highway system, a State, and a city have many porous boundaries. Cell boundaries can become porous to let in nutrients and excrete waste.
4. **Transformations** - are changes within the components themselves, and between the components, to produce differing emergent properties and functionality, physical and/or information. good be into a deliverable, or in the case of email, it might be encrypted as it moves through. Transformations can be physical or informational; wherein, energy is the calculated transformation of matter or information.
2. **Access** - refers to the use or access of a resource. Access reconciles the relationship between a system resource and a system boundary. Access represents a relationship between the identification of a functionally needed resource and the resources processing through a structure within the system. Simply, an **open system** is "open to access through its boundary", and a **closed system** is "closed to access through its boundary". In systems thinking, open systems maintain processes by which they exchange information with their environment. These processes allow for the adaptation and evolution of the system. In computing, 'open systems' are capable of interoperating so that mutual efficiency exists between them. Mutual efficiency refers to the optimization of energy expenditure by all systems in a relationship. This might otherwise be known as a 'homeodynamic potential'.
3. **Resource/signal** - refers to an element which is available within the system boundary and which enables a transformation in the system to occur -- it is that which has the potential of being accessed by a systems component. It is possible using signaling to request access to some resource, and to inform others of access (or potential access) to some resource, which are messages sent from a system boundary.

Hence, there are three elements any real-world system may be composed of, and there are three types of potential connections within and between systems:

1. **Information, data** (a.k.a., concepts, meaning) - is a base, axiomatic element, and conveys meaning to consciousness.
2. **Material, matter** (a.k.a., objects, shape) - is a base, axiomatic element, and enables physical movement of consciousness in a body.
 - A. **Energy, light** (a.k.a., electromagnetism, power) - is the calculated transformation of a base, axiomatic element; is the base, axiomatic process [done to objects, *as power*, and concepts, *as intelligence*].

More simply, the three elements are:

1. **Information** (Read: meaning, "conceptuality").
2. **Materialization** (Read: objects and gravity, "physicality").
 - A. **Electromagnetization** (Read: light and magnetism, "energy").

Every living system involves a set of [at least] three conceptual components that form its first principal dynamic. The three components are:

1. **Boundary** - refers to the structure within which a system accesses a resource. The boundary represents the "borders" of the system that define where access, and controlled action, can be taken. In the Decisioning System specification this is referred to as "access rights".

A network is a set of interconnected components and their interactions.

1. Interconnected components - nodes (elements) connected through relationships. Because of the interconnection of components, networks typically have complex relationships.
 - A. Networks are constructed of:
 1. Nodes are individual components or elements that have their own individual functions or identities.
 2. Linkages between nodes by which information, matter, and energy may be passed between nodes.

Most complex systems and all living systems involve a series of systems dynamics. All network have [a] complex [of] relationships; in particular, human societal systems have a complex of social and technical (socio-technical) relationships. Complex dynamic (i.e., changing) relationships interconnect parts of a system, which produces an overall [emergent] behavior. For the purpose of iterative modification to, and adaptation of, a community's habitat, these "systems thinking dynamics" are used for the modelling, simulation, and controlling of a complex and living community system. Herein, we model our reality, we test and we simulate to more

greatly align the next design iteration of our community with our highest potential expression of fulfillment. In order to do this as a living system, we need corrective feedback: we must correctly know the full structure of the system, we must correctly understand its behavior, and we must also correctly access signals within our boundary in order to efficiently move resources into positions of greater fulfillment. Essentially, "systems dynamics", as a term, defines those relationships between structures in a system and relates them to the system's behavioral results. Notice here that the axiomatic concepts of systems form the potential for a system dynamic. Broadly speaking, the term 'dynamic' means (or, is a synonym for) the term "active". In a sense, critical thinking represents a "dynamic of thought" that is capable for following (or referentially retracing) an active environmental dynamic (or "active environmental information in a real world").

Technically speaking, a **feedback loop** is a system structure that causes output from one node to eventually influence input to that same node. Feedback loops are a necessary dynamic [principle] of complex, living systems. Such systems have feedback loops that allow for self-renewal, self-correction, and self-organization (in an environment): observed as the healing of a cut or the organizing of organisms in nature. Living consciously requires a willingness to embrace constructive feedback (i.e., critical feedback). We may be born into conditioning, but the responsible thing to do is to learn how to think and discern for oneself, and to come to one's own conclusions. The concept of 'feedback' implies a loop where information of some kind is fed back into the system itself. Wherein, feedback presents the possibility of changing state and "re-orienting" within a larger environmental system; whether it's data in a computer or the sense of a change in the temperature, feedback is a mechanism for responding and adapting to an environment. Feedback allows for the effective re-orientation of a system.

Through access to information about the result of outputs in an environment, a synthesized correction can be made to the structure of the system so that its next output orients the system differently. Feedback maintains the potential for a probability (or possible causality) orientation - the way in which a system (or organism) orients to its environment as it concerns information involving the initiation and regulation of processes, states, behaviors and actions. Functional and living systems are responsive [through feedback] to their environment. This type of feedback is known specifically as 'negative feedback' (or 'corrective feedback'), and it is necessary to stabilize a system for corrective operation in its alignment with a gaolad direction.

For example, in , people see a problem, decide on an action, expect a result, and believe that is the end of the issue. The figure illustrates the framework within which most discussions are debated in the press, business, and government. In early 21st century society, the act of voting or buying a product might equated as a good

example of this. Problems leads to actions that produce a result that creates future problems and actions. There is no beginning or end, except for individual physical lives. Humanity lives in a complex system of nested feedback loops. Every action, and every change in nature, is set within a network of feedback loops. Feedback loops are the structures within which all changes occur in nature, and we can come to know these structures and engineer through these structures, or we can do otherwise, unwisely.

In the simplest possible feedback control system there are two symbols/parts - a stock, and a flow. The stock is an accumulation, or integration, or level (to choose terminology from different fields). The flow changes the amount in the stock. The flow is determined by a statement that tells how the flow is controlled by the value of the stock in comparison to a goal. All systems, everywhere, consist of these two kinds of concepts—stocks and flows. Such a statement, that there are two and only two kinds of variables in a system, is powerful in simplifying our view of the world. People in early 21st century society familiar with accounting statements, as in annual reports of corporations, will recognize the two classes of variables. A financial report is presented on two different pages—the balance sheet and the profit and loss statement. All numbers on the balance sheet are stocks representing accumulations that have evolved over time. The profit and loss statement represents the flows that cause the stocks to change. There is no comparably important third page, only the page representing stocks and the page representing flows. That structure of an accounting statement represents a fundamental truth about all systems. Water in a bathtub is a stock; the flow of water changes the stock. When "you" see (signaling information from the environment) the bathtub is full (goal) you change your relationship to the bathtub tap (flow) to shut off the movement of water into the tub-like stock of water ... because "you" see it is full and that is your goal. The system's variables here are the flow of water into the tub and the perceived amount of water in the tub at any moment in time.

The real world is made up of a complexity of nested loops. It is important to recognize that simple loops have serious shortcomings and may be highly misleading. The truths learned from simple systems are often completely opposite from the behavior of more complex systems. The very idea of 'feedback' concurrently puts implies the notion of transience - that life is always changing and that the most important 'probability constant' is change itself (i.e., is the information system's next iteration).

Systems thinking maintains that the reconciliation of these concepts of flow and stock come through the concept of transience (i.e., the iteration of consciousness), that life is always changing and that the only constant is change itself. Our collective practices and outlooks have always undergone change as new awareness and abilities come forward through the recognition of this transience, it is important to be real with ourselves that

present awareness, ability, and outlooks will be altered or entirely superseded to some degree at some point by new knowledge and ability, as our long history of culture and technical changes clearly shows up. By momentarily reconciling we have a space to align our decisions within nature and in the nature of our understandings so that we may more accurately adapt our models and service systems.

A person understands filling a bathtub with water. But, if we go to a system that is only five times as complicated, then intuition fails. As bio-physiological consciousness, we can only hold so many relationships in our mind at a given time ('working memory'); hence, we might quite easily and incorrectly presume a basic feedback loop when a much more complex one is somewhere present and influencing behavior (or "the emergent movement of a stock"). Since the real world is a complexity of feedback loops and our ability to hold relationships is limited in our mind by some degree we do the following: we test and simulate and record and share so that we may accurately model and engineer the emergent orientation of our community. In community, our decisions (and hence, actions) are based on these models. In community, we make models explicit, we seek to discover inconsistencies, we determine future implications, and we feed-back information to improve our models toward our purpose as a community.

Although all living systems follow the foundational principle(s) of systems dynamics, not all systems are equivalent. Individual systems have their own behavioral characteristics as a by-product (or result) of their structure and their interrelated functionality. The principle design dynamic of this relationship says that:

1. There are two axiomatic system structures:
 - A. The system's assembled structure (i.e., the system's structure).
 - B. The environmental system in which the assembled [system] structure exists at a location.
2. Structures create behavior patterns, and structure induced behavior patterns produce results (repeated outcomes). There are three productive results:
 - A. Societal productions: The socio-technical system of an organism/species.
 - B. Functional productions: Technologies (i.e., objects assembled by life, including simple tools, machines, and computers).
 - C. Non-functional productions: Social relations (i.e., the concepts, desires, values and objectives that humans have in their mind when they think and behave around one another).

All complex systems produce these effects. And herein, the dynamics of a complex system form a foundation for the emergence of potential. Knowing the dynamics of a system gives a creator greater creative potential

in the system. By connecting the dots "you" gain understanding; through understanding you can predict results via probability and reduce to the selection of a decision most probably aligned with a set goal. The modeling of these feed-back systems relationships, in our community, into an emergently understood model allows for [formalized] specification of decisioning (i.e., a decisioning system).

The specific information and its arrangement in a system's decision space, once processed into a static state, will produce a probable behavior[al characteristic] -- the structure of a system determines its behavior (i.e., a system's structure causes its behavior). More precisely, the structured processing of information through the system produces a probabilistically [stated] behavior -- information to state, state to a probability patterning of behavior. Understanding these structural interrelationships is necessary to understanding system behavior. To change a system's gross behavior, change its structure. System behavior results from the effects of reinforcing and functionally directing processes. Structure is a (or the) reinforcement mechanism.

System behavior is by definition behavior that is unpredicted by the behavior of its apparent parts; which isn't to say that the behavior can't be understood, but it has to be modelled as a whole [as much as technically possible] to gain a more accurate picture, a more precise map, model, or "territory".

System behavior may be predicted and designed through models and simulation (as in, simulation of the underlying structure and component processes and relationships of the system). A simulation model will simulate the interaction of system elements over time.

Living system's interface and exchange information with their environment; they are structurally open systems. Herein, the system's approach doesn't rely on any one leader or social class; it is open to the emergence of new and more accurate information; it doesn't have an empowered social hierarchy, which would inhibit the adaptive emergence of the Community's systems.

Efforts to alter system behavior without changing its underlying structure (e.g., patchwork) may create short-term improvements, but produce more long-term problems. We must think long-term, strategically (and iteratively) if we are considering problems as structural elements of a system.

Feedback provides information about the effect of changes made in an environment. The 'feedback dynamic' creates potential. That potential means that there is also probability in the [information] system - with change there is a probable effect (or result). If there is a probable (or probably influenced) effect and consciousness is present (as SIGOR), then there is a 'decision'. Feedback is a mechanism by which we adapt our decisions to our environment by choosing the next complete iteration of a state of dynamic design.

Complex systems capable of change have a natural desire to change for their better, to suite their needs and to better adjust to and through their environment (i.e.,

evolution without an end). Evolution is open ended. As a community, we desire to evolve toward states of lower entropy, for we have observed all that it accords, such as a more thought responsive and loving environment. With this understanding, we can create states of the world that fulfill our needs more effectively and efficiently. And, structures that make us more functional, designs that give us a bigger decision space, systems that enable us in the physical world to better survive and thrive, consciousness that is moved toward cohesion and love and away from disorder and fear.

Complex living systems are not chains of linear cause-and-effect, but complex networks of interrelationships involving a spectral continuum of cause-and-effect. Therein, a systems approach is ideal for solving complex, ill structured problems.

In a dynamic there exists the potential for 'synergy' [where there is a plurality of potential directions]. A 'synergy' is the complex behavior of whole systems unpredicted by the behaviors of any of the components of the system (it is another word for the concept of 'emergence'). Herein, 'syn-ergy' is to 'en-ergy' as differentiation is to integration [in the mathematics]. "Syn" stands for synchronization (or "withness" and "togetherness"). "En" stands for "force" [of initiation]. And, "-ergy" is the ability to do something, to do "work". In other words, syn-ergy means to do the work of integration, and en-ergy means to do the work of observing difference[s in a signal]. In figurative terms, through self-initiation we can do the work of integration. Herein, critical thinking [as a component of the systems approach] is a principle tool for integration. Hence, as a tool, critical thinking may help us understand emergent

behavior. 'Synergetic capability' is the processing of using a howl to predict the functional "behavior" of the units [of the whole].

Systems range from simple to complex. A high-functioning system continually exchanges feedback among its various parts to ensure that they remain closely aligned and focused on achieving the goal or purpose of the system.

If any of the parts or activities in the system seems weakened or misaligned, the system makes the necessary adjustments to more effectively and efficiently accomplish its intended and purposeful goals. A pile of sand is not a system. If you remove a sand particle, you still have a pile of sand. The sand has no greater decisioning process than to respond to the probably technical principles by which its structure, and hence, behavior is determined. Alternatively, as an adaptive system, consciousness has the ability to modify in response to environmental signals, which provide information about a probability space. In modification by consciousness there is re-orientation by some spatial direction.

The essential characteristics of systems include:

1. A system is made up of related and interdependent parts, which form a [view as a] whole.
2. Systems have boundaries.
3. In a system the input is connected to the output through a process.
4. A process functions for a purpose.
5. A system has order and sequence in its process.

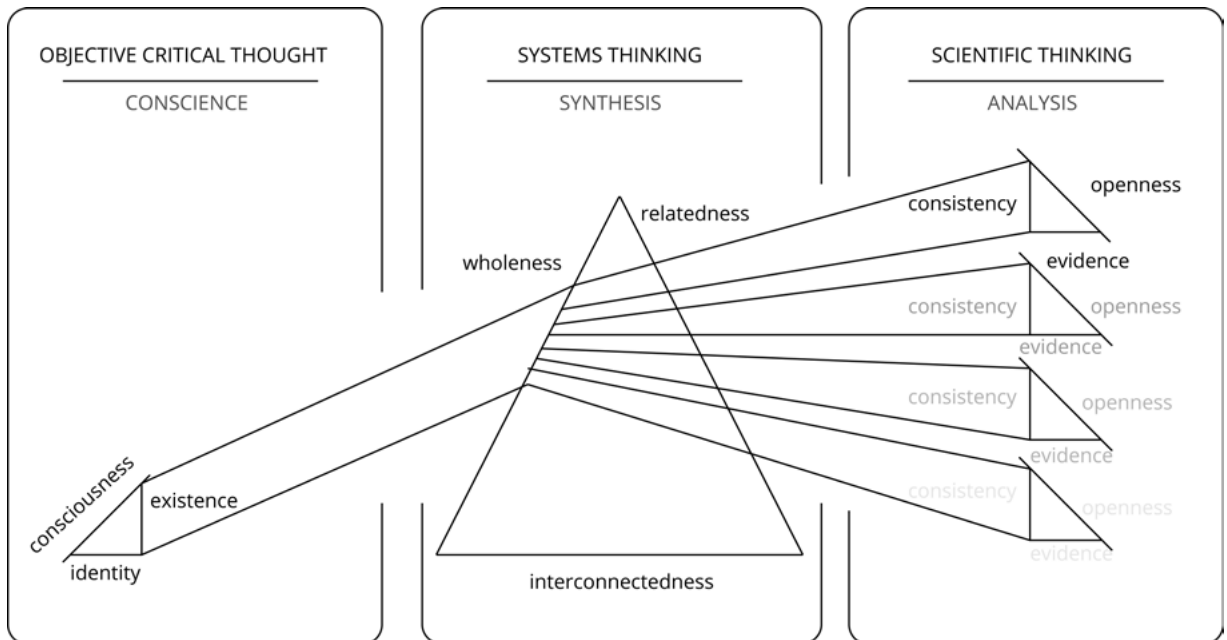


Figure 20. Illuminated refraction of systematic, scientific, and critical thought through a prismatic structure.

6. A system cannot be considered in isolation from its environment, its supra-systems and subsystems.
 7. Systems have specific purposes within larger systems.
 8. Systems can be optimized by “economizing” resources, in particular, resources that are scarce.
 9. In the real world, systems are optimized through experience, experiment, verification, and integration.
 10. Inputs and processes can be maximized for optimum value-state generation. In a democracy the authorities manage these things for “your benefit”. In politics opinions manage these things for “private benefit”. The system of the community is transparent for all of our benefit.
 11. A system which is in equilibrium will change only if some type of energy is applied.
 12. A system’s parts must all be present for a system to “effectively” carry out its purpose optimally [or at all if considered in terms of ‘criticality’].
 13. Systems have a structure, which is a stable parameter of the system. Structures impose limitations on a system’s processes, and they generate a probability-determined decision space.
 14. Structures can change. The change of structures can be designed. Designs can be more accurately informed by the fed back [resonant] information from the design’s change in effect to an environment.
 15. The structures of a system limit its [functional] capacity. There is only so much that can be done to increase capacity or modify the characteristics of a system from within the system itself, beyond that the structure must be re-designed. In the system there are parameters; and if it is a living or otherwise adaptive system, then there is the ability for consciousness to select a decision within a diversity of probable decision spaces.
 16. A system’s parts must be arranged in a specific way in order to carry out its purpose - structure and organization matters.
 17. Systems maintain their stability through feedback and internal structural adjustment to processes. In other words, systems change in response to feedback. Systems maintain their stability by making adjustments based on feedback.
 18. A basic [characteristic] principle of systems is that “you”, as consciousness, cannot in full detail describe and understand a supra-system from the knowledge contained only within the components of its sub-system. As was mentioned earlier: there is not the information. This is because complex systems in their whole and related structural form have the characteristic of ‘emergence’. An automobile has a different function than any incomplete or otherwise related (i.e., put together) set of its parts. Just looking at the parts in any individual form will not tell you (without a pre-existing model) how the parts of a car come together to perform a useful function, transportation and the extension of our function of locomotion [to a larger decision space].
 19. If you are going to describe a supra-system you have to have at least one assumption that goes out beyond the system until you experience the whole of the system itself. In the real world, individuals have to experience a system to understand the system (or have experience of the system to have a model of it). As others have said of humankind, we will change [our values and our ways], our systems, “when we see and experience a better way”. Community represents an opportunity to facilitate life enriching and usefully adaptive experiences [toward fulfillment]. Now, it might be interesting to note here that if consciousness were actually what this reality-system that we are necessarily experiencing was composed of, then we have to experience our own existence (which some people incorrectly equate with ‘subjectivism’) if we are to adapt and develop the potential of our consciousness. Herein, consciousness experiences limitations in existence, which generates a probable decision space and the ability of a consciousness to change the decision space within parameters. In other words, if the statement, “consciousness is the system” is true, then the statement “we have to experience via our consciousness the system to have understanding” is concurrently true. This is a fundamental understanding of the adaptive behaviors of systems in the physiological sciences -- that we as humans have to experience to understand. Even the adoption of language is an experience.
 20. Designing a system with multiple processes is an engineering challenge and involves the process of engineering inquiry.
- The efficiency mechanism is inherent throughout the systems approach. We might see how a very different economic system might result from the application of systems thinking at the socio-economic level of a community. We are living systems in continuous exchange with life-resource on a finite Earth. Wherein:
1. **Effectiveness** is the degree to which the goals of a system are achieved. How do the results of our design decisions align with the goals of our fulfillment, our common life-grounded needs?
 2. **Efficiency** is a measure of the use of inputs (or

resources) and processes to achieve outputs.

3. The **performance** of a system refers to the systems effectiveness and efficiency.

2.2 Systems projects

At the societal-level, all projects are actionable systems, and all systems are run as active projects. Here, systems science can offer valuable support to structure projects:

1. Listing, modeling, and simulating (visualization):
Using 1D language, 2D concept models, 3D object models and 4D simulations of objects (simulate models) of various urban scenarios, predicting and designing the impact of design choices on community fulfillment, behaviors, and resource utilization.
2. Data collection and dataanalysis (cognition):
Leveraging (artificial) intelligence and big data collection to understand human and resource requirements, including patterns of movement, socio-technical interactions, and resource consumption within neighborhoods and the global habitat service system.

2.3 Technological systems

A.k.a., Technical systems.

Every system that is capable of being perceived (or sensed) in an environment has a technical relationship (a.k.a., technological relationship). In a sense, it could be accurately equivocated with a technology (if the system is not just conceptual, but can be verified by experience to exist). Technology can be described as anything with utility and function. The human body, for example, is made up of various technologies, each executing specific functions. A tree is made up of its technologies, its roots pull in water from the soil, channelling it up its trunk to its branches and its leaves, which in turn collect sunlight for energy. Humans are similarly made of organ technologies. There is an inherent technical ordering, and use of technology in nature. Language is a technology, clothing is a technology, molecules that modify human consciousness (e.g., dopamine, tryptophan, dimethyltryptamine) might even be considered a technology.

QUESTION: *What is the most important part of any system?*

ANSWER: *The part that is not working as expected.*

2.4 Dynamic complex systems

"As above, so below". [What we see at any scale will inevitably show up at another.]

- Hermes Trismegistus

A simple analogy for a dynamic complex system is a single-celled organism. The organism is conceptually distinct from its environment by its shared qualities; we are naming it as a system. What we see in this system is a porous cell boundary that allows the exchange of materials with the surroundings; it is an open, but critical system. The cell consists of many interdependent parts that interact to create the behavior of the whole cell; its parts exhibit interconnectedness, and together they generate an 'emergence' [of behavior]. The parts (as "constructors") have the ability to come together as needed and perform various tasks; it is self-organizing - in an information system the parts that construct might be referred to as 'constructors'. The cell is constantly sensing signals from its environment(s) and adjusting to signalled changes by modifying its internal dynamics (temporally known as a 'state'), which is composed of a set of interrelationships; it is recursive.

Peter Medawar said, "reductionism is the belief that a whole may be represented as a function (mathematically speaking) of its constituent parts, the functions having to do with spatial and temporal ordering of the parts and with the precise way in which they interact." Some people forget that it is not always easy to know a priori [experience] what the appropriate level of reduction is for any given scientific problem. The solving of complexly dynamic problems takes systems thinking and not reductive science by itself.

Methodological reductionism describes the idea that complex systems or phenomena can be understood by the analysis of their simpler components. Conversely, holism is the idea that a complex system can only be understood by taking into account the interaction of its parts, and that by reducing the system down into its component parts "you" will obscure understanding (e.g., emergence and feedback).

Reduction[ism] without holistic observation divorces itself from the observations of those who are afflicted by it, whereupon those who reduce refuse to reconcile their observations with reality. Science without a continued and consistent observation of the whole is to be rejected for it is, itself, a rejection of the logical application of the method in the first place. It is unfortunate that this leads some people to reject science outright without recognizing the necessity of science in-context. Some contexts simply have a probable likelihood of producing science that is untrustworthy, which is regardless, as understanding [for us] requires experience. And, without an observation of the whole [in-context] it is easy to pass blame, and particularly, to blame the "victims" of a larger, systematic problem - ignorance by convention.

Taken together, the properties of *openness* [to an environment, *interconnectedness* [of parts], *recursiveness* [as the flow of information], and *self-organization* [as a function] result in what is called a 'complex adaptive system'. The complexity of the system causes its overall behavior to be "organic" in nature, which means that its behavior unfolds over time; it is emergent. "Emergence" is a phenomenon that only occurs in the presence of

every system. To quote Jaewon Kim,

*"At the core of [emergence] was the thought that as systems acquire increasingly higher degrees of organizational complexity they begin to exhibit novel properties that in some sense transcend the properties of their constituent parts, and behave in ways that cannot be predicted on the basis of the laws governing simpler systems."
- Making Sense of Emergence (Kim, 1999:3)*

Here, we are begged to realize by our experiences within an existent system that we exist because of a larger ecological system, which has a lifeground that services all fulfillment. All ecological systems have a lifeground. Actively acknowledging our lifegrounded needs and essentials, is likely to bring them forward into a momentary decision space where they maintaining their emergence as a central primary focus to our society. We return to these core guiding requirements of what sustains us, and from there, priority resolution becomes clearer, eventually giving way to a more valid life focused social systems. From the lifeground we acquires universal human values in combination with prior lifeground awareness, which stands above all divisions and [subjectively] relative viewpoints to bring a unity to our perspectives, worldviews, and our design (and production) services.

*"The world we have made, as a result of the result of the level of thinking we have done thus far, creates problems that we cannot solve at the same level of thinking at which we have created them - we shall require a substantially new manner of thinking if humankind is to survive."
- Albert Einstein*

2.5 The systems approach and the analytic approach

NOTE: *It is important to adapt understandings to the evidence when it presents a probable certainty of a different information model.*

The following is a discussion of the systems approach in contrast to the analytic approach; with the additional note that an integrated approach is necessary for the sustainment of community.

The systems approach is fundamentally different from that of traditional forms of analysis, and analytical thinking. Traditional analysis focuses on separating the individual parts or components of what is being studied; in fact, etymologically the word "analysis" is a transcription of an ancient Greek word meaning "to break up into constituent parts". In contrast, the systems approach focuses on how the thing being studied interacts with the other constituents of the system – a set of elements that interact to produce the emergence of [at least] a behavior, of which an element of the system is a part. The systems approach focuses on relationships, multiple outcomes, holism and boundaries, the environment, the

larger system (source), controlling logical processes, and feedback. This means that instead of isolating smaller and smaller parts of the system being studied (a "reductionist" approach), the systems approach works by expanding its view to take into account ever larger numbers of interactions, which are then verified through the controlled analytic approach. Thus, a systems approach accounts for interdependent sets of variables, as opposed to the analytical approach (via reduction), which is more effective at handling independent sets of variables.

"Why" questions about objects called systems cannot be answered by the use of analysis. Answers to why questions are called 'explanations' and the product of explanations is understanding. In the 1950s society became aware that science does not produce understanding, it produces factual knowledge. The product of analysis, of the scientific and the analytical approach, is how things work, never why they work the way they do. The systems approach provides a [universal] contextually related explanation, and thus, understanding. Explanations always lie outside of the system under analytical study, never inside of it. Analysis takes an observer inside the system where knowledge is acquired and verified, but not integrated by its identifiable interrelationship to a larger whole. Understanding involves the integrated accumulation of knowledge through systems thinking.

Analytical thinking is a powerful tool for understanding the parts of a situation; it is just not designed to convey a complete understanding of how those parts work together. Synthetic thinking (i.e., synthesis) is the reverse process of analysis. It is a tool for making sense of and for understanding interactions - understanding how things work together. However, Synthesis needs analysis – how can you find the similarities across [apparently] different things if you haven't listed the "different things" first?

Essentially, synthesis refers to [a conceptually integrating consciousness] seeing how things work and are composed together. "You" take the object "you" want to understand and ask, "what is this a part of?" An individual first identifies the containing whole of which the object is a part. For example, to understand an automobile, you must know that it is a part of a transportation system; it functionally extends human locomotion in some useful manner (it is a part of a society's geospatial service system known as "the transportation system"). An individual must account for the whole system to understand the function of a "car". What is a transportation system? What is the locomotion system [in a human]? Finally, someone disaggregates the understanding of the containing whole by identifying the role or function for which it exists in a larger whole [structure]. It is important to note herein that each part is only of limited value without the other.

A systems approach uses synthesis to combine separate elements in order to form a coherent whole and provide explanations for the behavior(s) and emergent properties of a system. Every synthesis is

built upon the results of a preceding analysis, and every analysis requires a subsequent synthesis in order to verify and correct its results. Without verifying reality and examining it comprehensively, we delude ourselves into fantasies (we might only see basic systems, and not complex ones).

Herein, synthesis into formalization is not a form of socially controlled uniformity. A systems worldview is not a set of taboos; it is a way of organizing an ever expanding understanding of the universe. The systems worldview is an “objective worldview” that maintains information alignment with an emergent understanding of reality, not our perception of reality as seen through an ideology. Systems thinking is not a form of ideological thought; it is not an “-ism”.

A complex intentional community requires an integrated, interdisciplinary, and systems-based approach to solving problems. Systems thinking can be defined as an approach to problem solving that observes “problems” as parts of an overall whole system - behaviors, functions, and structures are identifiably interrelated. When individuals are unaware of how things influence one another within a whole they become incapable of approaching problems from an integrated perspective, leading to errors and flaws in their thinking and solutions. Herein, we recognize the value in a systems-based approach to understanding and guiding the adaptation of our total information system (social + economic + ...). We understand that all elements of a system must work together to maintain the whole - whole systems design re-forms community toward fulfillment. The traditional disciplinary boundaries are artificial, and they narrow our focus so that we miss fundamental and systematic connections to the world.

It is relevant to note that systems thinking also goes by several other more contextualized names: strategic thinking, solutions thinking, structured thinking, future and forward thinking, long-term thinking, high-level thinking, lateral thinking, lifecycle thinking, and design thinking. As well as, synthetical thinking and systemic thinking. The term “systems thinning” is simply more comprehensive.

Note that the understanding of ‘systems thinking’ can be more difficult to intellectually integrate than the method of ‘analytical thinking’ by individuals in early 21st century society. There are multiple reasons for this, most notably: (1) the modern schooling system only gives a moderate introduction to analysis and often confuses critical thinking with conditioning (i.e., they apply conditioning and call it critical thinking); (2) systems thinking is either not taught or not fully explicated in early 21st century society’s institutions and industries which profit profusely off a lack of systemic integration [of services]; (3) the thinker may be dealing with interactions that are not necessarily visible to the eye; (4) in complex systems, particularly living systems, the interrelationships are dynamic rather than static, which makes pattern recognition necessarily more complex - complex systems interactions may change regularly and

affect each other differently each time they do so. Hence, “dynamic thinking” and “lateral thinking” are necessarily subcomponents of synthetical thinking.

NOTE: *Systems thinking is highly dependent upon pattern recognition and pattern coordination - being able to identify, organize, and integrate patterns.*

2.5.1 Itemized differences between analytical thinking and synthetical thinking

Simplistically, systems and analytic thinking can be replaced with the concepts of compositioning and decompositioning. Wherein, de-compositioning is reasoning from the whole to the parts, and ‘compositioning’ is reasoning from the parts of the whole to the whole itself.

More completely, the two thinking methods may be differentiated as follows (note, the same concept is conveyed below in three different manners):

1. Analytical thinking **enables an understanding** of the parts of an object. Synthetical thinking **enables an understanding** of how those parts work together to form an emergent behavior (i.e., why they work the way they do?).
2. Analytical thinking **breaks things down** into their component parts. Synthetical thinking **finds the patterns (models)** across those component parts. It connects the dots. It requires a refresh of the model [of the system] to more greatly integrate new and more accurate information, and to remove apparent contradictions of its logic in the process of integrating. There is a *delta iteration* in the system (i.e., the system changes in time and space).
3. Analysis involves the **identification of differences**. Wherein, a ‘critical analysis’ [in part] involves the idea of “versus” (or “vs.”) - to put two ideas in opposition to one another so that you can claim one of them correct. Synthesis concerns the **finding of similarities**. In other words, synthetical thinking is the intentional finding of repeating patterns (or common “themes”) across a system (object or situation). Although analytical thinking enables us to find those repeating patterns and common themes too, it doesn’t do so directly (or as effectively) as it is more focused on identifying differences rather than similarities.

2.6 The forms of systems thinking

While there exists a potential for categorizing different types of systems thinking, these distinctions may not significantly contribute to a deeper understanding. The

terms 'systems methodology' and 'systems thinking' generally encompass all possible variations. These seemingly separate forms of thinking collectively aid in heightening awareness when dealing with systems by integrating information to foster a more comprehensive understanding. They assist in the creation of systematic and holistic solutions, leading to more effective thought processes and actions. Tools that encapsulate these understandings across various scales prove to be valuable resources in this context.

2.7 Systematic pattern recognition

A.k.a., Pattern conception, pattern formula, pattern discovery, logic.

Every system is a pattern, as an axiom. There are three axiomatic categories of meaning (symbolized/signed meaning) in the context of systems as patterns.

2.7.1 Sameness (unique identity, informationality)

The process of recognition the pattern in one or more static objects or concepts:

Shape A = Shape B (or Shape A \equiv Shape B)

Concept A = Concept B (or Concept A \equiv Concept B)

This statement asserts that the shapes A and B are equivalent or identical. For instance, if you want to express that one shape is equal to another shape (let's say Shape A is equal to Shape B), it can be represented as a logical statement using the equality sign (=) or an equivalence symbol (\equiv) depending on the context.

2.7.2 Causativeness (cause and effect, materiality)

The simple formula for pattern recognition of dynamic objects (cause and effect), that is itself a pattern (of cause and effect) is:

If > then > because

- If X, then Y, because Z
- If event A occurs, then result B happens, because of cause C
 - For instance, if a ball is thrown at the wall (X), it makes a noise (Y), because of contact/collision reverberation (Z).

This is the pattern of an entity who is pattern seeking.

All systems, and science in generally, involve this formula. Science, in this way, is an attempt to visualize and formalize natural phenomena via this pattern.

2.7.3 Reasonableness (rationality, thinking and reasoning)

Then come the axiomatic propositions of logic (i.e., the axioms of propositional logic) that construct the base of all reasoning:

1. **And (conjunction):** Denoted by \wedge (or the word "and"), this connective combines two propositions and is true only if both propositions are true. For instance, if proposition A is true and proposition B is true, then $(A \wedge B)$ is also true. If either proposition A or proposition B (or both) is false, the conjunction is false.
2. **Or (disjunction):** Denoted by \vee (or the word "or"), this connective combines two propositions and is true if at least one of the propositions is true. In an "or" statement $(A \vee B)$, if either proposition A or proposition B (or both) is true, then the entire disjunction is true. It is false only if both propositions are false.
3. **Not (negation):** Denoted by \neg (or the word "not"), this connective negates a proposition, essentially flipping its truth value. For instance, if proposition A is true, then $\neg A$ (not A) is false, and if A is false, then $\neg A$ is true.

2.7.4 Directiveness (motivations, goals, and objectives)

Then comes the axiomatic conscious action of step, thinking (intelligence), which allows for engineering (analysis and synthesis; problem>solution ability):

1. **Taking apart intentionally** (disaggregation, disassemble, reverse engineer).
2. **Putting together intentionally** (aggregation, assemble, engineer).
3. **Testing together intentionally** (experimentation, discovery and exploration).
4. **Using together intentionally** (socialization, societal flow and harmony).

2.8 The systemic thinking process

NOTE: *Creative thinking is a form of systems thinking; it is the relating/creating of things or ideas that were previously unrelated. Systems thinking is not the death of creativity; it is instead, an opening into the flow state of creativity.*

Systemic thinking is the process of synthesis, and it is described quite basically by the following steps:

1. List (identify) the system elements (as part of an assembly, a system). Lists are cohesively structured, clearly formatted and list items based

upon a pattern, principle, or some other similarity:

- A. Lists of collections of patterns that group similar informational (categories and classifications, abstracts, concepts) and/or physical (concrete, tangibles, objects).
 - B. Lists of procedures that form a functional system of resources, activities, and knowledge-skills; list of work flows, on some timeline, short, medium or longer strategic). A procedure is an ordered sequence of steps or concepts to achieve a goal.
 - C. Search for and collect the elements of the assembly.
2. Group (categorize and classify) similar elements together and describe what each group has in common.
 - A. Find the common theme(s), the repeating pattern(s), the supra-type(s) and sub-type(s).
 3. Model and visualize (see visually) all elements together from one to five dimensions (i.e., from definition to simulation).

The systematic data collection methods are:

1. **Checklists** (a.k.a., check-lists, check-listing) are a type of procedure that accounts for previously identified potential observations of events and/or objects, and allows an observer to record its presence and/or absence over time. A checklist is a tool used to systematically verify or track the completion of tasks or objects (deliverables/conditions). It consists of a list of items or actions that need to be checked, completed, or verified. Checklists are commonly used in various fields to ensure that essential steps or items have been addressed or that certain criteria have been met. These methods are typically more structured and concise, focusing on specific items or tasks to be verified or completed.
 - A. Here, information is gathered from the use of the checklist tool to ensure safety and or completion of operations requirements.
2. **Surveys** (a.k.a., surveying, questioning, feedback and issue/demand questionnaires) - is a systematic data collection method used to gather information on needs, preferences, opinions, or feedback from a targeted group of individuals or entities. Surveys involve a series of questions or inquiries designed to collect data on a particular subject, topic, or area of interest. Surveys can be used to gather quantitative or qualitative data and are part of the decision system where need, preference, and feedback inquiry processes inform master plans and current socio-technical habitat operations. All surveys are check-lists; they are lists of items that

some team con-structured, and some coordinator checked were completed, by societal users.

- A. Here, information is gathered from users through their completion of a pre-constructed survey that collects data on needs, preferences, and expectations.
3. **Technical computers and sensors** - is an electronic computer system that collects and sends on/off signals.

2.9 Learning systems

A systems approach entails an environment where learners explore the interrelationships within a system, looking for useful patterns and verifying related identities for oneself, rather than memorizing isolated facts. Functionally healthy young children are naturally good systems thinkers, most likely because their learning has not begun to become fractured. In their eagerness to learn, they bring all that they know to their learning and are willing to explore boundaries in search of understanding. Everything has the potential of being related and relevant. It is unfortunate then that their thinking and learning experiences become increasingly compartmentalized as they progress through the modern schooling system, which is designed to move them into the market as trained professionals (the schooling system's stated goal).

Herein, we realize that the very infrastructure of any community is most effectively sustainable through 'interdisciplinary teamwork' at the systems level, for it is representative of the group dynamics a system "team" at scale: teams are open environments of socially cooperative participants (i.e., teams share and cooperate); teams have functional goals in the application of effort; and they act in common through some form of logical coordination. It is here that we may understand that teams naturally facilitate the learning experiences of others in the team because they understand that they have a functional relationship together and that the structure of that relationship will be improved by any individual members own improvement. By becoming 'interdisciplinary teams' at the 'systems level' we are likely to facilitate each other's self-development in experience of the system itself.

When investigating a phenomenological relationship one might ask:

1. What is the relationship?
2. How does the relationship function?
3. When was the relationship observed?
4. Why is the relationship present? In order to answer *why* you have to look at the supra-system and ask *how*.

2.10 Modeling, simulation and computation

Through descriptions it is possible to form simulations and improve understanding. To the extent what "you" simulate ends up looking like the real thing "you" can gain tremendous insight into how what "you" see came to be and how what "you" see can be controlled. Through simulation comes greater clarity of understanding and greater potential for control. In large part, the dynamics (relationships, rules) of any physical or conceptual systems can be modeled and simulated. Over time, modeling and simulation allows for ephemeralization (as in, procedures that allow for doing more with less input). More completely, modeling and simulation provide better information, and over time, better information allows for the doing of more [tasks, activities, etc.] with less [resources, energy, etc.].

There is a mental (conceptual) and material (physical real-world that can be understood in meaning:

1. **Concept models** (of conceptualizations) of that world must include concepts in relationship to derive meaning. Concepts have models (i.e., concept models), and are shown in static images or static images with math values (numerical value sets) that are constant or variable. A whole societal system can be conceived of.
2. **Simulations** (of physical objects) must include objects in motion to derive meaning; i.e., to derive understanding with objects. Simulations are object models in motion (i.e., static animations and dynamic simulations). Computation is the computer execution of a mathematical model using numbers (i.e., sequencing) and logical operators (by level); whereas, simulation mimics a process or a system. A whole societal system can be simulated.

NOTE: *Simulations and concept models must be used together to completely explain; wherein concept models and definitions describe, and simulations explain (note: both are visualizations for a complete explanation that includes: definitions used consistently, descriptions, and explanations).*

A 'model' visualizes patterns of information flowing through a system. A model is necessary for service design practice, and for the engineering or operating of any system. Much of design practice comes down to two models:

1. A model of the current situation.
2. A model of the preferred situation.

Examples of models include:

- Site maps, charts, application flow diagrams, and service blueprints.

Simulation is the imitation of the operation of a real-world process or system over time. The act of simulating something first requires that a model (or theory) be developed; this model represents the key characteristics or behaviors/functions of the selected physical or abstract system or process. The model represents the system itself, whereas the simulation represents the dynamic operation of the system over time. Simulations are predictions rather than observations. A 'decision space' is a calculated simulation. Science provides observations and the systems methodology generates simulations, which are then re-tested against observation. Processes are simulated to see whether the particular simulation leads to (more or less) the same behavior that is observed in reality (or in experiments). Empirical observation, simulations, and experiments are all valid methods that need to be combined.

Fundamentally, all systems have dynamics (influences and processes) that can be modelled and simulated. Some dynamics are static, and others vary by input. A 'living system' is a system that changes [internally] over time in response to inputs. At each instant of time, a living system is in a specific state determined by the probabilities of prior states. The 'state' describes how the system is at a given time. The 'state space' refers to the totality of all the states the system might "take on" or be capable of "becoming". Alternatively, in a 'memoryless system' (or 'static system'), the outputs depend only on the present values of its inputs. In other words, memoryless systems do not depend on any past input. Whereas, in a dynamic system the outputs depend on the present and past values of its inputs.

A "reason" is the initiation/start of a model of reality. Until you have established that you can learn something about the universe the word reason no concept (i.e., no meaning). One of the functional abilities of the brain is model forming. The brain has a functional ability to form models of the world. Forming models about reality serves a functional purpose, a social purpose, a decision purpose, a material purpose, and a lifestyle purpose, leading to the operation of functional services systems that really work for all of humankind.

2.10.1 Real world models and computers

Real-world models are systems, characterized by rules, that capture (mirror or pattern) how aspects of the real-world change. Through the application of a model, rules can be used to understand and to control state changes in the real-world. Using models, rules often describe state changes in the form of 0 and 1:

0 = Old system state (prior state; earlier iteration of environment) - how parts were interrelated before applying the rule.

1 = New system state (output state; next

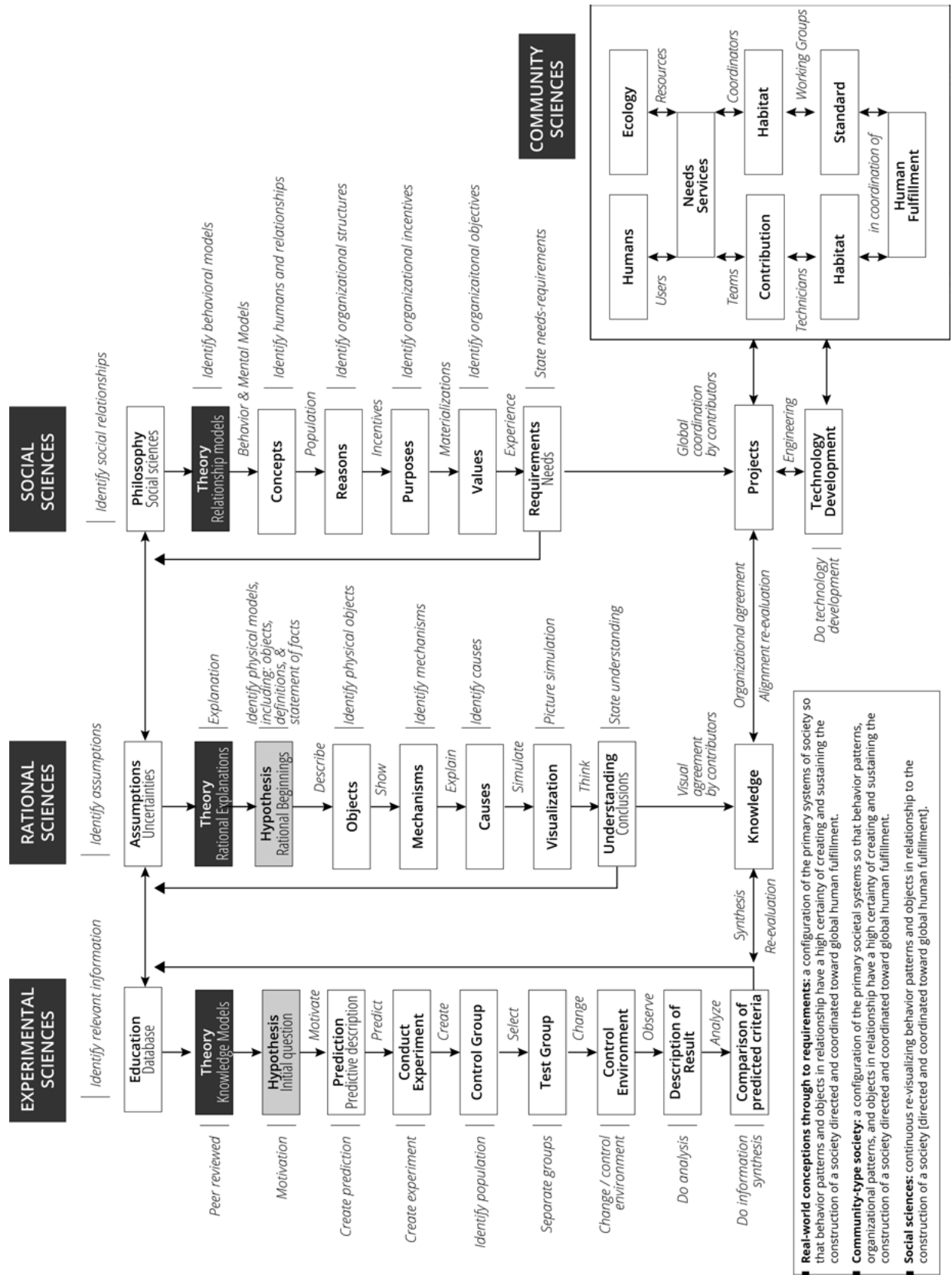


Figure 21. Depiction of three methods of science. Title: model-social-approach-science-experimental-rational-theory

iteration of environment) - how parts are interrelated after applying the rule.

Or, 0 may represent the current state, and 1 may represent a probable (e.g., planned) future state.

Properties of the world as described in terms of:

1. Observation - Natural[ly observable] units (of sensation). Understood through physical measurements.
 - A. Rules involve observation of sensation.
2. Quality of being useful - True or false, or some degree of complexity therein. Understood through visualization and experimentation, as well as computation and simulation.
 - A. Rules involve logic (conceptual patterns) and arithmetic (mathematical patterns).
3. Direction conceptualization - Value orientations [when/where arranged by humans]. Understood through socio-technical life experience.
 - A. Rules involve socio-technical interrelationships within a given environment.

Note that these properties are effectively the direct outputs of any societies economic system. Through the economy, services and objects (sensations) become available (accessible) to the population, wherein the arrangement (configuration) of the population in interrelationship with an environment of services and products orients the population toward some definable direction.

As humans understand more about the world, their models become more unified and integrated. Further, their ability to use materiality to facilitate their understanding and control over the world is likely to increase as models become more accurate and technologies become more capable.

A digital computer, for instance, is a technology that allows for directly automating, extensionally, pattern processes. Digital computers are physical logic machines made of electronic binary circuits that literally embody (are the patterned representation of) rules of logic. Computers directly encode those logic rules that are used for making models and understanding models. In other words, computers perform computations in the form of executed programs. Programs encode rules from models, written in programming language(s). Programming languages are based in logic and arithmetic, and therefore, can be used with computers (informational-material encoding and operating platforms).

2.10.2 Real-world modeling

Haber (2015) clarifies modeling as the process of making explicit one's knowledge and assumptions about a certain system through the generation of a representative

replication. By using this replication, instead of the actual system, a model provides users (researchers, etc.) with a synthetic environment that can be used to predict (test, experiment, etc.) without implications on the original system (Drogoul et al., 1994). This is especially important if experimenting in the actual system is impossible or to be avoided due to moral, methodological, or safety reasons (Goldspink, 2002). But, modeling also makes it possible to investigate the working of systems that do not actually exist in the modelled state. Therefore creating models may even allow for predictions about possible system performance (Epstein, 2008; Bandini et al., 2009). Investigating the effects of modeling choices in the replicated system is called simulation. Unlike analytical models, simulations are not solved, but run (executed); and, the changes of system states can be observed at any point in time. This provides an insight into system dynamics, rather than just predicting the output of a system based on specific inputs' (Siebers et al., 2008:1).

2.10.3 Real-world computing

A software program maps the logic and arithmetic rules that models are composed of to a form that a computer can use. The execution of the program can extend the modeling abilities of humans and provide more useful data. The iterative systems model described herein, involves: real-world phenomena, the building of models and predicting of behavior, the executing of models in computing systems. Models, programs and computers are all connected by logic, arithmetic, and ultimately, mathematics.

Logic exists for arguing (analyzing or reasoning) about claims (information) being true or false. In mathematics, a proof is a formal demonstration of a formula that is always true (i.e., theorem). Therein, axioms are base true formula. Then, rules of inference prove theorems from axioms and prior theorems.

Calculations can be done on formula. The mathematics can be thought of as computation, and the formula are software. For the software to exist there must be some object, hardware, that does the calculation. Calculation requires a tool to perform the calculation. Note here that tally sticks (notches in stick or bone) are one of the earliest known material encoded calculation tools (they are also thought to be where the Roman Numerals came from). A tally stick is a physical system, the same as a goat herder with a population of goats are a physical system. Each time the goat herder let's a goat into another field, s/he notches a stick. In the end, there are as many notes on the stick as there are goats in the next field. In other words, accurate information about the real physical world has been encoded into the physical world, which may then be shared by those who understand its meaning (i.e., pattern of each notch representing one goat and a different field). This computing tool can then be used to count and check the number of goats transferring in total between fields, and eventually,

a user could use the system to control the transfer of all goats between all fields. Imagine the concept of resources in place of goats and the concept of economic sectors in place of fields. Using highly complex digital computing systems (of which tally sticks were an early version of) it is possible to count, check, and control for the allocation of all resources transferred between all economic sectors at a global level. Tally sticks work as an information processing (calculation tool), just as computers do, because they are all physical systems (i. E., the goats, resources, sticks and computers are all physical systems), which consciousness is capable of understanding through a physical interface. The relationship between the physical system of goats and fields is preserved as an carving (engraving or encoding) on a tally stick. All maths is essentially a matter of making small physical systems or tools that model the world directly (as a one-to-one relationship). Then, an abacus is a more complex and useful computational physical tool. The, a computer is an even more complex and useful computational physical tool. All of euclidean geometry is a set of rules, which may be physically visualized by a physical drafting tools. Even a slate and a chalk in digital or physical form is used to do the operations and show to another that the operation has been done. The process is that a conscious observer observes the state change of an abacus or slate, the conscious observer remembers a rule that causes that state change, the conscious observer then acts to move beads in the abacus, or to write something down in the case of the slate. In this sense, a computer is a unification of maths, memory, and the sequencer in a physical object, or objects. And, prior to the digital computer, this is what a computer meant, it meant a person who knew maths working with a slate or abacus like tool who remembers states and executes rules.

It was realized by Turing and others that machines (i.e., mechanization) could be used to do computations (replacing human mathematicians), if a machine could be built that (i.e.,the following is all that a mathematician does):

1. Could detect some number of [physical] symbols at a time.
2. Have finite internal memory or state.
3. Have a set of rules in read only memory.
4. Has a read write memory to record calculations.

Turing proposed an actual machine that used purely mechanical procedures that could do the same process as a human mathematician. These characteristics are the characteristics for a universal computing device that can perform any computation that anyone can do, including a mathematician. Fundamentally, computers can be applied to computations that correspond to something that exists in the real world, and the real computations are always done with physical devices. The effectiveness of mathematics is always the effectiveness of a computational procedure for modeling some part of the

real world (e.g.,the number of sheep leaving a field, or, the number of resources and their trans-fer/-formations between economic sectors in a habitat). A procedure is a set of rules that are expected when used to lead to the same answer or result.

3 The methods of science

A.k.a., The scientific approach, scientific thinking, discovery.

Systems engineering is informed, in part, via the methods of science in their ability to provide validity and to evolve human knowledgeable-understanding and intentional control over the world -- description (mathematics) and explanation (visualization). The methods of science refer to a body of processes (or techniques) of investigation and understanding of natural phenomena and how to control them. This is accomplished through the most modern methods of questioning, observing and learning, measurement, testing and experimentation, visualization and understanding, and integration, applied to the acquisition of information, correcting previous knowledge, and demonstrating the validity of a particular understanding. These iterative understandings may be useful in solving problems involving our common fulfillment. The method(s) can be applied at the social level for the purposes of social concern. The specific purpose of science is to expand our knowledge of our shared reality; it facilitates an understanding of our shared environment. At a practical level, science is a useful standard [tool] for better understanding our real, existent world. And, through more accurate information we arrive at more accurate decisions about global human fulfillment. Science is about model (pattern) creation and model (pattern) validation (certainty). Model creation involves the rational scientific method (visual understanding (engineering), and model validation (observational control research) involves the experimental scientific method.

In part, it is possible to understand the world through individuals' interactions with it and observations of it, of which science is one method of interaction. Science is the intellectual and practical activity encompassing the systematic study of the world through observation, experimentation, explanation (visualization), and intentional discernment (integration). There are many ways to see the world, such as through: politics, belief, tradition, superstition, money, science, systems. When someone looks through the lens of a 'systems worldview' the method(s) of science is not artificially restricted in its application; it can also be applied to the social system, to the economic systems, the material system, the habitat system, the decision system, the learning system, and in its application, more greatly clarify humanity's understanding of itself and control over its environment. There is a natural feedback system built into physical reality, and it is mirrored in the human brain, and in consciousness itself, to inquire (a.k.a, investigate, learn, integrate, create, play, etc.) further.

The methods of science are used to discover more about the natural world and its cause and effect relationships. Science is identifying cause and effect relationships (with objects, concepts, and mathematical descriptions). And, their explanations are tested using

sensed and causally controlled with evidence (certainty) from the natural (a.k.a., real) world; wherein; the explanations are understood through visualization (as visually understandable models). Evidence of a theory ought not convince people of the validity of a theory without accompanying understanding and direct, conscious life experience. Evidence of causality is experienced as conscious sensation, observations and measurements that facilitate the understanding of a natural [law] phenomenon, which are always modeled for [visual] understanding - evidence is contextually sensed data and intentional understanding. Causality is about feeding forward of the awareness of systems so that they may be understood, predicted, and intentionally evolved for control over the environment and engineering of human fulfillment. Here, as opposed to within the social>value>justice-system, a "law" is something that is deterministic (a.k.a., physics-consciousness [absolute] material). Causality takes place in time, so causality is necessarily a temporal process. Scientific causality is that which can be visually and experimentally explained; whereas, engineered causality is that which can be visually simulated and constructed to be operated. In its most general sense, science involves: *observation, identification, description, experimental investigation, and theoretical explanation (visualizations)* of phenomena. Experimental evidence is evident to all observers who have the ability to sense it (process it as a 'signal') and "witness it", and understand and create new visual models of what occurred (as a result) and what could occur (in the future, as a design).

Causality is the means humanity uses to perceptually "source down" (i.e., look down and more closely) to that which is trying to be understood, to the true root origins and causes of human issues and natural phenomena, so that humanity can correct, re-structure and re-orient its systems [toward synthesized patterns that more certainly cause our well-being and overall fulfillment. The courses-of-action we do or don't take are naturally based upon [to a large extent] whatever we establish as the cause of something, so developing a shared working approach (i.e., scientific inquiry) toward the understanding of causality can be influential not only in finding optimal solutions, but in getting on the same direction as a global population. Herein, our effort is directed toward uncovering to the root causes to social and ecological problems, as it is easy to become lost or stop short of where the problems really lie.

The methods of science have their basis in the field of empirical research and rational inquiry. Research and inquiry lead to the discovery of knowledge. It is the way we find out what works best; it is partially how we progress. The scientific method is [in part] about correcting previous "knowledge" using a method based upon gathering measurable evidence via repeatedly tested hypothesis against the benchmark of the natural world to "prove" validity. Ideas are valid to the extent that there is sufficient information and cause for the probable certainty of the idea's validity. We can test our changes

to our environments to see if we get the results we expect; which we add to the base of understanding from which we develop fulfillment. And, by devising better tests we can refine our theories. The scientific method never proposes "truth"; instead, it continually seeks it through empirical observation and measurement upon the benchmark of the reality we all share. Science says, "Statistically, this is highly suggestive of something we would call truth." Here, "truth" becomes a process of factual refinement, a pattern of discovery and creation. Herein, truth is a process - a search for a consistent empirical regularity. The beauty of the "laws of nature" are that they still remain "true" whether you believe them or not. Practically speaking, this is why we must use "nature's laws" to inform and guide our community. Yet, no laws are ever broken when science encounter a new discovery. In science, the "truth" is discoverable and emergently knowable.

The scientific methods have two general purposes of discovering [socio-technical] controls and visualizing [socio-technical] explanations:

1. The use of scientific experimental methods demonstrate, and statistical mathematics to predict with confidence, an outcome with mathematical certainty by testing/experimentation and changing/controlling variables.
2. The use of a scientific rational method is used to explain and visualize the socio-technical conception and material operation of reality (phenomena) and society (in reality).

The scientific approach has gained credibility because of the success in the approach in improving our humankind's everyday lives. The credibility was the result of adherence to a multi-step process of discovery and validation, and data storage. People often mistake the individual steps, the tools or methods of science, as being sufficient to indicate that the approach is scientific. That is simply wrong. You can read all of the scientific literature to come up with an inspiration for a theory, but you have not completed the experimental scientific process until you have designed an experiment to provide reproducible, unbiased data to support the theory. You can do all sorts of calculations with equations and computer models, but you have not completed the scientific process until the results of predictions are verified by unbiased observation. You can do all sorts of clinical and epidemiological observations, but you have not completed the scientific process until you have performed a prospective trial. You can do all sorts of decision analysis and mathematical logic, but the scientific process is not completed until the procedure is prospectively tested.

Nature is fact[ual], it is truth and reality, is real-world certainty about relationships; which, is inherent and objectively discoverable through observation,

experience, and integrated synthetic-information model optimization. "Source dynamics" (or, the technically dynamic principles of which nature is systematically sourced and accessible) are existing conditions that are binding and immutable (a.k.a., "physics"). They are the deterministic components, as "laws", of "creation" (i.e., the creation of potential over a decision space). There are real limitations in this material reality, and there are decisions that can lead to the real world gain or loss of global human fulfillment.

The evidence exists in the real limitations that consciousness bumps up against and senses (Read: identifies sensorially), and visualizes. Hence, there are "design problems" because there are limitations; there are real limitations in this technical reality. Consciousness cannot simply imagine flight and have its body respond to the thought by flying up into the air [as might occur in a "lucid" dream]. Yet, knowledge, in truth and certainty, starts with imagination and curiosity, and it involves a structured process of inquiry that maintains the ability to re-orient toward that which exists. Thus far in known history humankind has been using this thing called 'language'; the language of thought integration and expression has visual properties. These visual properties represent understanding when creating and sharing models, and technology when engineering and constructing new models; for describing that which exists. And, what is society describing with this technology but problems with solutions in our fulfillment [to varying degrees].

Essentially, the scientific method(s) allow us to measure the effects of our models of reality, and to improve them so that we know more about how to fulfill our needs and maintain alignment with our purpose. If we identify our needs and make them objective [to some degree], then science will be able to provide data toward their optimized fulfillment. Essentially, scientific work is about discovering increasingly accurate descriptions of reality and applying the results for mutual technological benefit [via synthesis into a model that we use to commonly orient society toward greater fulfillment]. Scientific models provide information in the coordination of decisions toward all forms of progress. And, all knowledge we gain through the use of the scientific method remains emergent in our modelled understanding of nature. Wherein, nature represents the design patterns of the universe. Essentially, everything is just science to the universe. And fundamentally, we are scientifically reliant on the processes that take place on this planet and provide for our life needs.

Science is an epistemology, it is a way of knowing (or, coming to know). Science is a method that transcends ideology and personal belief in its acquisition of reliable information of how the world really works. It attempts to create predictable models of feedback that are rigorously examined, tested, and replicated until an emerging "consensus" develops and the principles thereof become a part of our technically oriented community. The overarching aim of science is that of

'self-correction' and 'standards of evidence'. Wherein, the "scientific consensus" is about the replication of experiments that agree with each other and lead to an emergent scientific truth that is understood. Science is not done via consensus; consensus is the result of doing science. In science, consensus becomes the emergent expression of a verified logical argument.

The "scientific feedback mechanism" is the experience of observing the results of a specified behaviour or controlled processes. It is a feedback mechanism that all living organisms have to greater and lesser degrees - humans have always had it. Repeatedly controlled evidential observation (scientific knowledge) leads to a pattern of experience re-organized into a model (theory) reflecting the total phenomena. Science may be generally divided into that which is hypothetical, theoretical, and empirical (as in, an objective physical experiment). Science is [in part] the search for [identifiable] patterns in nature (Read: the world around us) through which models are created to help us to understand, to explain, and to design. A model is a structure that depicts an understanding of how something works. It is the way in which we think and talk about something [so that it makes sense].

In application, science involves the emergent discovery of universal principles that may be applied to social concern to create better living and better science [for humanity]. Therein, nature's way provides an example. Science involves a method of inquiry into nature specifically designed to derive predictable technical principles from an existent system while accounting for all known influencing variables that can be accounted for given what is known. Note could be rephrased to state "... to derive predictable laws of existent properties". Principles are synthesized out of experience, which are then used to make a test of an invention that is developed into a comprehensive strategy (e.g., "economy"), which if left uninhibited will alter humankind's patterns [without its awareness]. Within a community-type society, the population considers a comprehensive fabric of mechanics so that individuals, and society at large, alter their patterns with awareness.

Science becomes both a body of evidentially verified knowledge that reflects the current understanding of the world as well as a set of processes for *discovering, verifying, refining, and operating within the bounds (limitations) of what is known* (i.e., knowledge, methods, and resources). Science is the only known way to produce reliable and verifiable knowledge -- knowledge that is verifiable and is accurate to that which has happened, so that better (for human fulfillment) can be built, together.

The application of the scientific method necessitates critical thinking and reasoning. Critical thinking involves [in part] the questioning of assumptions as well as the removal of contradiction through the application of analytical and logical thought to determine greater accuracy in the verification of identity. The questioning of assumptions is necessary for the method to duly fulfill its purpose. Herein, scientific reasoning involves

the concurrent application of abstractions or symbols in formal relationship to variables or dimensions within the context of probability and proportion.

The purpose of science is not that of duality, or "paradoxical non-integration". To say that science is "true" or "false" is a mistake of language, since it is not the sort of thing that can be true or false, but a set of methods for testing ideas against how things really are, not a claim, a belief system or an ideology. Black and white thinking eventually turns into belief. Belief is the enemy of adaptation because a belief is a self-imposed limit (on individual- and social-fulfillment); not necessarily an actual limit. There is something fundamentally different about being "open to a possibility" and "believing in it". When "you" believe "you" are no longer open to new information. If you "believe it", then you are no longer open for "it" to be different, and you don't have to collect any more data on "it"; essentially, you have become attached to "it" [without evidence for it]. Science is void of arbitrary restrictions to the acceptance of a set of results as evidence; it does not have attachments in its transparent usage. In science, everyone is on the same side. In science, if someone corrects your thinking, then they make you a better individual, a better "scientist". And yet, it is important to remember that science, as a tool, is always applied in-context.

In any society, the question must be asked, What is the environment within which "science" is said to exist? Is the environment within which science exists conducive to arriving at the best conclusions and the most accurate information? Therein, does information about the world have a monetary cost? Is information in society potentially useful for competitive advantage over others? If you want to understand anything will it cost you something? Fundamentally, the cost of information (i.e., information costing money) has social consequences, the principal of which is as a structural limiter on human potential for social understanding and cooperative development. Some forms of social and economic organization incentivize the skewing, manipulation, and obfuscation of data.

In scientific discovery, argument and progress come from a place of openly inquiring. Thus, those who hold beliefs will be frustrated by science because they are not open to questioning and discovering more accurate understandings.

The scientific method presents an opportunity for us to discover through our individual senses the "laws of nature", the technical principles of reality, for ourselves. Scientific discoveries discover more about the rules of the larger system of which we are a part. And, a systems methodology has the potential of telling us *why* the "laws" are what they are. In community, we use the technical principles of nature as a template for our adaptation [to the total environment]. Our [in simulation-encoded] designs are based on our emergent scientific understandings, that which has been demonstrated [to facilitate and align with our fulfillment].