
Ideal-Real Links: A Study of the Act-Fact Interface

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Introduction

Since the arrival of humans onto the scene of evolution, it has been possible to divide the world into three concentric *realms*: ecosphere; sociosphere; egosphere. Between the inner subconscious and the outer supernatural, these realms contain our reality and give it a perspective focus. As Figure 1 shows, our anthropocentric point of view looks out into the surrounding world as layers of distinct qualities.

The outermost layer is the natural environment, the all-inclusive envelope that contains and sustains everything. Out of it emerged humanity, which is perhaps life's finest, yet most dangerous product. The consciousness and capability of human beings has supplemented nature with culture, thus creating a sociosphere, which now threatens to destroy the ecosphere within which it exists.

Although all organisms affect their environment in order to survive, humanity has gone beyond all other species in transforming its natural habitat into an artificial one. This development is a result of the human capacity to envision *ideal* worlds and then try to realize them. External constraints, of course, do not always allow humankind's internal ideals to be implemented and thus sets the stage for the tragedy of the human condition.

Moreover, not only do different people have different ideas of how to change things, but each person may have conflicting ideas that compete for priority. These contradictions create three typical confrontations: extra-personal (physiological); inter-personal (sociological); and intra-personal (psychological). The so-called global *problematique* is the complex system of these conflicting situations, in which humanity is both culprit and victim.

The complexity of the issues facing us requires well thought-out and sophisticated treatments. In this article, we shall present a systematic method which could help us understand these problems and undertake their solutions. This method is based on the theory of *sociophysics* which developed its form and content through a *Systems Unification Model* (SUM).

Sociophysics is an interdisciplinary theory which tries to establish linkages among the natural, social, and human sciences through unifying metaphors. On the basis of this unity, it will be possible to distinguish the different malleability potentials of the various domains of reality and thus optimize our impact upon them. Thus, sociophysics could show the way towards not only the most efficient and effective policies, but also the most ethical and aesthetic ones.

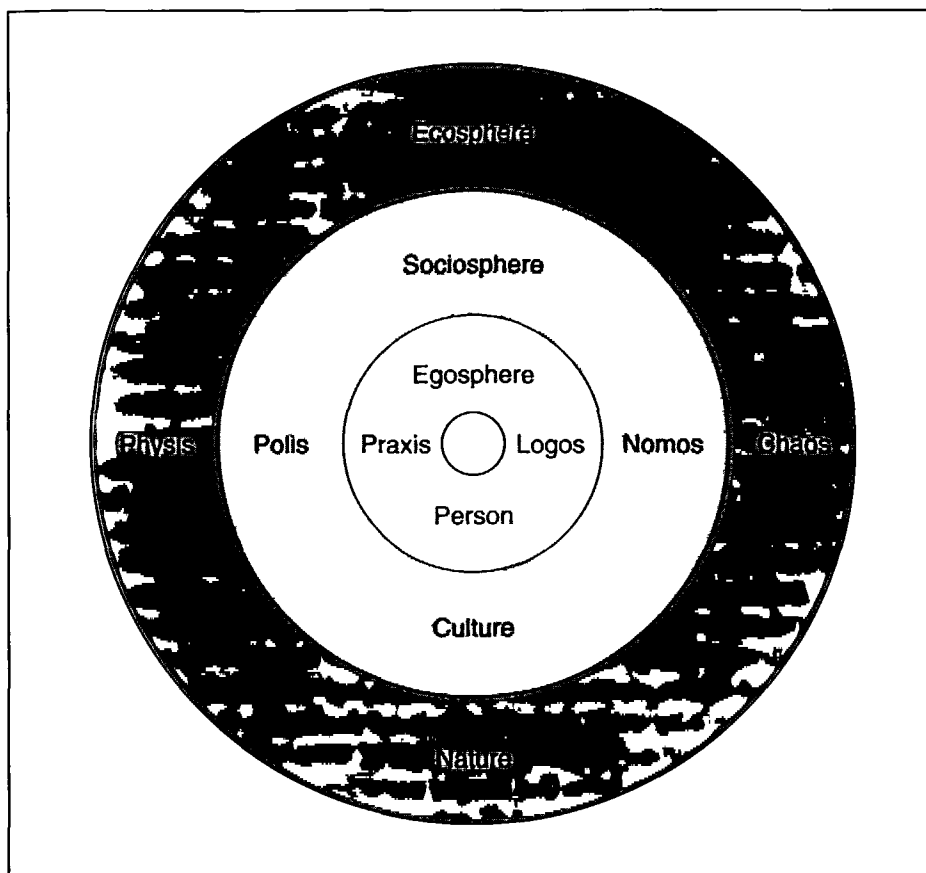


Figure 1.
Concentric Reality
Domains in the
Humanity-Society-
Reality Perspective
Focus

It is the SUM thesis that historical events can best be explained by linking natural factors and social actions to human ideals. This thesis conceives such fundamental similarity in the three realms of existence that it asserts the operation of general principles applying to them all.

Knowing these principles will take us a long way towards finding the appropriate answers to such intractable questions as: What could and should humanity do to improve its condition on earth? How could we best fulfil our needs and implement our visions? When, where, and why is the most propitious time, place, and reason for human action?

Of course, in this brief article, it is not possible to discuss, let alone answer, these crucial questions adequately. What follows then is only an outline of the SUM theory of sociophysics and how it could be applied to the human predicament. The three following sections of this article treat each of the above mentioned realms, beginning with the most basic and ending with the most significant.

The Natural Environment

For an adequate explanation of the human condition, any theory must begin with *nature*. Defined as the totality of whatever precedes and exists, independent

of humanity, nature provides the necessary conditions for human existence. It is within this all-encompassing context of *physis* that everything, including humankind, can be seen in proper perspective.

Although humanity is a creature of nature, it has gone beyond it by the evolution of self-consciousness. Through inspection and introspection, we have become participant-observers of the environment. Accordingly, we can perceive and conceive reality in terms of visions and ideas.

The most basic concept innate to humanity is its own existence in time and space. This primordial awareness distinguishes the self from others, as it does separations in space and variations in time. In this way the human mind relates and compares things by discerning their similarities and differences.

This comparison results in certain fundamental dichotomies which divide things into static and dynamic, concrete and abstract, animate and inanimate. These categories differentiate between continuity and change, form and substance; order and chaos. Although these are conceptual polarities, it is assumed that they correspond to existential attributes which determine their truth or falsity.

It is very important to know which element falls naturally into which class, because such knowledge will tell us what can be changed and what is better left alone. Although most things fall in between these two extremes, knowing the relative ease or difficulty of changing or maintaining the status quo makes for more realistic policies or feasible activities.

In this part of the study we shall first juxtapose these critical oppositions and then try to resolve their contradictions by mediating them into a higher category. The following sections will treat each of these relative concepts which reflect natural hierarchies from the simple particles of matter to the complex waves of mind. At each level, we shall present the appropriate principles that guide their behaviour.

Statics

According to modern quantum theory, everything is ultimately composed of different kinds of sub-atomic particles called *quarks*. These quarks are considered as material units because their primary characteristic is *mass*. As a result they become subject to *inertia*, i.e. resistance to change.

It is this resistance that underlies the first law of physics, which recognizes the bias of matter to conserve its mass. Ever since Parmenides of Elea, this *conservative* tendency has been admitted to be the basic trait of reality which applies to all material bodies, regardless of their type or size. In translation, we might say that everything seeks its self-preservation and status quo maintenance, thus opposing any attempts to change the actual state of being.

Another characteristic of mass is its attribute of *charge*, by which material bodies influence each other. The combination of two opposing charges, positive and negative, produces the phenomena of attraction and repulsion; so that opposites attract and similars repel each other.

This quality, together with the existence of *fields*, permits the aggregation of particles into distinct *systems* from the microscopic atom to the macroscopic star. The three main fields (nuclear; electromagnetic; gravitational) dominate

various levels of aggregation and are responsible for binding parts into wholes by bonding them into permanent relationships.

These *structures* follow the principle of conservation by maintaining a system's spatial identity and temporal stability. Structural resistance, of course, varies according to the strength of the units that compose and the type of bonds that bind together each system. Solids are usually more distinct and stable than liquids or gases, and thus they can retain their form and content more easily and for longer.

Since it exists in space and time, another attribute of matter is *motion*. All material bodies occupy some place and so can be displaced from one location to another. Any movement, however, requires some time for its completion; the further the distance to be covered, the longer the time necessary for the travel. This means that nothing can be done instantaneously; everything takes time.

According to the theory of relativity, every body is either stationary or mobile in relation to others. If one knows the position and velocity of each body in a system, then Newtonian physics can determine both the past and the future of everything. Thus, in the world of classical *determinism* cause-effect relationships follow a predictable trajectory of absolute certitude.

Such certainty, however, requires omniscience, which human beings do not possess; so our knowledge of anything can only be partial. In any case, whether stationary or in constant motion, this picture of nature is quite static, and although it may be true to an extent, it is not the whole truth. For that we have to turn to the other side of the coin presenting its dynamic aspects, which we shall discuss presently.

Dynamics

Matter's massive quantity inherently includes a quality known as *energy*. So much so, that matter and energy are, since Einstein's famous formulation, completely interchangeable. Matter can release energy and energy can consolidate matter. Like space-time, matter-energy forms a fundamental unity which gives nature its dualistic character.

Energy may be considered as matter-in-motion or the *potential* of matter to change. As in the case of matter, the law of conservation demands that energy can neither be created nor destroyed, but only converted from useful to useless states. Whenever energy is transformed from potential to actual it is spent, and thereby can no longer serve any practical purpose.

For anything to be done, there must be a difference of energy potential. It is only this difference that makes change possible by crossing the threshold from a higher to a lower level. All *action* involves such "falling down" of energy through time.

As a result of this enervating process there takes place an increase of *entropy*. Unfortunately, nature has decreed that the dissipation of energy is a one-way process, accumulating entropy. Accordingly, the total energy of the universe is continually degrading into entropy, just as surely as the arrow of time moves only from past to future.

Of course, it happens that, for limited times and in restricted places, energy potentials can be raised to higher levels. These feats, however, can only be performed by dynamic systems at the expense of their environment. Building or maintaining structures in the face of entropy requires additional energy which must come from somewhere, such as the surrounding systems which are thereby destroyed faster than otherwise.

In order to reverse entropy, even regionally and temporarily, *force* must be used. It is force that gives mass an acceleration and in doing so changes the direction of its motion. Applying force, however, requires an expenditure of energy, thus proving once again that one cannot get something for nothing.

In its simplest action of moving matter in space, force performs a service called *work*. Only through work can anything get done or something be made. Creating a system or staging an event involves work, i.e. the application of force and the expenditure of energy. In this sense the creation of something means the destruction of something else; we cannot have one without the other.

This antinomy is also reflected in the law of *alteration*, first enunciated by Heraclitus of Ephesos, i.e. that everything changes and nothing remains the same. This law opposes as well as it complements that of conservation. Just as matter gives the world its stability, energy gives it dynamism, thus combining the eternal *yin* and *yang* of reality.

Yet, some people emphasize only one and ignore the other equally important aspect of reality. Ever since the two pre-Socratics, these opposing schools of thought have carried on a continuing debate about their differing perspectives. A more balanced view, however, must take into account both attributes and recognize their mutual contribution to the nature of things.

Dialectics

The contradiction between statics and dynamics is all taking place within the paradigm of classical determinism. This overriding theory asserts that to every effect there is a cause and to every action there is a reaction. Deterministic causality thus infers a chain-link connection between every event in time, in other words a billiard-ball behaviour among everything in space.

This mechanical metaphor, however, is too simplistic to apply to all interactions. The complexity of reality demands a more sophisticated theory to account for its infinite variety. This is particularly so when organic behaviour is added to inanimate action.

The emergence of *life* from matter and energy added a new dimension to the nature of things. This development brought forth the importance of *form* over substance. Although some *order* is found in every system, living forms alone have evolved the most complex organization to be found anywhere.

This evolutionary process is remarkable because it goes against the natural flow of entropy. Unlike inorganic systems, living beings fight entropy by shaping matter into more complex forms and channelling energy into more elevated potentials. Although, eventually, all life must succumb to death, at least for short times and in small places, it flourishes as an extraordinary example of negentropy.

Since matter and energy alone are inadequate to explain this peculiar behaviour of complex systems, we must introduce the concept of *information* to serve that purpose. As the term indicates, this concept puts everything in form. By informing something, we assign it an order which distinguishes it from chaos. This distinction highlights spatial patterns and temporal regularities, thus making knowledge possible.

For this crucial function to manifest itself, the complex structure of the brain evolved gradually and culminated in the human *mind*. The unique capacity of mind for self-reflection made humanity the paragon of animals at the same time as it confronted nature with its greatest threat. In either case, the search for knowledge and its resulting implementation has changed the face of the earth.

Being able to distinguish order from chaos and create hierarchies of archetypes relates to the human drive for conflict resolution. Ever since Socrates of Athens, the dialectical process has tried to resolve the contradictions between opposites by synthesizing them into a higher truth. Dialectics, thus, combines the static and dynamic aspects of reality into a better picture for human understanding.

This picture includes both determinism and randomness, entropy and evolution, continuity and change. Different aspects of these ideal extremes are mixed together in real conditions, so that the world proceeds in non-linear order as well as deterministic chaos. Explicit contradictions at the phenomenological level may thus be resolved by implicit complementarities at the existential level.

Human conceptualizations and explanations, however, can never capture completely the multifaceted aspects of reality. Heisenberg's uncertainty principle conserves information by denying us accurate knowledge of everything at once. A Laplacian world of absolute causality, therefore, can neither exist nor be explained.

Given these inherent limitations of information and determination, one can but proceed cautiously and humbly. Having only incomplete facts and imperfect minds, our understanding can only be partial at best. In view of this *caveat*, the attempt to gain more abstract and general comprehension must be made at the expense of concrete and particular exposition.

This study illustrates such an attempt by sacrificing analytic details to synthetic generalizations. In what follows, we shall try to find metaphors from the natural to the social worlds at a high level of abstraction and thus confirm the application of the same general principles established above in both domains of reality.

The Social System

As we ascend the ladder of complexity, we encounter various system types, from the atomic and molecular to the cellular and organic. At the summit of this hierarchy is the human being, who aggregates all the traits of the lower levels. Humans are a combination and emanation of physical, chemical and biological systems. Accordingly, it is in these factors where one should search for the roots of human behaviour.

Here, we shall look into such behaviour in the context of the social system. This system includes all the *artificial* aspects of man which exist within the *natural* environment. It is in this context that humans live and act, so much

so that they are defined in terms of the society of which they are both the creators and creatures.

On the basis of the natural infrastructure, humanity has built its own social superstructure, which includes economic, political and cultural sectors. After a few millenia, the social artefacts of humans have been developed to such an extent that are rivalling their natural instincts. Humankind, as we know it, therefore, combines both nature and culture.

The following sections correspond to those of the previous part in that they treat the three aspects of reality. In each are juxtaposed the nature and social aspects of structures, processes, and functions of human systems. In this way it will be easy to see the comparative application of general principles in both domains of reality.

Systemics

Society is basically a material system because it is composed of human beings, their goods and artefacts. As such, its population has a certain biomass, which together with its possessions and cultivations make up the physical substance of the system. This *sociomass* is distributed in space (with various density configurations) and time (through many succeeding generations).

Like every material body, society is subject to the law of inertia. Once it attains a certain momentum, the system tends to maintain it indefinitely. The conservation law thus requires that under normal conditions trends established in the past continue in the future.

Social inertia manifests itself as *tradition* a tendency to perpetuate the status quo and keep societies going on in their usual way. These conservative tendencies or *customs* hold back societies from readily changing direction or speed. Customs are to be found both in individuals and collectives, so that societies aggregate the conservative strength of their members and human beings share the traditions of their communities.

The strength of tradition depends on the structure of social *institutions*. Strong fields create and maintain close relationships which are the sinews of institutional structures. Individuals are thus bonded together in groups by the complementary charged fields they emanate.

Similarly, various attractive and repulsive charges form *sociofields* determining the similarities within and differences between both groups and institutions. The existence of both kinds of field charges reflects the variety of vertical and horizontal distinctions, such as political factions, cultural strata and economic classes.

Since the strength of field charges falls according to the square distance law, the cohesion of institutions diminishes with their size; so small, compact systems are more cohesive than large, diffuse ones. Consequently, as pyramidal structures are very stable, social systems are hierarchically constructed when they extend beyond a certain size. Classless societies, therefore, can only exist in very small and simple systems.

Similarly, as societies increase in mass, they become less mobile, so there cannot be large nomadic groups. Human beings and their possessions, however,

do move about within and between societies, both physically and socially. In either case, these movements act as *vectors*, which cancel each other out in traditional societies, so that the aggregate remains static.

As long as the inputs (births, imports, immigrants) and outputs (deaths, exports, emigrants) of the system balance, society maintains its stability over time. Otherwise, the system will either expand/contract territorially or change its structural composition temporally, as we shall see presently.

Historics

The record of social change is reflected in human *history*, according to which societies inevitably progress through time. Like the hysteresis of materials, the history of societies is the accumulation of their past performance which determines their present state and directs their future possibilities. Thus, a historical system, where nothing ever happens, is as rare in the social as it is in natural domain. Some change, albeit in different rates, is always in progress throughout reality.

In order for a system to change its velocity vector, i.e. speed and direction, some force must be applied to it. As was mentioned already, force is the *sine qua non* of change in any domain, including society. The rate in which force acts upon the system determines *power*, a central concept in both the social and natural sciences. Accordingly, social power may be defined as the ability to change the status quo rapidly.

As material power can move things physically, social power can move people behaviourally. By such capacity, the powers-that-be can affect human behaviour and either bring about social change or prevent others from doing so. Controlling the rate of social change is, therefore, a direct function of social power.

In order to overcome inertia, power must be proportional to the mass, space and time involved. This means that the greater the number of people one has to affect, the further they are to be moved and the faster this is to be done, the more power is required to do the job. The more powerful a person is, the more people he or she can move, through a longer distance in a shorter time.

If sufficient power is appropriately applied, the rate of change accelerates and a social *revolution* takes place. However, under normal conditions such amounts of power are not readily available, so relatively slow evolution is the more likely process of social change. The flow of history thus varies according to the uneven application of power in society.

This variation creates *cycles* which alternate increasing and decreasing rates of change. Caused by the action-reaction law, periods of relatively smooth progression are followed by rather sharp breaks or retrogression before the cycle re-establishes itself. If the system develops, the cycle upgrades to a higher potential by the accumulation of power, otherwise it falls victim to the inevitable process of entropy.

Power is usually accumulated in social groups and institutions. This accumulation permits collectivities, more than individuals, to apply *pressure* upon others and so get them to behave in preferable ways. Various interest groups pressure society to move in different directions. Either these opposing pressures

cancel each other out and nothing happens or they leave a net increment which determines the final direction of social change.

All these activities require the expenditure of energy, because nothing can happen without some energy cost. Since social *action* is energy intensive, low-energy societies are usually very traditional and in slow motion. On the contrary, systems with high energy potentials are very dynamic and when channelled into productive *labour*, they can be quite creative and progressive.

In order to overcome the natural process of entropy by which societies tend to degrade and disintegrate, environmental resources must be continuously tapped to feed new energy into their systems. Societies thus suck in energy from nature and transform it appropriately to fulfil the needs and wants of their members.

Yet the quantity of available energy alone is not enough to maintain or advance social systems. In addition there must be sufficient quality of human ability to manipulate matter, energy and life. This means converting people and resources from the state of nature into personalities and commodities in a state of culture. This socialization process will be considered next.

Cybernetics

The appropriate manipulation of social power requires intelligent *control* of its application. Such intelligence is reflected by the cybernetic mechanisms of society, which try to maintain the system in dynamic equilibrium. For this to be done, information about the state of the system and its environmental perturbations must feed back and forth, so that corrections are made and regulations are kept.

Together with power to control actions, humans also exercise *influence* to shape thoughts. The exchange of influence in society is effected through the *communication* of linguistic symbols, which serve as triggers for action. In this sense, the channels of information or communication create force fields which ultimately affect the behaviour of people within them.

Attempting to use influence to change one's mind is often more difficult and time consuming, if not energy consuming, than applying power to move one's body, so it reflects the difference between humanity and brutality. Between these two ideal poles, the practice of social power and influence is mixed together in various proportions of physical force and mental persuasion.

Natural evolution and social development have tended towards an increase of the mental component in the power equation. At a certain stage in this process, the mind transcended the brain from which it emerged and created *culture* to supplement nature. So, although humans have always maintained some of their given essential nature, they have also added to it their own artificial culture.

The development of self-consciousness meant that life was neither completely determined nor random. A third factor could now be added in the form of *volition*. Human willpower arising from the internal realm could shape the external world to some extent, just as the natural environment has determined the human condition since its inception.

In this process, humanity acquired desires as well as needs. As basic needs were fulfilled, sophisticated *values* were created, but whereas organic needs can be met, ideal wants cannot. Human imagination, being unlimited, drives human action to a never-ending search for utopia.

When human volition was added to physical ability and multiplied by technological culture, the aggregation of power became so great as to threaten nature itself. Under these circumstances either our social *hubris* will eventually destroy humanity or our cultural *praxis* will ultimately save the day and raise humanity to a higher existential level.

In order to avoid the former and attain the latter end, the classical dictum of *know thyself* holds more than ever. This means that humans must realize the capacity of their culture as well as the tolerance of nature. Consequently, we must set the limits of human action between the possible and the desirable; between what could and what should be done.

Setting our limits voluntarily takes a lot of self-control and social constraint. It requires a *moral* order of global proportions and a cybernetic mechanism of great complexity. As a contribution to the development of such a system, we shall present our conceptual model in the final section.

The Human Element

The existence of humanity between two worlds, natural and social, creates many problems for both of them. Much more than any other life form, human beings are driven to impose their will upon their environment. Their different visions, however, create desires which motivate conflicting actions, hence the many intra-, inter-, and extra-personal problems of mankind.

These problems arise from disagreements both on what is possible and desirable, and on whose will shall prevail in deciding these things. Being social as well as natural animals, humans wish to control others as well as themselves, so as to multiply their power to affect reality according to their images.

Many of these ideals, however, are out of either time or place and cannot be realized. Unfortunately, ignorance and misunderstanding of natural and social conditions proves them wrong only after the fact, to the great cost of nature and waste of people. Sadly, the best intentions are often the cause of the worst actions because the gap between ideal and real is so hard to bridge successfully.

What we will do in this section is outline an optimal manner of linking these two worlds. The link juxtaposes the facts of nature with the acts of culture from the perspective of human *intentions*. By differentiating the relatively static from the dynamic nature of things, our study can direct ideals into more realistic channels and thus make human action both more effective and more efficient.

The model presented here comprises a practical calculus of three components: analytic, synthetic, and logistic. These correspond to the probable anticipations, desirable aspirations and feasible activations of human potential. Each of them will be dealt with in the following sections, thus giving an overall idea of the general lines making up this conceptual model.

Analytics

In order to acquire knowledge of anything it is necessary to study all its aspects from a holistic perspective. To know something means to be able to describe

its condition or structure, explain its causality or history, and predict its behaviour or evolution. This applies to the knowledge of events and situations as it does to things and people.

Such knowledge is particularly important as the first step in problem solving. Studying a problem analytically is the necessary prerequisite to its correct solution. So, if we want to change an unacceptable situation, we must first perform a diagnosis of its present condition, an anagnosis of its past development, and a prognosis of its future tendencies.

The *diagnosis* of a situation involves an accurate perception of current operation of the system in question. If this observation discovers certain symptoms or deviations from normal functioning, then a problem is at hand. As we shall see later on, this implies the existence of the general norms and standards of ideal performance against which actual behaviour can be measured.

Backing up the diagnosis of the current situation is the *anagnosis* of its antecedents. This regression into the past will discover the aetiology of the condition and the reasons that brought it about. Causal insights about the historical development of a problem can explain its existence and go a long way towards its solution.

On the basis of the diagnosis and anagnosis, one should be able to make a conditional *prognosis* of the probable outcome of an event in the foreseeable future. In deterministic situations, a certain tendency of the past is usually extrapolated into the future, so, in establishing a distinct trend, one helps predict its projected performance.

Of course, incomplete information, nondeterministic situation and imperfect calculation make this methodology an ideal algorithm, which can only be partly applied in practice. Nevertheless, even if it is partially followed, it will improve our understanding of the nature of things and extend our anticipatory abilities in the right direction.

Knowing the difference between the statics and dynamics of nature, as well as the constants and variables of culture, is crucial in making a situational *analysis*. This difference between perennials and ephemerals tells us what will most likely continue from the past into the future, regardless of ourselves, and what may change depending on various factors, which we may be able to influence under certain conditions.

Since it is part of human nature to anticipate events, present behaviour is partly determined by the calculus of its future prospects. The difference between an optimistic and a pessimistic outlook may change completely one's current intentions and actions. For this reason, a realistic prospective analysis of any given condition is the *sine qua non* of its proper treatment.

Synthetics

Factual knowledge may be sufficient for understanding the world, but it is not enough for changing it. *The intention to act requires the possession of values*, as well as facts. So, in order to make a decision which adopts a course of action, one must aspire towards a certain desirable objective.

Purposeful behaviour is an attribute of all living beings, but only humanity has made goal-seeking a science as well as an art. In doing so, human beings prescribe certain actions and proscribe others on the basis of cultural norms rather than natural laws. These deontological codes of behaviour determine human *aspirations*, just as epistemological methods determine anticipations.

Certainly since Hume's dichotomy between *is* and *ought*, data analysis has had to be supplemented by value synthesis, thereby setting the preference criteria which guide decision making. These normative criteria will have to be collective as well as individual, since public policies must supplement private decisions. At both levels, standards for goodness and beauty, as well as truth, have to be accepted for a social system to function normally.

Searching for social norms is a controversial issue, ranging between absolutist and relativist poles. It is our thesis here that both extremes may be avoided by relying on nature to provide the criteria as much as possible. The normative objective should be to bring natural and social values into optimal proximity, thus synthesizing the *axiology* of the two domains.

Ecological *ethics* are most appropriate in harmonizing both the nature and the culture of humanity. The synergistic coexistence of sociophysical systems is not only desirable for the evolution but necessary for the survival of both. Ultimately, therefore, what is good for nature is also good for society and humanity.

The Anthropic principle recognizes this interdependence by defining the purpose of nature in terms of human survival. Accordingly, it is said that nature exists as it does in order to create the proper conditions for human evolution. Without the existence of humanity, reality would have neither form nor function. Only thus can this particular universe be explained most satisfactorily for us.

Be that as it may, social *morality* must be based on the principle that any decision which affects others must be taken after due consultation with those involved. Accordingly, an action is moral only if it takes into consideration those it affects. As a corollary, it is evident that since the world is becoming increasingly interdependent, it must become more moral. Ethical behaviour, therefore, is not a luxury but a necessity in social systems of high density and complexity.

Finally, another fundamental human aspiration is to increase beauty in the world. To that effect, arts are created and plans are drawn which embellish life and elevate culture. This aesthetic predilection should, thus, be integrated with the ethical imperative as the holistic ideal of social development.

The sense of proportion and perspective, like the duty of consideration and the need for evaluation, gives purpose to social action and meaning to human existence. For this reason it is indispensable to a principled policy calculus and wise decision making, as we have emphasized here.

Logistics

As much as they are indispensable, necessity and desirability are not sufficient to change reality. They can only point out the need and the desire for improvement, but cannot bring it about. The best of intentions and the fairest

of visions also require the wherewithal of resources in order to be implemented. *Feasibility* must, therefore, be added to complete the triad of prerequisites for social praxis.

In order to determine the feasibility of any plan of action, the policy maker must weigh the pros and cons of various options, as well as the adequacy of desires and availability of resources for the task. This logistic calculus is as important as the analytic and synthetic ones, so it will be considered at this time in the following three dimensions.

The first factor contributing to the realization of any intention is its *economic* feasibility. The question here is whether an actor can afford the costs of his or her actions. As was mentioned previously, everything costs something and the cost may be measured in time or space, matter or energy, life or information.

Against that cost must be measured the value which this action will bring to make it worthwhile, as well as who can and will pay for it. Unfortunately, it is not often the case that those who pay the costs of social actions reap the benefits accrued from them. Distributive *justice* does not always coincide with contributive, so that the production and consumption of social goods are not evenly exchanged.

Economic feasibility and equity are functions of both natural capacity and cultural ability. The advancement of culture, especially science and technology, determines human capability to exploit nature and convert its raw materials into social commodities. *Cultural* factors similarly dictate not only the what and how, but also the where and when, as well as the who and why, of social dynamics — all of them on the basis of given natural statics.

Together with economic and cultural factors, *political* factors complete the logistic calculus that measures the feasibility of human intentions. Political feasibility is a function of the dialectical outcome between action and reaction. Since every position generates its opposition, public policy is the net vector resulting from all these conflicting pressures. Political will is, therefore, determined by the amount of social power that can be brought to bear upon the resolution of a particular public issue in a certain way.

For social inertia to be overcome and for any intentional change to be given a chance of realization, all three feasibility factors must coincide. The intelligent policy-maker will, therefore, make sure that all significant aspects are adequately covered, not only for the feasibility of a project, but also for its desirability and possibility. It is the proper integration of all these parameters that make for human wisdom as well as prudent statesmanship.

Of course, the practical execution of the best laid plans may still go awry and the finest of policies can miscarry. The random elements of reality can reduce to chaos the most organized projects and social change may proceed haphazardly rather than intentionally. This possibility is enough to make us humble in our precarious role in the scheme of things, but not enough to force us to give up our considered volition to shape human destiny.

Conclusion

Without repeating the discussion of the main body of this article, we shall now summarize succinctly its salient points and then draw the appropriate conclusions.

To help in this task, we have in Figure 2 a diagram which integrates the main lines of SUM into a synoptic form, reflecting the triadic bias of sociophysics.

What the model highlights are the interconnections among the three domains of reality. The facts of nature crosscut the events of culture and the acts of mankind to produce a network of triadic linkages. Each human being has to confront not only nature at large, but his or her own ego and that of others. As a result, discrepancies and conflicts arise within and between any combination of these foci and loci.

Perhaps the most important contradictions manifest themselves among personal ideals, social practices and natural realities. External constraints often make internal desires unrealizable because they fly against both the opposition of others and the laws of nature. Ignorance or miscalculation of natural and cultural reactions make most human actions highly inefficient as well as ineffective in the long run.

Although in the past we could afford such sub-optimal behaviour, we can no longer do so in the future. Until recently humanity was too small and impotent, so its actions could not affect significantly the grandeur of nature. Now, however, human power has grown to the point where it threatens its own creator and habitat. So it is both irresponsible and unwise to continue in the old traditional ways.

The theory of sociophysics contributes in the search for a better way to treat ourselves and nature, by recognizing environmental limitations and optimizing systemic efforts to realize social goals. Since humanity is defined by its ideals, we must systematize the attempts and criticize the intentions for their realization. This means improving the ends and means of public policy planning in local as well as in global contingencies.

It is the major thesis presented in this article that taking into account the nature of things (*de rerum naturae*) must characterize human intentions and social policies alike. Social change can best be directed by human intervention which links natural necessity with cultural desirability. As we have shown, discriminating and integrating the triadic sets: statics, dynamics, and dialectics; order, chaos, and will; anticipation, aspiration, and activation, should increase the chances of realizing our ideals.

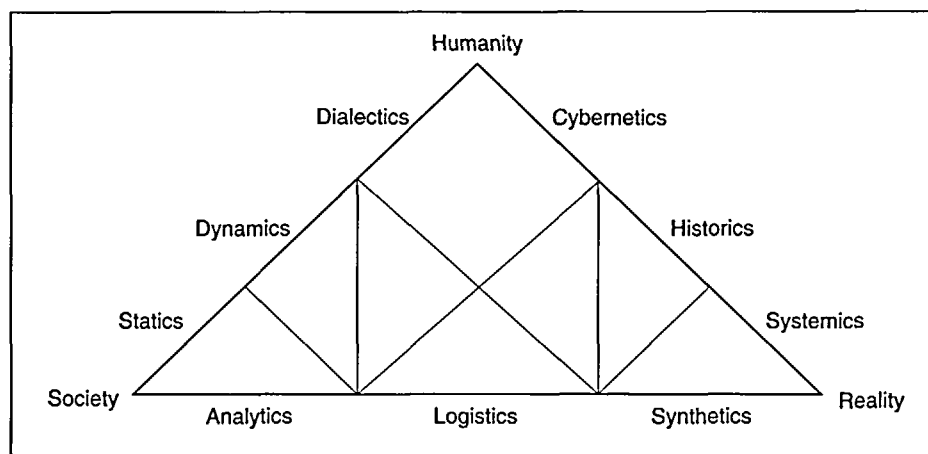


Figure 2.
Triadic Linkages:
Facts-Events-Acts
Cross-cutting
Connectivity

Of course, the details of this methodology will have to be worked out further as they apply to more particular instances. So far, a plethora of highly specialized studies have already been undertaken considering the various aspects of our *problematique*. These studies, however, are restricted and disjointed, so they need to be linked and aggregated at a higher level. It is to this end that applied scientists can use the SUM theory in their consolidation and implementation of knowledge.

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