Forms of Thought

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Abstract

Objective: An investigation into spatial dynamics of organizational environments their effects on individuals and institutions, with an emphasis on underlying and emerging theories of Organizational Analysis. Comparisons will be based on individuals and institutions in both real/time and virtual environments, to emphasize the symbiotic properties of both systems. Through the examination of interactions inherent in all systems, models will be developed to show how through nonlinear practices many diverse functions can be, and are related to the improvement and growth within all systems.

Methodology: Spatial analysis through the use of geographic information systems techniques were applied to the study of organizational analysis as applied to individuals and institutions.

Methods: Spatial data analysis in relation to present methods of system engineering using the optimization processes of general systems theory..

Results: Systems as defined operate in multiple planes delineating both order and chaos operating in unison, to provide cohesive environments, which appear to transcend structure, yet are fully immersive.

Conclusions: As systems emerge and new environments fill the void of what was once considered chaos, new paradigms will arise allowing for the reduction of the “Time Step” (cumulative knowledge acquisition and application), redefining degrees of freedom and the reduction of complexity, and the continual optimization process inherent in all systems.

CONTENT

Keywords
Spatial analysis, Systems theory, Ubiquitous Computing, Geographic Information System, Location Based Services, Mana, Ambient Information Visualization, Calm Technology, Mobile Computing, Qualia, Rhizome, Radial Familiar.

Introduction

All systems are ultimately controlled by fundamental interactions, and the relation of these interactions with other systems creates an environment, which can be biological, social, physical, etc.

A system is defined as:

> 1. The orderly combination or arrangement, as of parts, into a whole; specifically, such combination according to some rational principle; any methodical arrangement of parts. 2. In science and philosophy, an orderly collection of related principles, fact, or objects. 3. Any group of facts and phenomena regarded as constituting a natural whole and furnishing the basis and material of scientific investigation and construction: the solar system. 4. A whole as made up of constitutive parts. 5. An assemblage of organic structures composed of similar elements and combined for the same general functions: the nervous system; also, the entire body, taken as a function of the whole.

The Rhizomatic nature of systems is evident in the fact that underlying subsystems i.e. physical, virtual, ethereal, social, are in constant flux. (Deleuze, Guattari, 1987) What we have is a chaos within the order. To that which every independent organism is connected, by an infinite number of random interactions within the system. Hence the semblance of free will or choice dictated by degrees of freedom. The degree of freedom is dictated by our understanding of the boundaries, and our ability to truly maximize the “space” that we have created.

While many theories are applicable in portions, each is a mere facet of the entire ontological breakdown of the “system”. Maslow, Darwin, Marx, Le Febvre

and countless others were and are merely contributors to the theoretical mapping of systems analysis and its evolution to a spatial, more ubiquitous theory.

Many human systems are defined by the extent of existing boundaries (excluding the natural/biological subsystems affected by any number of undetermined stimuli) creating an opportunity for examination, and the application of controls within these boundaries, to fully understand their parameters. As with all of the fore mentioned critical thinkers, for the pure reason of hypothesis a definition of space was necessary, for their findings to have a logical reference. When space is defined as all things, both physical and virtual, natural and manmade, orderly and chaotic, allowing for the true quiescence of a priori. Whether this priori is knowledge or matter, is a paradox of matter is fact and fact is not always matter.

The separation of the body from the soul

A critical review of theories of evolution and creationism is relevant in today's society, which is attempting a further step at the reduction of chaos/complexity through ubiquitous integration of complex* systems (computing). A biological definition is relevant in the physical descriptions of systems as comprised within a whole or "Body". What is of pertinence to this research is the need or desire to change the "Body" the composition of systems while maintaining the same "Soul/Strategic Goal". As in western civilization economics is the "matter" or "DNA" evident or linked to all classes of systems. So the final outcome is how do we evolve, change our system, while maintaining its original integrity?

As we move into more complex systems, the body which was once familiar begins to take on new appendages. In this case, it is being directed by several forces such as, technology, resources, and interest. What is important to

* Complex systems are constantly evolving, so what is complex is relevant to the advancements of these systems and how they are adapted within the organism/organization/individual.

organizations and individuals is purpose and intention. Can we manifest in new forms and still accomplish our means?

Current dilemmas include the transformation of an entire “economic by product” i.e. “money” through the emergence of new systems. We have the paradox of creating a new body but no means of attaching an economic system to that body*. For example, music was/is played on instruments/devices, which allow for distribution and production within our current system. With the emergence of a “new technology” the venues have changed for the process in which we physically acquire music on tangible objects. We are now at the phase of acquiring music in intangible forms (data) for playback on tangible devices.

<u>Constant</u>

1: Music is created

2: There will be devices to play music

<u>Not constant</u>

1: the “medium” used to transfer/acquire/listen to music

As we see with the advancements within the music industry, variation of forms is required in complex systems as the system evolves. The fact of data becoming the new medium has resounding economic impact to the core of the industry.

Music Download Vending Machines Set for Britain

The first vending machines to sell music downloads are to be introduced in London next month as Britons continue to turn their backs on traditional methods of buying singles. Customers will be able to download a single for about one pound onto a mobile phone or personal music player and the company launching the project said on Monday they hoped to initially offer two million songs. The move follows continuing poor sales for traditional, over-the-counter singles. In October the chart compilers said they recorded the worst ever sales for a song reaching number one -- just over 23,000 -- compared to sales of hundreds of thousands in the 1980s and 90s.

(Reuters, 2004)

Production of CD's, tapes, and records, distribution, marketing and promotion, in sum all of the elements of the industry, its "body" are on the verge of being transformed. Going from a Newtonian model of linear hierarchies to a Rhizopod (Darwin, 1909), a new body gelatinous in form, almost an evolutionary by product of autopoiesis (self creation) or reduction of complexity of previous systems, allowing for the creation of a new system, thus the requirement for a new body.

What's holding back online music?

Part of the problem in making online music delivery successful appears to be two deeply embedded, conflicting cultures. The music industry continues to fixate on CD sales as the chief vehicle for delivering its product. Security jitters, for example, have kept record companies from granting streaming services access to their complete catalogues. At the same time, listeners want to own their own music libraries; and, having downloaded billions of songs for free, they are reluctant to pay. "There is a psychological barrier," (Reuters, 2003)

While current systems of usury and compensation for labor adhere to previous bodies it becomes more apparent the variation in the equation is "money". What will take the place of money? The shift in society to a Spatialized form of "capital" leads more to "data" becoming not only the economic fiber which links systems within the body, but the formation of a new "body" itself. One based on data in every way we haven't even imagined, creating new conditions for existence based on "space" instead of labor.

Marx cites:

The essential condition for the existence, and for the sway of the bourgeois class, is the formation and augmentation of capital; the condition for capital is wage labour. (93)

As stated previously the music industry has evolved and seen many manifestations. The 20th century alone has seen the rise of the Rhizomatic structure/body within a system (economics) yet the "body" is ultimately seeking a

reconstruction of the system or a disconnection of the synapse will occur due to its own failure to find usefulness or purpose within the (new) system as in relation to the body.

If we take the current phenomena of music and its transformation of the variant and apply this same model to the auto industry, which has a separate soul/strategic goal and its “body” the industry itself which allows for the creation/manufacture of said goals, you see an interesting focus on outcomes. The two mutually exclusive bodies both facing the same need for resolution, this need is linked to economic systems, which have not or cannot reduce the current state of complexity (adapt) for fear of collapse of the old “body”.

Since the beginnings of the auto industry we have constants:

<u>Constant</u>

1: Creation of vehicles

2: Propulsion methods

<u>Not constant</u>

1: Medium used to propel vehicle

Like the music industry, automobiles will eventually face a variant in the medium which will change its link to the economic system. This will resonate even more so if this medium is equitable to data in the sense of the new medium being intangible and openly accessible (solar power, sub atomic particles, gravity) yet can be manifested in “physical” devices.

Wheatley cites:

Systems analysts and scientists studied open systems primarily focusing on the overall structure of the system. This route led away from observing or understanding the processes of change and growth that make a system viable over time. Instead, analysts went looking for those influences that would support stability, which is a desired trait of structures. (78)

Conclusion

If we relate “thought” to the analogy presented in the first equation with music, we arrive at this conclusion. That the mind (instrument) is the creator of thought (music) and the body is the device which allows for playback of this medium. Thought is analogous with intangible data in the fact that it is transferable/exists without physical/tangible manifestation, for all practical purposes (FAPP) of this paper.

Topologies and the dynamics of organism structure

In the current body, logistical systems, linked to economic systems, require geographic 2 dimensional saturation of the geographical area. The availability or convenience of venues/markets depends on the permanent strategic placement of these venues in appropriate proximity to population clusters. The primary construction of these systems focused on the basic physiological needs of the organism within its environment/geographical area.

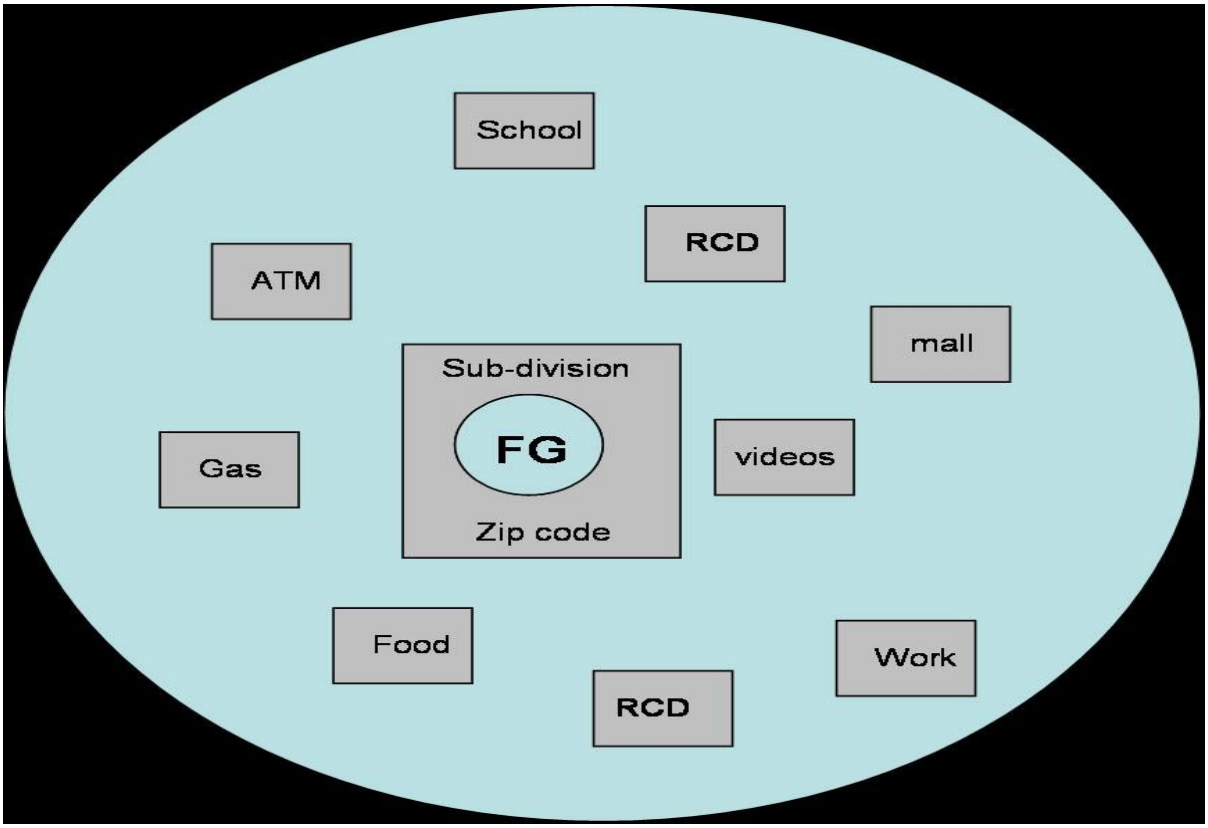
1: Food
2: Gas
3: Money

This model is evident in every facet of our lives. It’s the theory of least resistance. An Individual will operate within the space that provides the least resistance to his survival. Food, gas, and money are available in and around all areas of human activity, the larger the cluster the larger the concentration of agents (FGM) which facilitate people activity. Every day, every where, these three agents propagate our existence.

The Radial Familiar (RF)

The radial familiar is the circumference proportionate to the primary destinations habitually patronized by a given subject. This definition of space has been referred to as “small worlds”, “collaboration nets”, “space time aquarium”, “awareness and activity centers” all describe the spatial make up of our “total” environment. The common thread with all of the fore mentioned is the visualization of our radial familiar, the space in which we exist in its entirety.

A social network is a collection of people, each of whom is acquainted with some subset of the others. Such a network can be represented as a set of points (or vertices) denoting people, joined in pairs by lines (or edges) denoting acquaintance. One could, in principle, construct the social network for a company or firm , for a school or university, or for any other community up to and including the entire world. (Newman, 2000)



. **Figure 1**. The Radial familiar[†] in relation to the limits of human activity within the sphere.

The RF is our small world, the routine of our daily lives. It is the structure of our existence. It is the space in which the world on a whole interacts with us. It is the stage for introduction, indoctrination, and assimilation. Previous models based on linear perspectives have dominated western thought throughout our modern era. The line has been considered the norm: from an early age we learn

[†] RCD – Remote Control Device: an agent which acts within the radial familiar, police, street lights, an administration of control. FG – Focus Group: this is the "anchor point" for the individual/organization within the RF.

to get in line to go to class: When you write you stay within the lines: We drive within the lines on the road: The line is orderly, the line is right: You don't want to cross that line in the sand: You don't want to get out of line, or you'll get in trouble: That comment was out of line: Stay on the straight and narrow. With so much focus on the line we loose our perception of space, bodies are not lines, bodies are immersive within and without. This is the importance of recognizing the RF not as multiple linear destinations, but as multiple spatial environments which are fully immersive.

Vehicles, orbits and planes

The recognition of vehicles within the RF is given to the fact of movement in the subjects (FG) operating space. A vehicle is a person, or an object which facilitates movement, either tangible or intangible within the RF. An Individual is considered a primary vehicle when his/her movement thus initiated leads to interaction within the RF. An automobile, bicycle, bus, even a telephone are to be considered secondary vehicles because of their ability to expedite movement yet still require a primary source. A television is an excellent example of a secondary vehicle in its "present" construct, another is the home computer. These two examples manifest intangibles (data, light and energy) to convey ideas, transport thought, facilitate movement to and through a primary source.

Vehicle:

1. *A device or structure for transporting persons or things; a conveyance: a space vehicle. A self-propelled conveyance that runs on tires; a motor vehicle.*
2. *A medium through which something is transmitted, expressed, or accomplished: His novels are a vehicle for his political views.*
3. *The concrete or specific word or phrase that is applied to the tenor of a metaphor and gives the metaphor its figurative power, as walking shadow in "Life's but a walking shadow" (Shakespeare).*
4. *A play, role, or piece of music used to display the special talents of one performer or company.*
5. *A substance of no therapeutic value used to convey an active medicine for administration.*
6. *A substance, such as oil, in which paint pigments are mixed for application.*

Orbits are the summation of our travels within the RF. It is the natural cycle that is developed within a subjects RF, his modus operandi, his norms, his schedule, his rhythm. An example of an orbit would be the trip to work and the return in the evening. Space, time, and gravity (money) are all present in this localized rendition of physics. Orbits are important factors in understanding the overall traits (social, pecuniary, ethnic, etc) of all subjects within any particular RF.

Orbits:

1. *The path of a celestial body or an artificial satellite as it revolves around another body.*
2. *One complete revolution of such a body.*
3. *The path of a body in a field of force surrounding another body; for example, the movement of an atomic electron in relation to a nucleus.*
4. *A range of activity, experience, or knowledge.*
5. *A range of control or influence: "What magnetism drew these quaking ruined creatures into his orbit?" (Malcolm Lowry).*

A plane is dynamic characteristic assigned to the combination of vehicles and their orbits within the RF. They could be considered the personalities of the orbit, the qualities which may vary given any number of particular circumstances. If one is looking for a hardware store his attention to a shoe store is going to be less, because a shoe store is not in line with the plane of consistency with the desired destination within the RF.

Plane:

1. *Mathematics. A surface containing all the straight lines that connect any two points on it.*
2. *A flat or level surface.*
3. *A level of development, existence, or achievement: scholarship on a high plane.*
4. *An airplane or hydroplane.*
5. *A supporting surface of an airplane; an airfoil or wing*
6. *.The orbital plane is an astronomical concept. It is the geometrical plane in which the orbit of a planet or other body is embedded.*

What is Mana?

Among Pacific islanders, “Mana” is the supernatural power or force that works through a person or an inanimate object. For the purpose of this research “Mana” is equated to residual/active presence and or an impression that works with/through an individual /object, in relation to physiological makeup and external environments. This integration of coupled systematics is the result of qualitative weights and the rhythm analysis of fluid open systems. Mana is interactive with the internal and external, a coefficient of qualia, (Lewis, 1929) it occupies properties of the animate as well as inanimate. While closely resembling monism in the metaphysical sense of energy dispersion, mana itself transcends restriction, boundaries, it is the edge of chaos. Mana is the projection of self, the sum of self, and the interaction with internal/external environments in proportion to the self. It is the accumulation of physiological phenomena in organisms and displaced in several forms, thought/beliefs, material/physical representation, every aspect which is perceived as being. FAPP everything that exists even thoughts, are “beings” and as a result possess mana. Fundamentally mana is the projection of qualia, the overall underlying influence in cognition.

For an explanation of mana in relation to the spatial sense we look at Maslow’s theory (see figure2), and combine the properties of Rhythm Analysis (Lefebvre, 2004), and further apply this integration to the topological study of individuals/organizations in space.

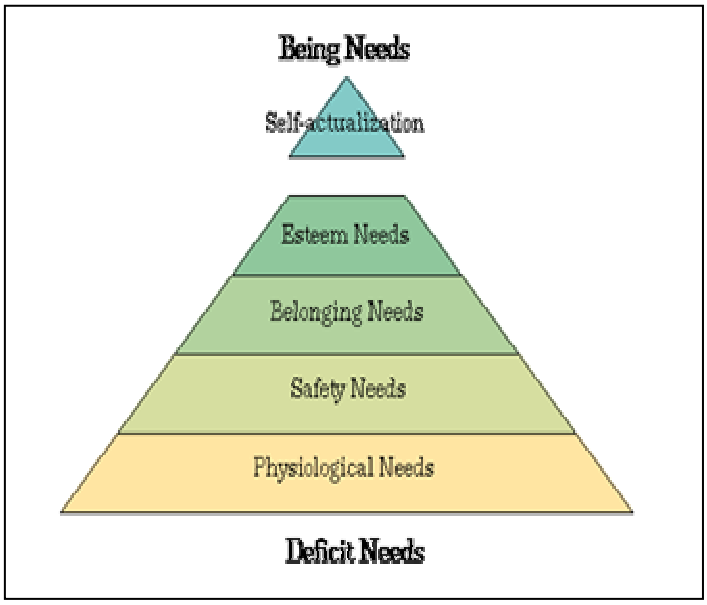


figure 2

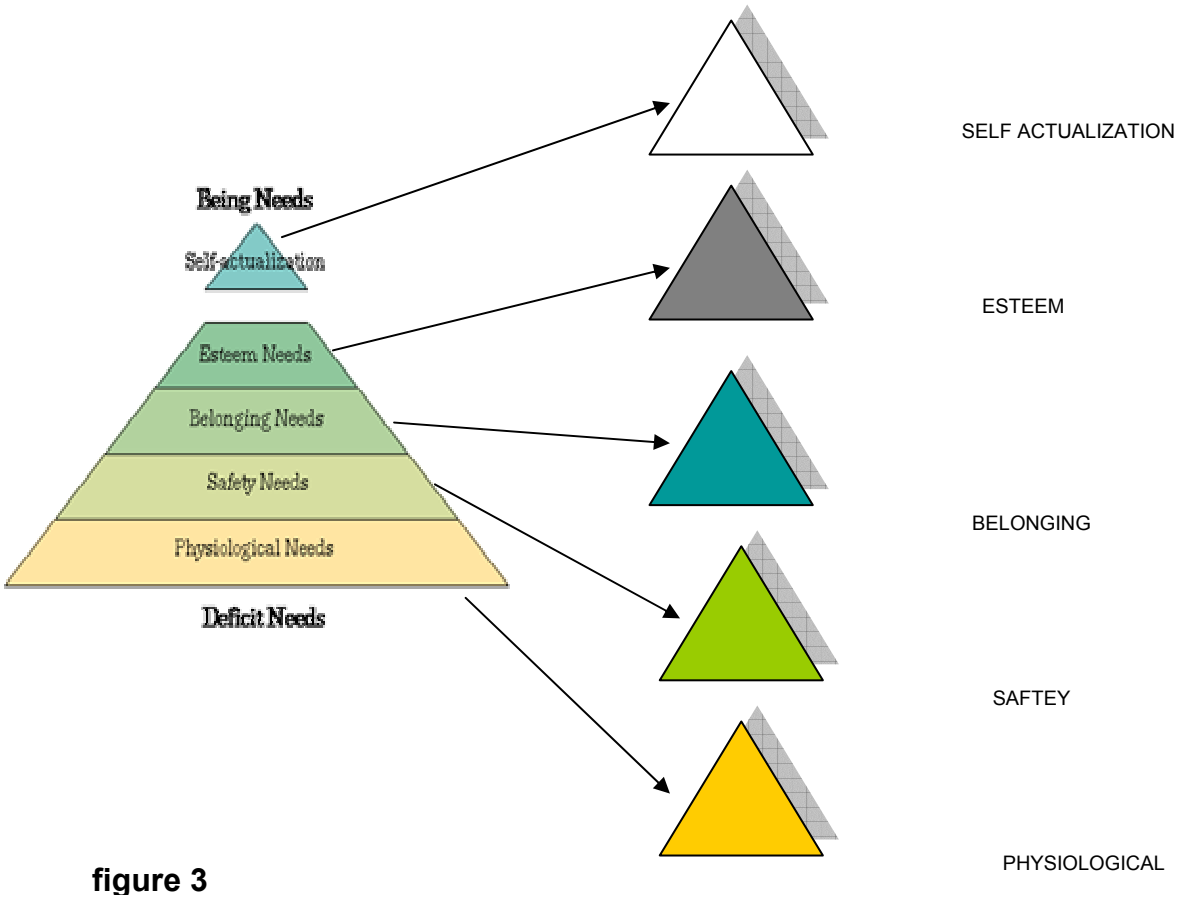


figure 3

Every property of Maslow's theory is given its own frequency (see figure3). This creates a core culmination of physiological phenomena, the sum of self. As well, it allows for the measured quantitative analysis of the projection of self and the interaction with internal/external environments in proportion to the self, on a fluctuating situational basis.

The following[‡] is a visualization of the combination of theories, as it applies to the concept of mana in individuals.

Mana radiates from within, and yet is all around us. It is what we collectively share, and through our displacement of this phenomenon what makes us unique. Everything posses mana, which is a coefficient of qualia, like the air we breathe which gives us life, mana gives us that cognitive "air" in which we universally share, yet individually project.

[‡] Refer to Appendix B and C for detailed visual explanation of the processes

Qualitative weight

This is the principle of how we place importance on categorical subjective stimuli in an operational environment. I have to be at work at 9:00 am, as I leave home I pass several agents/stimuli that I may not actively process or interact with, thru the application of inattentional blindness (Noe, 2000). Yet I recognize/process that there are four fast food restaurants on my way to work. My conscious objective (focus) is to get to work, yet through Meta Marketing I am embedded with subconscious data (passive interaction not focused) attached to the physiological process, so at the appropriate time the factors can be weighed. For instance, the choices functionally stored in the psyche for this example are:

Lunch ***A. McDonalds***

B. Chinese food

C. Office cafeteria

D. Vending Machine

1. I choose McDonalds because:

    A. I have time

    B. Its cheap

    C. I can get my child the sponge bob watch

    D. I like the fries

2. Chinese food:

    A. I like Chinese food

    B. I have time.

    C. Going with a group of friends

    D. Experience outweighs the cost

3. Office cafeteria:

    A. Time constraints

    B. Its convenient

    C. I can eat with my peers

4. Vending machine

    A. No time

B. Its food

C. Its cheap

In this example of meta conscious decisions, the outcomes appear to take on a computational /archival aspect of physiological systems. Choices are made by the qualia of our environments based on the openness of subjectivity continually updated and archived. This result is the overall effect of the fluidity of rhythms appropriate to the subject (interactive effects of mana).I.E. “I don’t have “time” to go to McDonalds, because the boss is riding me to get this done.” In this instance work is given the qualitative weight, by the giving of ones “time” in order to accomplish the task. Hence physiological needs are continually subjective to the parameters of our environs. This is the result of the effects of qualia, in direct relation to our own mana, within spatial topologies. With the acquisition of these types of data, you now have the foundation to make assumptions within specified systems.

Labor theory of value

The Spatialized exploitation of “Commodity Fetishism” (Marx, 1867) where markets are manipulated based on residual demographic factoring[§], creating the possibilities for the exploitation and manipulation of emerging systems. This concept is currently in its infancy, buyers/consumers are given discount cards for free, which allow producers/distributors to catalogue the consumers spending in their venue. If we expand this concept to a virtual environment/immersive system where discount cards factor the consumer’s mana and are digitally linked to his RF, the exponentiality of LVT is limited only by “space”. These “data extractors” allow for a compilation of the individuals transactions/exchanges within the complete spectrum of the RF. A person’s mana is now a factor in the element of pricing. As for the creation of discount cards and their evolution into viable economic determiners, we arrive at Banking not only as a means to interpret financial situations, but demographic displacement/Knowledge management of consumerism as in relation to space.

[§] Residual demographic factoring is the phenomenon of systematic marketing on the FG and its residual impact within a subjects RF.

This assemblage takes on a new meaning when placed together with the conceptual effects of the influence of Mana, and the geo/socio spatial dynamics and its implications when applied to location based services. LBS are an essential part of convergence by way of creating a new architecture for the spatial environment. This is the link between tangible and intangible, these are the way points, markers that delineate the geography of both “realities”.

> **The Impact and Penetration of Location-Based Services**
> *The development of mobile telecommunications also has transformed the services from focusing on transmission of voice data to various applications of transmitting information through multimedia. Handheld, mobile and small size wireless devices such as Personal Digital Assistants (PDA) and mobile phones, have been enhanced and can be connected via infrared, GSM modems or radio signals to wireless networks. With the development of location aware technologies and the increasing number of mobile device users, services providing location related information are likely to become major applications of these new technologies. (Shiode et al. 2002)*

Products may have higher or lower values/costs based on the influence of an individuals RF or the clustering of individuals who are the intended demographic. In essence creating multiple exchanges, commodities change at their ”price” which is determined by several factors, not just the products imposed practical worth or value, but the value of the person making the purchase and his exposure to secondary environments, values (personal) based marketing, latent influence on freewill.

The revision of credit systems will eventually see an evolution from promissory accounts, given on the premise of factors like worthiness, income, etc. to include, the consumers ability to residually increase market shares based on the effect/influence of his mana, thus the discount.

The evolution of capitalism sees the “body” manifest a new system. Transformed from one of wage = labor or compensation for time, to one which includes value based on the duration of time spent in specific environments /planes and the residual effects of that time and its exchanges produced. The lines of banking, distribution of products/retailing and information management will see a convergence in spatial environments, due partially in fact to their overall redundancy in the current “body”.

New body, New system

With the creation of food banks instead of supermarkets, refrigerators will link to systems of preference and necessity, and will compose a shopping list, or allow for the automated shopping at the point of origin, the home. Food will be paid for and prepared for pick up or sent to the home via transport, eliminating the need for the physical act of shopping. The technology exists for this to be a present reality: Refrigerators with TV’s, Bluetooth technology (RFID), wireless internet, and bar code/RFID recognition. What is being presented are the elements of a body waiting for the organization of systems. The integration of body parts allows for the reduction of complexity/chaos.

New Body ←-----→ New System

What is required from management is not a constant quest for the maintenance of body structures (Wheatly, 1992), but a continuous evaluation of possibilities, and developments which spurn growth, not stability. This is the preparation for transformation which many industries are and will have to face in the advent of a spatial society.

With technology the continual reduction of the time step (acquisition of knowledge) is rising at a rate disproportionately faster than the structure of the current economic body/system. Marxist equations of: C -→ M -→ C (commodity money commodity) and M → C --> M, have a new variable, one of space/volume. Not of the two dimensional sense of saturation via location, but in the manipulation of true three dimensional intangible space. Hence, the need for organizations to create a new body or face extinction.

The continual practice of mergers is seen as adaptations to new systems as the body itself transforms. What is apparent is that the “body” (current) is extremely delayed by use of antiquated systems linked to economics which hinder growth, and ultimately will lead to the collapse of the body. As noted in the creation of an intangible proportion method (see introduction) which has no need for oil wells, refineries, transportation of product, venues to sell the “fuel” and all of the subsidiary markets related to its exchange. Now have this situation manifest as it has in the music industry, with the creation of MP3 technology where the system is in place before the body (new) is linked to old body economic systems. If systems are not prepared for the manifestations of new bodies, and bodies are not prepared for the creation of new systems, we are allow for the deconstruction of present and future possible body/system manifestations based on current realizations.

The system without a body concept is even more devastating when the new system can disrupt the current body system through physical means. For example the Mp3 formatted music can be placed on CD’s, now apply this situation to combustion engines where people could download “gas” for free, thus further the destruction of the current body twofold.

What is of importance is the realization of the music industry on a whole and its failure to do a strategic analysis of possible technological advances. This failure in turn has left them with the creation/manifestation of a new system/organism which has a parasitic quality in relation to current bodies and systems. This system has proliferated beyond the means of current closed systems, further delaying the creation of a new body, due to the focus of curing the present body system. What music industry now has is a technological form of AIDS, basically destroying all of the previous body systems and structure. Grow or die, to be, or not to be, becomes the fact in the evolution of understanding matter in relation to the growth of bodies and systems.

New body corporate transformation.

The convergence of pictures and music entertainment: Redefining Sony as a global media and content company. In addition to the convergence of its electronics and entertainment businesses, Sony is acutely aware of the importance of transcending the traditional boundaries of pictures, music and other areas within the entertainment business itself. By linking up these various kinds of entertainment services, and thus creating even more attractive entertainment content, Sony aims to position itself as the world's leading global media and content company. (2004)

The strategy present in Sony's focus is one of complete integration though the immersive qualities of its products, continued acquisitions, and new markets. The architecture present in this direction will facilitate a total ambient information visualization through it's over all saturation of available "space" and the effects of calm technology through its distribution of products and services. Once the environment is constructed the secondary vehicles of Sony's transformation will have a ubiquitous quality in the RF of its patrons. Physical items such as consumer electronics will ultimately serve as the spring board into the true Sony "lifestyle". What is coming is not an era of consumption, but of qualia, and the ability to facilitate more intrinsic needs while durable goods will play a smaller role in the driving factor of what is "good" by giving us what we need and want before we even know it.

Lifestyle Facilitator

With the incorporation of "lifestyle" into their strategic thinking and direction, Sony has gone about many ways at securing multiple planes of interaction. Their acquisition of Ericsson (mobile phone producer), a partnership with BMG music, and Sony films, show a true expansion of their vehicle. The primary being the physical product itself (TV, Computer, Mp3 player, camera, phone) which in turn is the platform for the secondary vehicle (music, movies, data, you) the very things you bought the primary to exercise. Finally we see

deeper indicator of a “lifestyle facilitator” by Sony entering into the banking and finance arena as well as becoming an ISP (internet service provider).

> *SonyBank utilizes the internet and the ATM infrastructure as prime channels and unlike the traditional banking industry, does not have any physical bank branches. With the coming broadband network infrastructure, there will be an ever-increasing amount of information available. this will allow for significant expansion in the number of services that can be offered to customers. (2004)*

By covering several areas of people activity Sony with its consumer electronics, newly acquired archives (music and film), and foray in banking, life insurance and internet service, is no longer selling a product but a way of life.

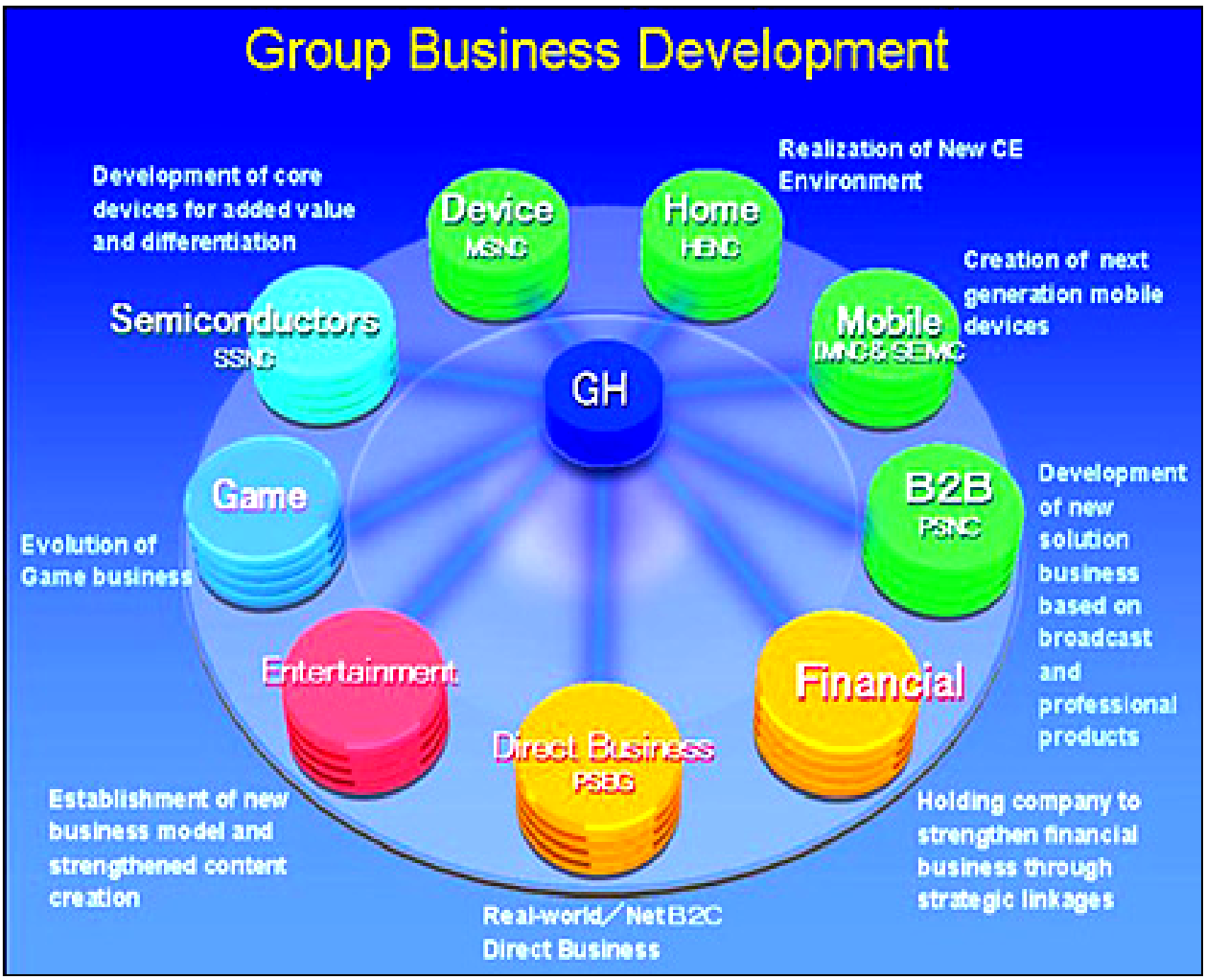


Figure 4 (Sony Group Fiscal Year Corporate Strategy Meeting, 2004)

The Spatial Environment

A Geographic information system stores information about the “real world” as a collection of thematic layers/planes linked together by geographic coordinates(see figure 5). These layers can be of any significance to the manipulator, data of any type has the ability to be visualized within this system. By geocoding, data integration, and visualization, the RF of any subject can be codified. When combined with the effects of location based services, and Radio frequency identification, the merger between the virtual reality and physical reality becomes apparent.

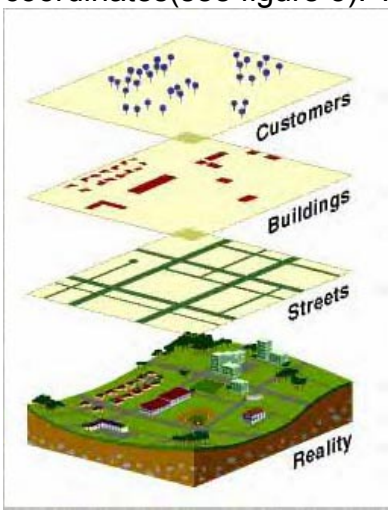


figure 5

> *GIS is a computerized database for the capture, storage, analysis, and display of spatial information. Database records are linked to a precise location that can be plotted on a map. Query the database for entries having specific attributes, and the results are displayed on a map, highlighted in color. Database changes resulting from an update are immediately displayed as well. Visualizing data on a map is easier than trying to search through voluminous amounts of tabular information. Relationships otherwise masked by the data itself are readily apparent, making GIS a powerful tool for managing spatial relationships. (Colberg, 2004)*

The effective use of GIS systems in conjunction with data integration is the foundation for emerging business paradigms. Transactions will be continuous

instead of fixed, as in relation to time, space, and a multitude of other characteristics linked to algorithmic information streaming through the construct[**].

All of this alludes to the ability to profile anyone, anytime, anywhere and in a remote fashion. Geographic profiling will become a continual process, like a stock ticker spewing forth quotes, data about individuals will be connected within a complete cybernetic loop.

U.S. COMMERCIAL REMOTE SENSING POLICY

> *A robust U.S. commercial remote sensing space industry can augment and potentially replace some United States Government capabilities and can contribute to U.S. military, intelligence, foreign policy, homeland security, and civil objectives, as well as U.S. economic competitiveness. Continued development and advancement of U.S. commercial remote sensing space capabilities also is essential to sustaining the nation's advantage in collecting information from space. Creating a robust U.S. commercial remote sensing industry requires enhancing the international competitiveness of the industry. (2003)*

This is the "reduction of complexity" as in Luhmanistic thought will generate levels of communication far beyond our current means. This communication will be based on several factors, forms, and situations. On the whole it is an evolution of processes leading to a new methodology, one involving the dynamics of space, combined with tangible and intangible forms, and their parallel functions merged to create a new spectrum. One such function will be the ability to "Track Via Movement", allowing for the continuous visualization of a subjects movements in the "real world".

[**] The construct is the sum of all realities (unified), it is the infrastructure, it is the device, it is the data, and the comprehensive inclusion of all vehicles. The construct is our stage, in which we act out our lives.

Palmer's Representation Theory identifies five components of any representation system: the represented world (W1), the representing world (W2), the aspects of the represented world that are being modeled (R1), the aspects of the representing world that are doing the modeling (R2), and the correspondences between the two domains (C). This mapping is not trivial, in general. We usually do this to solve certain tasks. (Wikpedia, 2004)

By way of LBS the subject is registered by his location as in proximity to service points within the environment. The subject's location is constantly updated by his interactions within space. Service points act as relays not only for the transmission of data to the subject, but also act as GPS waypoints allowing for triangulation and continuous representation in both virtual and real worlds[††].

Technologies in spatial analysis

The creation of the new environment is being built upon several advances in technology, all having the qualities within their construction of the intended space. These devices are smaller, work passively, and are extremely discreet, lending to the notion of "calm technology". What we are seeing is a total restructuring of our "body" in preparation for the new systems currently evolving. It is of no coincidence that the miniature nature of these devices, is the signaling of a reduction within our complex adaptive system, in both the physical (size and capacity) and the intangible (energy source, data transmission). The effective use of Piezoelectronics (remote energy transmission) combined with the eventual realization of nanoelectronics (microcomputing) are clearing the way for convergence.

EnOcean has fulfilled the dream of cost-free energy – by converting process energies into usable electric energy. The radio transmitters from

[††] See **appendix C** The birth of immersive environments.

EnOcean “help themselves” to the ambient energy available everywhere in small quantities: events to be registered are always linked with a change in the energy entropy – a button is pressed, the temperature changes or a motor vibrates. This energy can be used to supply sensor and processor electronics and produce radio signals. Above all, our wireless radio switches without battery open up completely new possibilities for architects and designers. After all, the maintenance free switches and sensors can be flexibly positioned anywhere in the room, even on glass. (2004)

Companies like ENOCEAN and VERICHIP are creating platforms for our future vehicles. Their products are the bridge in the cybernetic loop that will allow the two realities to merge. This trend in technology is society itself seeking out the functions of a new body system. A system that is efficient, non-intrusive, secure, and precise. (see figure 6)

figure 6

VeriChip is a subdermal RFID device that can be used in a variety of security, financial, emergency identification and other applications. About the size of a grain of rice, each VeriChip product contains a unique verification number that is captured by briefly passing a proprietary scanner over the VeriChip. Once inserted just under the skin, the VeriChip is inconspicuous to the naked eye. A small amount of radio frequency energy passes from the scanner energizing the dormant VeriChip, which then emits a radio frequency signal transmitting the verification number. (Applied Digital, 2004)

Theory of R.A.I.N

Realistic Automation of Integrated Networks through the combination of emerging and future technologies is based on the concept of total emersion, and autopoiesis in virtual environments as they correspond to and with their real world counterpart. As in nature water takes on many forms, liquids, solids, and

gases all continuing the renewal process through constant transformation of states and roles. This convergence will produce a situation of virtual worlds becoming real, and real becoming virtual. It is through this unification of environments/systems that people, data, tangible and intangible will become the mechanism for symbiosis.

As in the processes of the human body, our brain is composed of tissue that forms a synapse allowing for the creation of low level electrical impulses which manifest themselves as “thought” through proximity and structure the brain has created and environment within the body in conjunction with other operating systems which allow for existence. It is this concept of “thought” the ethereal result of electrical impulses which allow for a virtual environment within the body. (see figure 7)

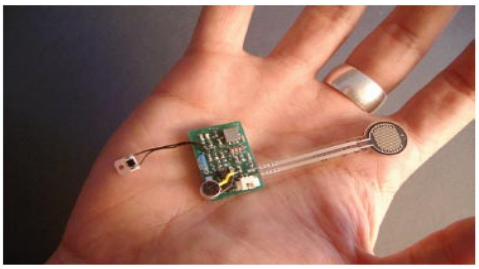


figure 7

A Smart-It consists of a communication board, with a wireless transceiver to let the device communicate with other Smart-Its; and a sensor board, which gives the Smart-It data about its surroundings. The standard sensor board has five sensors: light, sound, pressure, acceleration and temperature. For specific purposes, other sensors can be added, for instance a gas sensor, or even a camera for receiving images.(Holmquist, Gaye, 2003)

Mind, body and soul, terms we use with relative frequency, but in all actuality is the blue print for the explanation of many grand theories. When we look at formations of thought as the result optimized systems efficiently expanding the bounds of what we recognize as chaos, we assume the soul. The virtual result of systems working in order to maintain existence, or is it the by product of these systems a sort of “awareness of the self” or a need for a “self” in the first place which causes the creation of this natural virtual environment.

The Major Trends in Computing	
Mainframe	**many people share a computer**
Personal Computer	**one computer, one person**
Internet - Widespread Distributed Computing	***. . . transition to . . .***
Ubiquitous Computing	**many computers share each of us**

Figure 8 (Weiser,Brown, 1996)

<u>The spatial future: Convergence</u>

The true exploitation of space will eventually "free" the individual, and allow for a more transient lifestyle, while maintaining the "anchor point" in a modal fashion. What this creates is the ability to shift the focus away from a continual need to satisfy the basic physiological needs, of food, gas, money, etc. to a more equitable use of time. Convergence is the combination of both worlds virtual and physical, tangible and intangible. This is the next step in understating, the realization of our dimension in its entirety, preparing us for new directions, new endeavors, new bodies and systems.

<u>New directions: Mobile Habitats</u>

The creation of mobile habitats is a paradigm shift for future living conditions throughout the world. As systems evolve from the standard fixed location habitat, based on the acquisition of land or the occupation fixed multiple dwelling units in favor of mobile habitats which provide a non evasive (economically and environmentally) housing alternative. Mobile habitats function like a laptop, portable yet accessible to a "Hub" for a more permanent durations (see figure 9), and practicalities.

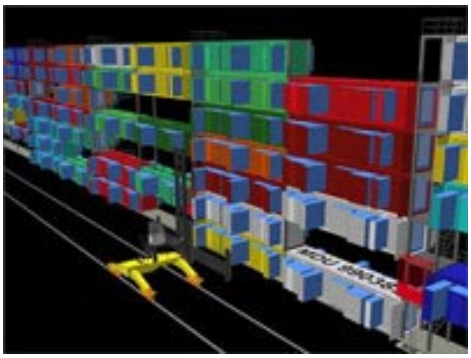


figure 9

The ability of the MDU to take on multiple roles is its greatest asset. It can be used in military as well as humanitarian systems to facilitate immediate logistical needs. There is growing

interest in the use of shipping containers as the basis for habitable structures. These "icons of globalization" are relatively inexpensive, structurally sound and in abundant supply. Although, in raw form, containers are dark windowless boxes (which might place them at odds with some of the tenets of modernist design...) they can be highly customizable modular elements of a larger structure(container bay, 2004).

Easily retrofitted with nanotechnology, and in conjunction with location based services, a mobile, automated, habitat is created. The abundance of shipping containers and the use of recycled products combined with emerging Piezoelectronics provides for economic feasibility, and will spark future developments in the aesthetics of MDU's. The MDU provides high degrees of freedom when dealing in the mobility of habitats. The benefits of the MDU are evident in the autonomy provided by mobile habitats as well as the ability to produce automated networks in places that were once devoid of technological support, with minimal outside sources.


figure 10

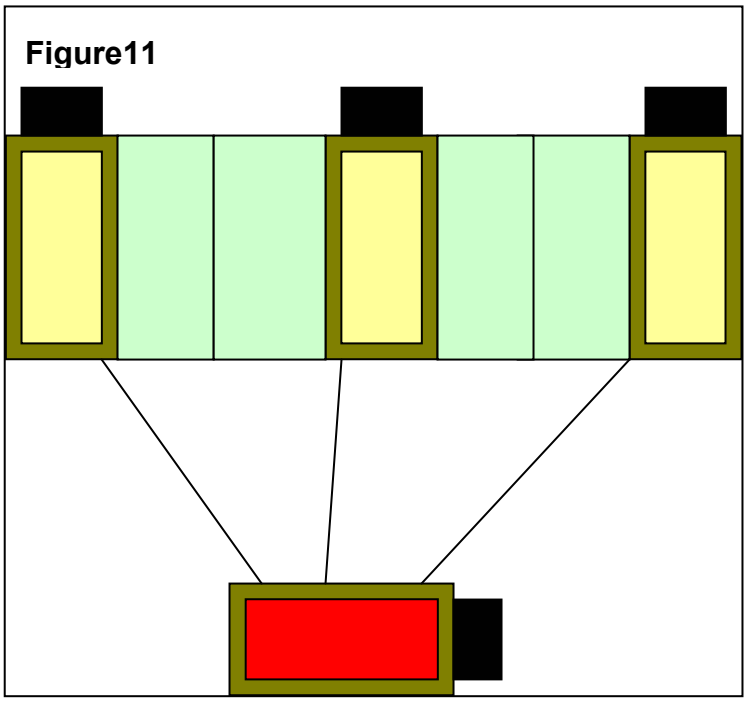


Figure11

Military uses

The mobile command post is one of many possible configurations possible by the implementation of shipping containers, and the addition of contracted vehicles and equipment already in use by the US Army. The Mobile command post is comprised of four M1075 transport vehicles, three of the vehicles will be modified to hold the shipping containers which will be outfitted with command

post basic issue items, as well as any other cargo necessary for mission accomplishment. In this capacity the container pulls double duty as transporter and eventual op center. The configuration will be powered by the EPP 3 (Electronic power plant) a vehicle already in use by the PATRIOT missile system. The addition of shipping container provides the Army with a low cost modification of existing or soon to be phased out platforms with minimal overhead, by dynamic reutilization instead costly recreation the Army can create platforms that allow for high mobility, advanced automation and connectivity, eliminate secondary logistical areas, with high mobile semi permanent structures.

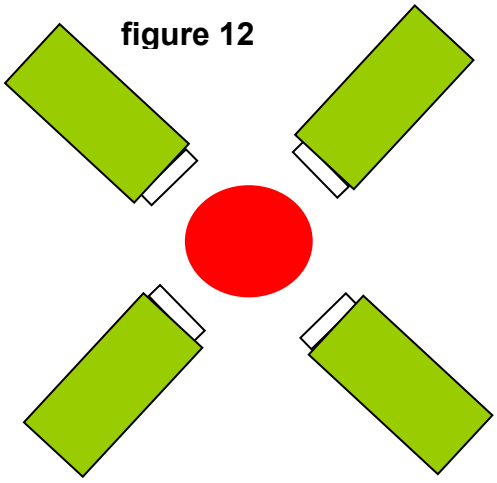


figure 12

Troop Housing

The issue of troop housing and the problems of contracting in foreign environments can be eliminated by the use of shipping containers as mobile habitats, existing contracts are already in place for the ECU (environmental control unit) which provides heat and AC, and like the CP (command post) configuration the unit is mounted on the M1075 for transport, in this configuration four units are dispersed around a “HUB” which provides power, data connectivity (wireless and cable), and is an LBS device fitted with RFID technology to assist in the creation of an integrated mobile network within the area of operations. With the recent implementation of FBCB2 and the future plans for Army modernization, the utilization of measures which transform the existing into the future can be done while saving time and money. It is a form of renewal through reuse and adaptation, while maintaining and pushing the technological envelope. The continual redevelopment of platforms to produce a better operating system, a better vehicle, crossing multiple planes, with expanding orbits.

The Possibilities of Unification

Shipping containers as emergency housing structures, mobile retirement communities which travel the world on boats and planes, or the use of MDU's as low cost correctional facilities. The possibilities for the use of this ever growing resource are only limited to our own faculties. As systems thinking truly entrenches itself within the world, environments created for optimization in all forms, economic, natural, and socio will begin to drive our present system in new directions, new dimensions where calm technology operates in environments facilitated by our need to create suitable habitats for mankind's evolving relationship with civilization and technology.

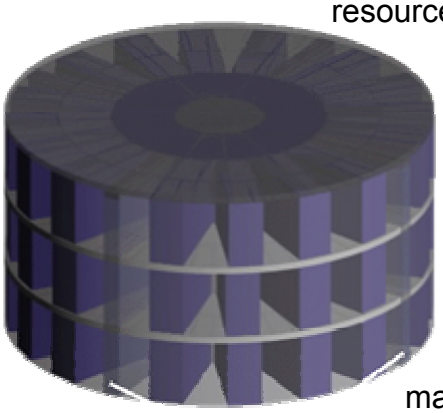


figure 13

Similar to its precursor (convergence), unification is the complete consolidation of all spaces, where you are recognized in all of your forms, on all of your planes. The redundant nature of our current process will be superceded, by a more efficient methodology. It is a place where basic physiological needs are not the focus of our attention, allowing for an investment of true thought without distraction.

Conclusion

There are many aspects of maximizing space which we have yet to discover each with its own unique ramifications. Every new endeavor leads us to a new realization, new possibilities, in turn leading to a better understanding of our system. Which will have the most impact, where will this realization lead us next? Once the architecture is understood, and the very fabric which binds our ever changing body is finally mapped, will we then be able to achieve what it is that we desire? For all intents and purposes our aim to recreate nature appears more like an attempt to reconnect. What is of importance to the institution and the individual in this visualization of new paradigms? What is evident is the need for

the realization on our part that letting go of “the box” is also a form of thinking “outside of the box”. This is our major premise “the priori” our way of looking back to build ahead, it is how we do things, it’s our security, it is our rationale. One must understand that the “priori” is like water, it takes the shape of the container yet maintains its own unique properties, it is situational meaning it can exist in different forms (gases and solids). It gives life to all, but does it live itself? What is needed is a better study of this system that we are trying to develop:

> **The efficiency of nature and its raw multiplicity operating echelons above our realm of comprehension are slowly being unraveled. What we are encountering is the result of multiple systems working in unison for a continual mutual growth, transformation, and existence. There is no “financial” gain within the properties of the universe, the system works due to an effective exchange resulting in a cyclical systematic growth for all within the body. No exploitation, no prime beneficiary, just a mutual cooperation among all systems.**

If earth is the plane, and we wish to expand our orbit, we must develop better vehicles, better methods, with the eventual understanding that the ultimate “financial” gain is the Unisys of thought, space and being. All things leading to this endeavor will lead to compensation in a monetary fashion as does all within our current system. What arises is an interesting paradox: ***that of which we seek will transform all of which has lead us to it***. It is where we are today, the financial vehicle is what drives us to our discoveries, as well as hinders us. It is time for the water to take on a new shape, a new form, yet continue to do what it has always done. Ever so often there are those who look ahead and never look back, these are the path finders allowing their “water”, their forms of thought to transform, to provide for us in all of its manifestations.

Soyez réalistes, demandez l'impossible.

Be realistic, ask for the impossible.

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Algorithmic information theory is a field of study which attempts to capture the concept of complexity by using tools from theoretical computer science. The chief idea is to define the complexity (or **Kolmogorov complexity**) of a string as the length of the shortest program which outputs that string. Strings that can be produced by short programs are considered to be not very complex.

Autopoiesis literally means "self-production" (from the Greek: *auto* for self- and *poiesis* for creation or production) and expresses a fundamental complementarity between structure and function. The term was originally introduced by Chilean biologists Francisco Varela and Humberto Maturana in the early 1970s. More precisely, the term refers to the dynamics of non-equilibrium structures; that is, organised states (sometimes also called dissipative structures) that remain stable for long periods of time despite matter and energy continually flowing through them. A vivid example of a non-equilibrium structure is the Great Red Spot on Jupiter, which is essentially a gigantic whirlpool of gases in Jupiter's upper atmosphere. This vortex has persisted for a much longer time (on the order of centuries) than the average amount of time any one-gas molecule has spent within it. The canonical example of an autopoietic system, and one of the entities that motivated Varela and Maturana to define autopoiesis, is the biological cell. The eukaryotic cell, for example, is made of various biochemical components such as nucleic acids and proteins, and is organised into bounded structures such as the cell nucleus, various organelles, a cell membrane and cytoskeleton. These structures, based on an external flow of molecules and energy, *produce* the components which, in turn, continue to maintain the organised bounded structure that gives rise to these components. An autopoietic system is to be contrasted with an *allopoietic* system, such as a car factory, which uses raw materials (components) to generate a car (an organised structure) which is something *other* than itself (a factory).

Avatar - Among people working on virtual reality and cyberspace interfaces, an avatar is an icon or representation of a user in a shared virtual reality. The term is sometimes used on MUDs, and also in computer role-playing games. This definition has recently been applied to online virtual communities and Internet forums in particular, as a picture that a member/user of such a community/forum has elected to display alongside his or her contributions in order to represent him or herself.

Bayesian inference is statistical inference in which probabilities are interpreted not as frequencies or proportions or the like, but rather as degrees of belief.

Bayesian statisticians claim that methods of Bayesian inference are a formalisation of the scientific method involving collecting evidence which points towards or away from a given hypothesis. There can never be certainty, but as evidence accumulates, the degree of belief in a hypothesis changes; with enough evidence it will often become very high (almost 1) or very low (near 0). Bayes theorem provides a method for adjusting degrees of belief in the light of new information. If it is unlikely that the observation will be made unless the particular hypothesis being considered is true, then this scaling factor will be large. Multiplying this scaling factor by the prior probability of the hypothesis being correct gives a measure of the posterior probability of the hypothesis being correct given the observation. The keys to making the inference work is the assigning of the

prior probabilities given to the hypothesis and possible alternatives, and the calculation of the conditional probabilities of the observation under different hypotheses.

Some Bayesian statisticians believe that if the prior probabilities can be given some *objective* value, then the theorem can be used to provide an objective measure of the probability of the hypothesis. But to others there is no clear way in which to assign objective probabilities. Indeed, doing so appears to require one to assign probabilities to all possible hypotheses.

Alternately, and more often, the probabilities can be taken as a measure of the *subjective degree of belief* on the part of the participant, and to restrict the potential hypotheses to a constrained set within a model. The theorem then provides a rational measure of the degree to which some observation should alter the subject's belief in the hypothesis. But in this case the resulting posterior probability remains subjective. So the theorem can be used to rationally justify belief in some hypothesis, but at the expense of rejecting objectivism.

It is unlikely that two individuals will start with the same *subjective degree of belief*. Supporters of Bayesian method argue that even with very different assignments of prior probabilities sufficient observations are likely to bring their posterior probabilities closer together. This assumes that they do not completely reject each other's initial hypotheses; and that they assign similar conditional probabilities. Thus Bayesian methods are useful only in situations in which there is already a high level of subjective agreement.

In many cases, the impact of observations as evidence can be summarised in a likelihood ratio, as expressed in the law of likelihood. This can be combined with the prior probability to reflect the original degree of belief and any earlier evidence already taken into account.

Behavioral finance and **behavioral economics** are closely related fields which apply scientific research on human and social cognitive and emotional biases to better understand economic decisions and how they affect market prices, returns and the allocation of resources. The fields are primarily concerned with the rationality, or lack thereof, of economic agents. Behavioral models typically integrate insights from psychology with neo-classical economic theory.

Analyses are mostly concerned with the effects of market decisions, but also those of public choice, another source of economic decisions with some similar biases.

Chaos - 1. A condition of utter distortion and confusion, as the uniformed primal state of the universe. 2. Any thing or condition of which the elements or parts are in utter disorder or confusion.

Chaos – As in regards to systems and understanding “Chaos” is the explanation for that of which we have none. As knowledge increases chaos takes a form of order, a recognized system, or process.

Chaos theory deals with the behaviour of certain nonlinear dynamical systems that (under certain conditions) exhibit the phenomenon known as **chaos**, most famously characterised by sensitivity to initial conditions (see butterfly effect). Examples of such systems include the atmosphere, the solar system, plate tectonics, turbulent fluids, economies, and population growth. Systems that exhibit mathematical chaos are deterministic

and thus orderly in some sense; this technical use of the word *chaos* is at odds with common parlance, which suggests complete disorder. When we say that chaos theory studies deterministic systems, it is necessary to mention a related field of physics called quantum chaos theory that studies non-deterministic systems following the laws of quantum mechanics.

Commodity fetishism is a false impression of society said to arise in complex capitalist market systems. The term is introduced in the opening chapter of Karl Marx's main work of political economy, *Capital*, (1867). Marx's use of the term fetish can be interpreted as an ironic comment on the 'rational', 'scientific' mindset of industrial capitalist societies. In Marx's day, the word was primarily used in the study of primitive religions - Marx's Fetishism of Commodities might be seen as identifying just such primitive belief systems at the heart of modern society. In most subsequent Marxist thought, *commodity fetishism* is defined as an illusion arising from the central role that private property plays in capitalism's social processes. It is a central component of the dominant ideology in capitalist societies. Persons within capitalist societies find their material life organized through the medium of commodities. They trade their labor-power for a special commodity, money, and use that commodity to claim various other commodities produced by other people. Producers and consumers have no direct human contact or conscious agreements to provide for one another. Their productions take on a property form, meet and exchange in a marketplace, and return in property form. The social connections between the people involved are thereby obscured (It should be noted that the term 'social', for Marx at least, refers to the essential organization of a society, i.e., those processes by which a society allocates the tasks necessary to its survival). Social relations between people are experienced only in the form of the commodities they see extracted from them as producers, and those returned to them as consumers. Both are private experiences, of person to commodity, and of material self interest. The work of social relations seems to be conducted by commodities amongst themselves, out in the marketplace. 'The Market' appears to decide who should do what for whom. Social relationships are confused with their medium, the commodity. The commodity seems to be imbued with human powers, becoming a fetish of those powers. Human agents are denied awareness of their social relations, becoming alienated from their own social activity.

As a consequence of commodity fetishism, the basic political issues involved in social relationships are obscured, from both exploiter and exploited. Commodity fetishism ensures that neither side is fully conscious of the political positions they occupy.

Cybernetics is a theory of the communication and control of regulatory feedback. The term *cybernetics* stems from the Greek *kybernetes* (meaning steersman, governor, pilot, or rudder). Cybernetics is the discipline that studies communication and control in living beings and in the machines built by humans.

Its emphasis is on the functional relations that hold between the different parts of a system. These include in particular the transfer of information, and the circular relations that define feedback, self-organization, and autopoiesis. The main innovation brought about by cybernetics is an understanding of goal-directedness or purpose as a negative feedback loop which minimizes the deviation between the perceived situation and the desired situation (goal).

Data Integration GIS data is often merged together from a number of sources including: paper maps, satellite imagery, aerial photos, tabular reports, or digital files.

Degrees of freedom is used in three different branches of science: in physics and physical chemistry, in mechanical and aeronautical engineering, and in statistics. The three usages are linked historically and through the underlying mathematics through the concept of dimensionality, but they are not identical.

Physics and chemistry

In physics and chemistry, each independent mode in which a particle or system may move or be oriented is one **degree of freedom.** For a roughly dumbell-shaped hydrogen molecule, three such modes would be rotation (twirling), translation (hurtling through space) and vibration (the two dumbbell "balls" bouncing together and apart).

Engineering

In mechanical and aeronautical engineering, *degrees of freedom* (DOF) describes flexibility of motion. A mechanism that has complete freedom of motion (even if only in a limited area, or envelope) has six degrees of freedom. Three modes are translation - the ability to move in each of three dimensions. Three are rotation, or the ability to change angle around three perpendicular axes.

To put it in simpler terms, each of the following is one degree of freedom:

1. Moving up and down (heaving);
2. moving left and right (swaying);
3. moving forward and back (surging);
4. tilting up and down (pitching);
5. turning left and right (yawing);
6. tilting side to side (rolling).

In *statistics*, **degrees of freedom** is a statistical parameter in many important probability distributions. Examples include the chi-square distribution, the F-distribution, Student's t-distribution, and the beta distribution that underlies them. In the familiar uses of these distributions, the degrees of freedom takes only integer values (usually low ones). The underlying mathematics do allow for fractional degrees of freedom, which can arise in more sophisticated uses.

Dialectics is the science of the most general laws of development of nature, society, and thought. Its principal features are as follows:

1) The universe is not an accidental mix of things isolated from each other, but an integral whole, wherein things are mutually interdependent.

2) Nature is in a state of constant motion:

> All nature, from the smallest thing to the biggest, from a grain of sand to the sun, from the protista to man, is in a constant state of coming into being and going out of being, in a constant flux, in a ceaseless state of movement and change. --Friedrich Engels, *Dialectics of Nature*.

3) Development is a process whereby insignificant and imperceptible quantitative changes lead to fundamental, qualitative changes. The latter occur not gradually, but rapidly and abruptly, in the form of a leap from one state to another.

> Merely quantitative differences beyond a certain

point pass into qualitative changes. --Karl Marx, *Capital*, Vol. 1.

4) All things contain within themselves internal contradictions, which are the primary cause of motion, change, development in the world

Dualism is the state of being dual, or having a twofold division. Dualism doctrine consists of two basic opposing elements. Generally it consists of any system which is founded on a double principle.

Field operators- We can now define *field operators* that create or destroy a particle at a particular point in space. In particle physics, these are often more convenient to work with than the creation and annihilation operators, because they make it easier to formulate theories that satisfy the demands of relativity.

Fundamental interaction is a mechanism by which particles interact with each other, and which cannot be explained by another more fundamental interaction.

Geocoding- (Encoding) Often we are confronted with client data containing implicit spatial references such as a street address or a zip code. Geocoding is a process whereby these can be converted to a more precise lat/long coordinate.

Geographic information system (GIS) is a specialized form of an information system. In the strictest sense, it is a computer system capable of assembling, storing, manipulating, and displaying geographically-referenced information in a relational database, i.e. data identified according to their locations. Practitioners also regard the total GIS as including operating personnel and the data that go into the system.

Geoprofiling-Imagine being able to use geographic logic to ferret out a serial criminal's home. Geoprofiling in this instance is composed of mathematical equations in a psychological theory called the least-effort principle. This concept proposes that criminals tend to commit acts of crimes within a comfort zone located near but not too close to their residence. With at least five or six incidents traceable back to the perpetrator, Rossmo's algorithm reduces the search area for the criminal's residence by more than 90 percent. Key locations are weighted and then geocoded onto a map. The end process is known as a "jeopardy surface", a map that resembles a topographical map showing peaks and valleys color ramped to highlight the most likely area where that criminal resides.

Industrial psychology is the psychology that deals with the workplace, focusing on both the workers and the organizations that employ them. Industrial psychologists (also known as organizational psycologists) are concerned with training employees, improving working conditions, and developing criteria for selecting employees, such as creating a new management structure or designing a different questionaire for applicants. The background of industrial psychologists often includes training in social psychology.

Knowledge Management caters to the critical issues of organizational adaptation, survival, and competence in face of increasingly discontinuous environmental change.... Essentially, it embodies organizational processes that seek synergistic combination of data and information processing capacity of information technologies, and the creative and innovative capacity of human beings. Information can be considered as a message. It typically

has a sender and a receiver. Information is the sort of stuff that can, at least potentially, be saved onto a computer. Data is a type of information that is structured, but has not been interpreted. Knowledge might be described as information that has a use or purpose. Whereas information can be placed onto a computer, knowledge exists in the heads of people. Knowledge is information to which an intent has been attached.

Knowledge technologies have emerged as a concept distinct from Knowledge Management. Knowledge technology is technology that adds a layer of intelligence to information technology, to filter appropriate information and deliver it when it is needed. The term knowledge technologies refers to a fuzzy set of tools including languages and software enabling better representation, organization and exchange of information and knowledge.

Labor theory of value (LTV) is a theory in economics and political economy concerning a market-oriented society: the theory equates the "value" of an exchangeable good or service (i.e., a commodity) with the amount of labor required to produce it.

The dominant view sees this as a theory of *price determination* in competitive markets, a substitute for the neoclassical theory of price determination. But to others, it is a tool for understanding the social relations of production, more of an historical and institutional theory than a price theory.

Marx's LTV holds that the labor needed to produce a commodity includes both labor directly expended on production of the commodity and labor expended on the production of means of production used up in its production. For example, if twenty workers are used for a year to produce means of production used by twenty workers in the next year to produce a consumer good, the good embodies the labor of forty workers. (This example assumes that technology is unchanged between the two years.)

The amount of labor done by an average worker under the prevailing conditions in a society (for instance the technology and transportation in use) will produce the same amount of value regardless of the manner of that labor. Greater value can be produced by trained workers or by workers using leading-edge technologies: the increase in value is created by the training process or the work required to create the technologies.

However, a lazy or inept worker (who spends more time producing an item) does not produce more value than an industrious one. Rather, the first worker's time produces less because the value depends on what is *socially necessary*. That is, the value of a product is determined more by societal standards than by individual conditions.

Mana refers to a supernatural force said to exist within all things, sometimes associated with maternal or lunar magic in mythology.

The word originates in Polynesian religion, and its modern use is a result of the popularization of the concept by anthropology and, to a great extent, by certain varieties of fantasy fiction. In Polynesian culture (e.g., Hawaiian, Māori), *mana* is analogous to respect, but it combines elements of respect, authority, power, and prestige. To have *mana* is to have influence and authority. This property is not limited to persons—peoples, governments, places, and inanimate objects can

possess mana. In Hawaiian, *mana loa* means great power or almighty.

The concept of *mana* has been, in various other cultures, the power of magic; however, it was not the only principle, and others included the concept of sympathetic magic and seeking the intervention of a specific supernatural being, whether deity, saint, or deceased ancestor.

The magic of mana was embedded into all talismans and fetishes, whether devoted to ancient gods, Roman Catholic saint relics, the spirits of the ancestors, or the underlying element that makes up the universe and all life within it. The concept of mana has been used in various cultures to justify human sacrifices, as the lives or blood of sacrificial victims might contain supernatural powers whose offering would please a deity.

Materialism In essence, materialism answers the fundamental question of philosophy by asserting the primacy of the material world: in short, matter precedes thought.

Materialism holds that the world is material, that all phenomena in the universe consist of matter in motion, wherein all things are interdependent and interconnected and develop in accordance with natural law, that the world exists outside us and independently of our perception of it, that thought is a reflection of the material world in the brain, and that the world is *in principle* knowable.

> The ideal is nothing else than the material world reflected by the human mind, and translated into forms of thought. --Karl Marx, *Capital*, Vol. 1.

Mechanomorphic crippling is what happens when the *process* gets in the way of the *product*. This happens daily, for example, when you can't get to the information you want on web pages because there's too much clutter in the pipeline--the bloat which was designed either for other propeller heads or for monkeys who like shiny things such a dim view of the user). That's why *these* pages are fast. They're simple text, so you don't need high patience or a T1 connection. Another ***exquisite*** example is Microsoft Word. There are some of us who want to write a letter, not create a monster. If you printed it out, complete with code, you would probably have to be Arnold to fold it (and he could light cigars with it for a year). Remember when you could actually *communicate* with less than a megabyte, and when so much valuable time wasn't spent in patching, upgrading, and spraying for lice? That's mechanomorphic crippling!

Monism is the metaphysical position that all is of one essential essence, substance or energy. Monism is to be distinguished from dualism, which holds that ultimately there are two kinds of substance, and from pluralism, which holds that ultimately there are many kinds of substance. Monism is often seen in relation to Pantheism, Panentheism, and an Immanent God.

Mutualism- In Biology, **Mutualism** is an interaction between species in which both organisms in a close relationship derive some degree of benefit. Mutualism can involve brief or long-term interactions (pollination versus lichen symbiosis between fungus and alga) and may or may not be obligatory for one or both partners. For example, rhizobium bacteria can reproduce either in the soil or in (usually) mutualistic symbiosis with legume plants. Mycorrhizal fungi, on the other hand,

can be totally dependent on their plant hosts.

Neural correlate of consciousness (NCC) is a term made popular by Francis Crick and Christof Koch in the early 1990s. It refers to those neural activities explicitly correlated with conscious experience. The NCC has become a hot area of research in the neuroscientific community. The NCC seeks to avoid questions of causation, and philosophical debates that are associated with the study of consciousness; hence the emphasis on looking for a "correlation".

Neurolinguistics is the science concerned with the human brain mechanisms underlying the comprehension, production, and abstract knowledge of language, be it spoken, signed, or written. Historically, the term neurolinguistics has been most closely associated with aphasiology, the study of linguistics deficits, and spared abilities, resulting from specific forms of brain damage.

Operations research, **operational research**, or simply **OR**, is the use of mathematical models, statistics and algorithms to aid in decision-making. It is most often used to analyze complex real-world systems, typically with the goal of improving or optimizing performance. It is one form of applied mathematics. The terms **operations research** and **management science** are often used synonymously. When a distinction is drawn, management science generally implies a closer relationship to the problems of business management. Operations research also closely relates to industrial engineering. Industrial engineering takes more of an engineering point of view, and industrial engineers typically consider OR techniques to be a major part of their toolset. Some of the primary tools used by operations researchers are statistics, optimization, stochastics, queueing theory, game theory, graph theory, and simulation. Because of the computational nature of these fields OR also has ties to computer science, and operations researchers regularly use custom-written or off-the-shelf software. Operations research is distinguished by its ability to look at and improve an entire system, rather than concentrating only on specific elements (though this is often done as well). An operations researcher faced with a new problem is expected to determine which techniques are most appropriate given the nature of the system, the goals for improvement, and constraints on time and computing power. For this and other reasons, the human element of OR is vital. Like any tools, OR techniques cannot solve problems by themselves.

Optimization is a general term for extremum searching (maximizing or minimizing) of particular properties.

In mathematics, it is usually the value of a particular function. Optimization is a part of the broader discipline of Operations research when applied to practical economic problems. In general most optimization problems in Operations Research are constrained optimization problems - i.e., the extremum of a function has to be determined within the bounds imposed by the particular problem. These bounds are expressed as mathematical constraints.

Organizational learning is an area of knowledge within organizational theory that studies models and theories about the way an organization learns and adapts. In Organizational development (OD), learning is a characteristic of an *adaptive* organization, i.e., an organization that is able to sense

changes in signals from its environment (both internal and external) and adapt accordingly. (see adaptive system). OD specialists endeavor to assist their clients to learn from experience and incorporate the learning as feedback into the planning process.

Organizational Studies (also known as **Industrial Organizations**, **Organizational Behavior** and **I/O**) is a distinct field of academic study which takes as its subject organizations, examining them using the methods of economics, sociology, political science, anthropology, and psychology.

Organizational studies is the study of individual and group dynamics in an organization setting, as well as the nature of the organizations themselves. Whenever people interact in organizations, many factors come into play. Organizational studies attempts to understand and model these factors.

Like all social sciences, organizational behavior seeks to control, predict, and explain. But there is some controversy over the ethical ramifications of focusing on controlling worker's behavior. As such, organizational behavior (and its cousin, Industrial psychology) have at times been accused of being the scientific tool of the powerful.

Profile Stop – a random stop and search by police, based on a suspect's race, minority status, economic status, religion, physical appearance, travel status, location, etc. Previously inflicted on minorities and poor whites, but currently being expanded by bureaucrats to include all US citizens.

Qualia (singular: "quale") are most simply defined as the properties of sensory experiences by virtue of which there is something it is like to have them. These properties are, by definition, epistemically unknowable in the absence of direct experience of them; as a result, they are also incommunicable. The existence or lack of these properties is a hotly debated topic in contemporary philosophy of mind.

Qualia have played a major role in contemporary philosophy of mind, largely because they are often seen as being a *de facto* refutation of physicalism. There is some debate over the precise definition of qualia, as various philosophers emphasize or deny the existence of certain properties.

It is important to note that qualia do not have the status of observed properties, which we are sure exist but might be wrong about; rather, the concept of qualia is first and foremost dependent on its definition, and the existence of qualia is predicated on the existence of properties which fit that definition. Thus if we were to discover that there is such a property as "what it is like to have a certain experience", but that this property was in fact knowable to others, it would not be a quale. Thus the contemporary debate over whether or not qualia exist is largely centered on whether or not experiences do in fact have properties that fit this definition. At the present time, there is little consensus over whether or not this is indeed the case.

If qualia exist, a normally-sighted person who is able to see red is unable to describe the experience of such a perception in such a way that a listener who has never experienced color will be able to know everything there is to know about that experience. Though it is possible to make an analogy, such as "red looks hot", or to provide a description of the conditions under which the experience occurs, such as "it's the color you see when light of such-and-such wavelength is directed at

you," supporters of qualia contend that such a description is incapable of providing a complete description of the experience. There is an ancient Sufi parable about coffee which nicely expresses the concept: "He who tastes, knows; he who tastes not, knows not."

RFID stands for **R**adio **F**requency **ID**entification, a technology that uses tiny computer chips smaller than a grain of sand to track items at a distance. A minute electrical current from a radio transceiver, or reader, wakes up a dormant card and give it enough power to generate a response. A patent search shows Charles Walton's 1973 patent is referenced by 48 later inventions.

Rhizome- In botany, a **rhizome** is a horizontal, usually underground stem of a plant that often sends out roots and shoots from its nodes. Also called a creeping rootstalk or rootstock. Many plants have rhizomes that serve to spread the plant by vegetative reproduction. Examples are asparagus and Lily of the valley. The spreading stems of ferns are called *rhizomes*

Service Points - Points of service delivery. May also pertain to prospects or targets of interest. Further characterized by levels of service and quality of service.

Symbiosis (pl. symbioses) is an interaction between two organisms living together in more or less intimate association or even the merging of two dissimilar organisms. The term host is usually used for the larger (macro) of the two members of a symbiosis. The smaller (micro) member is called the **symbiont** (alternately, **symbiote**). Microscopic symbionts are often referred to as endosymbionts. The various forms of symbiosis include *parasitism*, in which the association is disadvantageous or destructive to one of the organisms, mutualism, in which the association is advantageous, or often necessary to one or both and not harmful to either, and commensalism, in which one member of the association benefits while the other is not affected. In some cases, the term symbiosis is used only if the association is obligatory and benefits both organisms. An example of mutual symbiosis is the relationship between clownfish of the genus Amphiprion (family, Pomacentridae) that dwell among the tentacles of tropical sea anemones. The territorial fish protects the anemone from anemone-eating fish, and in turn the stinging tentacles of the anemone protects the anemone fish from its predators (a special mucous on the anemone fish protects it from the stinging tentacles). The biologist Lynn Margulis, famous for the work on endosymbiosis, contends that symbiosis is a major driving force behind evolution. She considers Darwin's notion of evolution, driven by competition, as incomplete, and claims evolution is strongly based on co-operation, interaction, and mutual dependence among organisms. According to Margulis and Sagan (1986), "Life did not take over the globe by combat, but by networking". As in humans, organisms that cooperate with others of their own or different species can sometimes outcompete those that don't. However, mutualism, parasitism, and commensalism are often not discrete categories of interactions and should rather be perceived as a continuum of interaction ranging from parasitism to mutualism. In fact, the direction of a symbiotic interaction can change during the lifetime of the symbionts due to developmental changes as well as changes in the biotic/abiotic environment in which the interaction occurs.

System - Orderly combination or arrangement, as of parts, into a whole; specifically, such combination according to some rational principle; any methodical arrangement of parts. 2. In science and philosophy, an orderly collection of related principles, fact, or objects. 3. Any group of facts and phenomena regarded as constituting a natural whole and furnishing the basis and material of scientific investigation and construction: the solar system. 4. A whole as made up of constitutive parts. 5. An assemblage of organic structures composed of similar elements and combined for the same general functions: the nervous system; also, the entire body, taken as a function of the whole.

System analysis is the branch of electrical engineering that characterizes electrical systems and their properties. Although many of the methods of system analysis can be applied to non-electrical systems, it is a subject often studied by electrical engineers because it has direct relevance to many other areas of their discipline, most notably signal processing and communication systems.

System model - A representation of the information types, directions of flow, production stages, and user interfaces for the system.

Systems theory or **general systems theory** or **systemics** is an interdisciplinary field which studies systems as a whole. Systems theory was founded by Ludwig von Bertalanffy, William Ross Ashby and others between the 1940s and the 1970s on principles from physics, biology and engineering and later grew into numerous fields including philosophy, sociology, organizational theory, management, psychotherapy (within family systems therapy) and economics among others. Cybernetics is a related field, sometimes considered as a part of systems theory.

Systems theory focuses on complexity and interdependence. It has a strong philosophical dimension, because applied to the human mind and society, it results in unusual perspectives. In recent times complex systems has increasingly been used as a synonym. Systems theory has also been developed within sociology. The most notable scientist in this area is Niklas Luhmann (see Luhmann 1994).

Part of systems theory, system dynamics is a method for understanding the dynamic behavior of complex systems. The basis of the method is the recognition that the structure of any system -- the many circular, interlocking, sometimes time-delayed relationships among its components -- is often just as important in determining its behavior as the individual components themselves. Examples are chaos theory and social dynamics.

In recent years, the field of systems thinking has been developed to provide techniques for studying systems in holistic ways to supplement more traditional reductionistic methods. In this more recent tradition, systems theory is considered by some as a humanistic counterpart to the natural sciences.

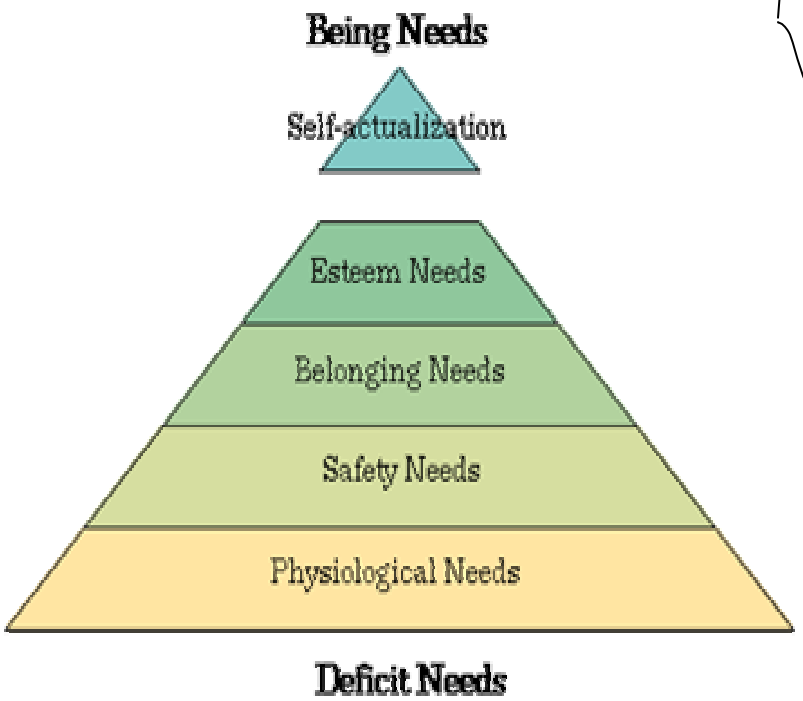
Ubiquitous computing names the third wave in computing, just now beginning. First were mainframes, each shared by lots of people. Now we are in the personal computing era, person and machine staring uneasily at each other across the desktop. Next comes ubiquitous computing, or the age of *calm technology*, when technology recedes into the background of our lives. Alan Kay of Apple calls this "Third Paradigm" computing.

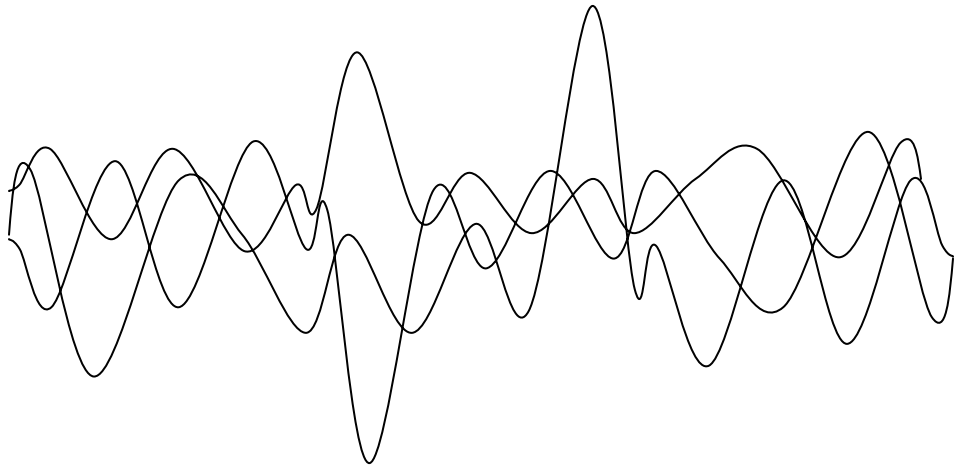
Use value- Marx notes various kinds of value - use-value, which is something like utility. The use-value of a carrot would be that you eat it and do not feel hungry. He also notes another kind of value - exchange-value or value itself. This is the value given to a commodity by labor time valorized in it, when exchanged with another commodity with an equivalent among of labor time valorized in it. Thus, if someone spent an hour digging for an ounce of gold, and exchanged the gold for a bushel of apples someone had gathered for an hour, then a bushel of apples would be worth an ounce of gold (and vice versa). Marx also notes how gold has historically often become what people used as money in capitalism. Marx notes how people often enter into commodity fetishism, seeing only that a barrel of apples is worth an ounce of gold, instead of that an hours worth of labor time looking for gold is the same as an hour's worth of labor picking apples.

Virtual reality (abbreviated **VR**) describes an environment that is simulated by a computer. Most virtual reality environments are primarily visual experiences, displayed either on a computer screen or through special stereoscopic goggles, but some simulations include additional sensory information, such as sound through speakers. Users can often interactively manipulate a VR environment, either through standard input devices like a keyboard, or through specially designed devices like a cyberglove. The simulated environment can be similar to the real world—for example, in simulations for pilot or combat training—or it can differ significantly from reality, as in VR games.

Visualization An essential component in any GIS is the ability to produce graphics and maps that convey the desired results to the people who make decisions. There a number of visualization tools that extend traditional map-making capabilities.

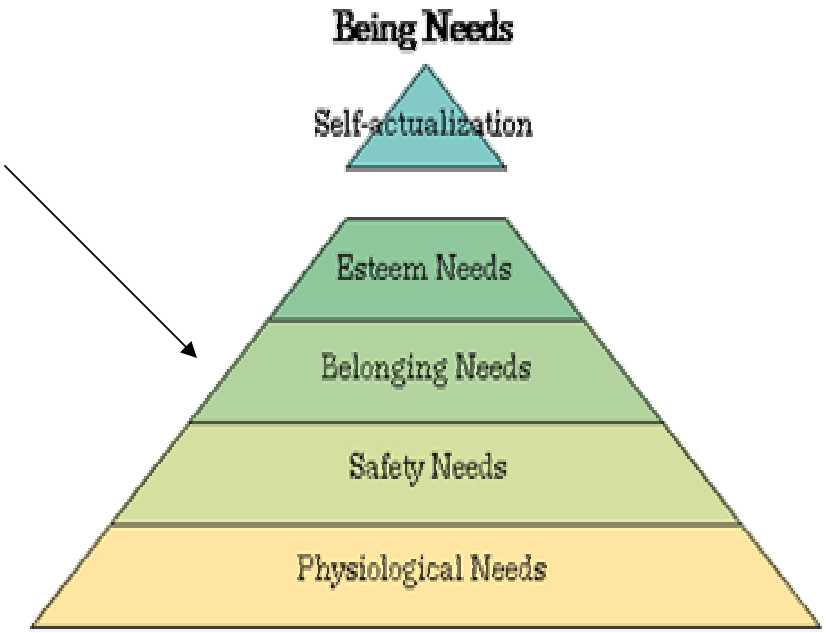
Appendix A

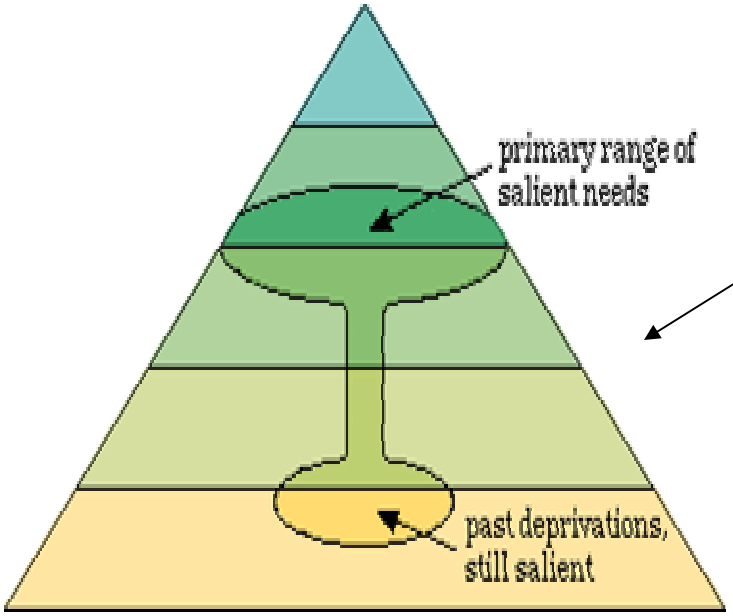




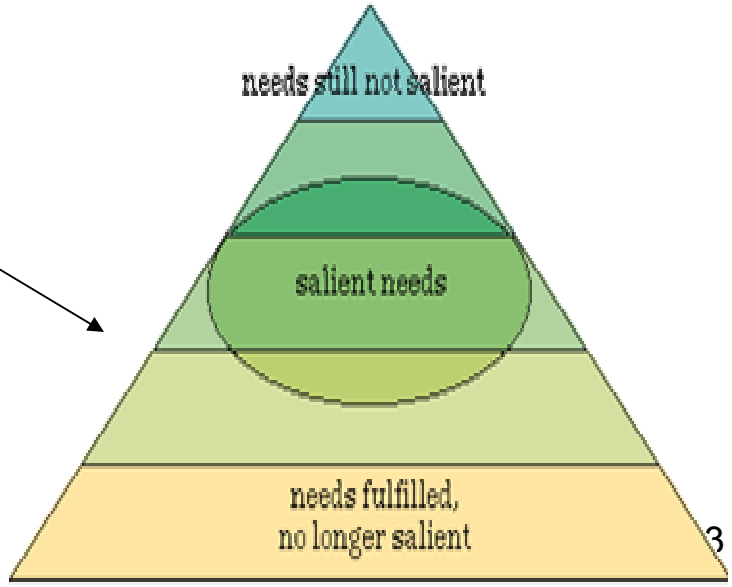
Maslow goes spatial

The basic organization
Of Maslow's theories

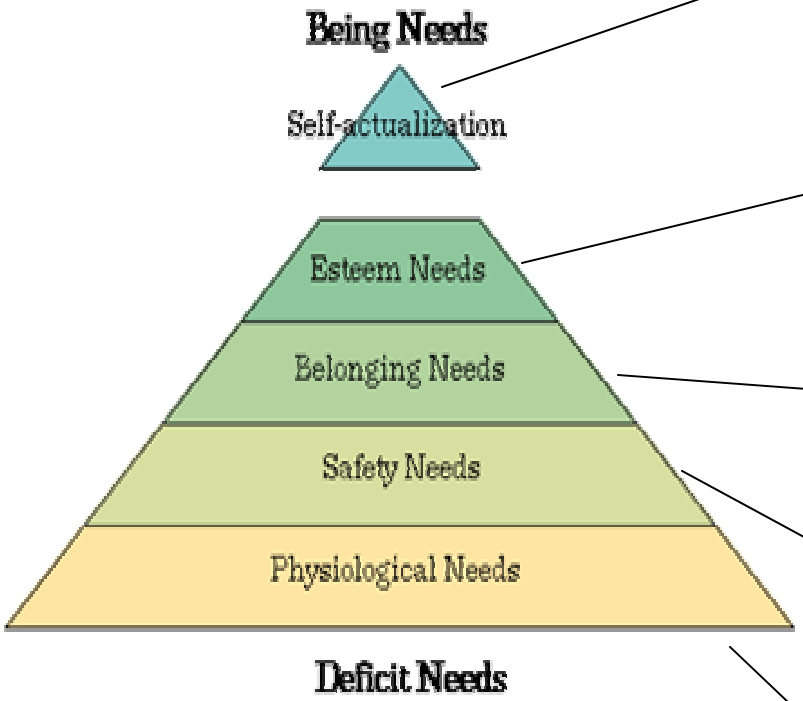




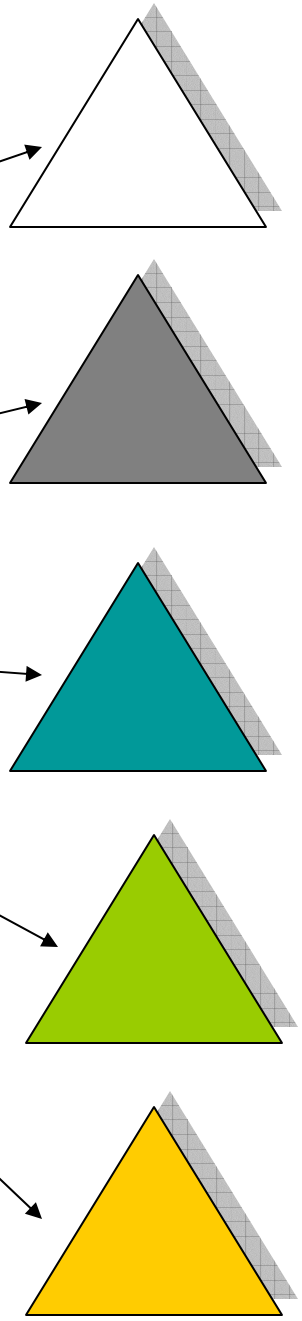
Variables



Maslow's theory in the spatial sense
Regards the exchange of needs based
On a model of continuous situational
Immersion in spatial environments.



Each element is assigned a channel,
wave length/frequency



SELF ACTUALIZATION

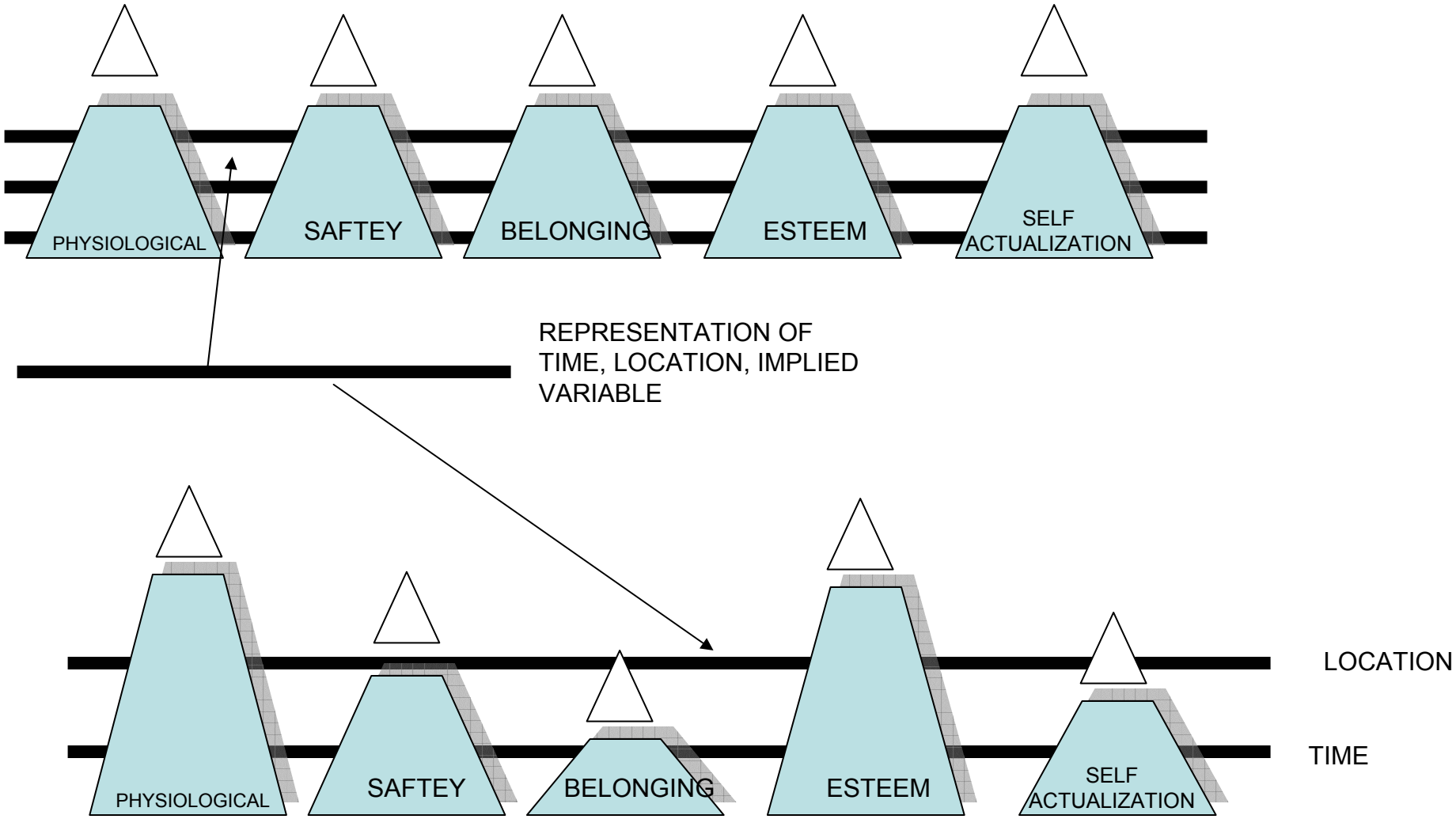
ESTEEM

BELONGING

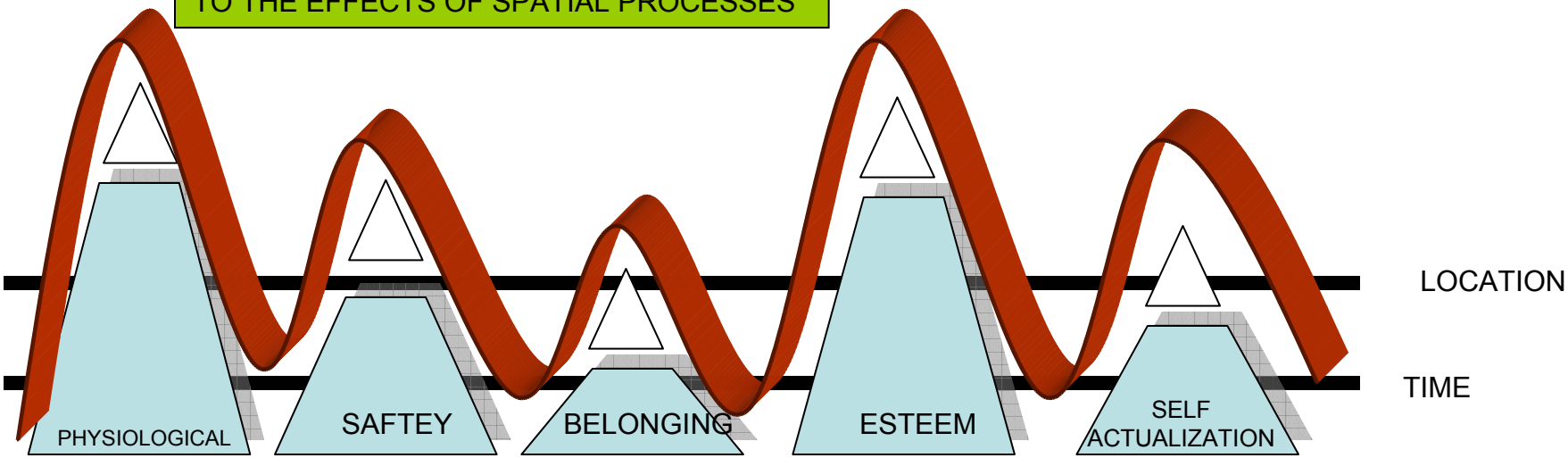
SAFTEY

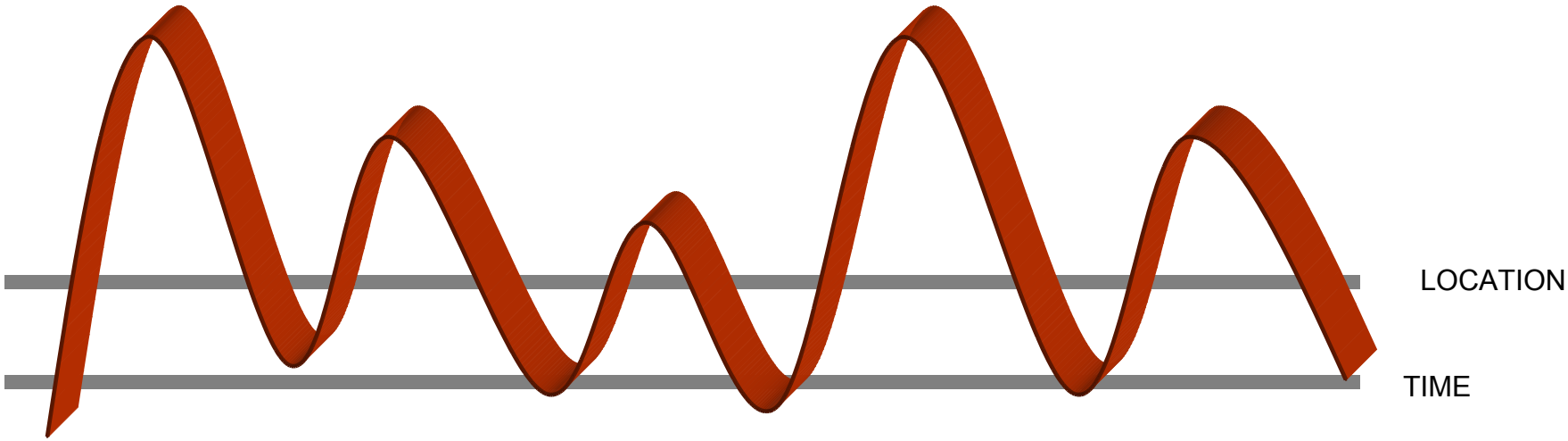
PHYSIOLOGICAL

Each element is assigned a channel, wave length/frequency. These elements are then influenced by agents that are present In the active environment, allowing for fluctuation, instead of rigidity.



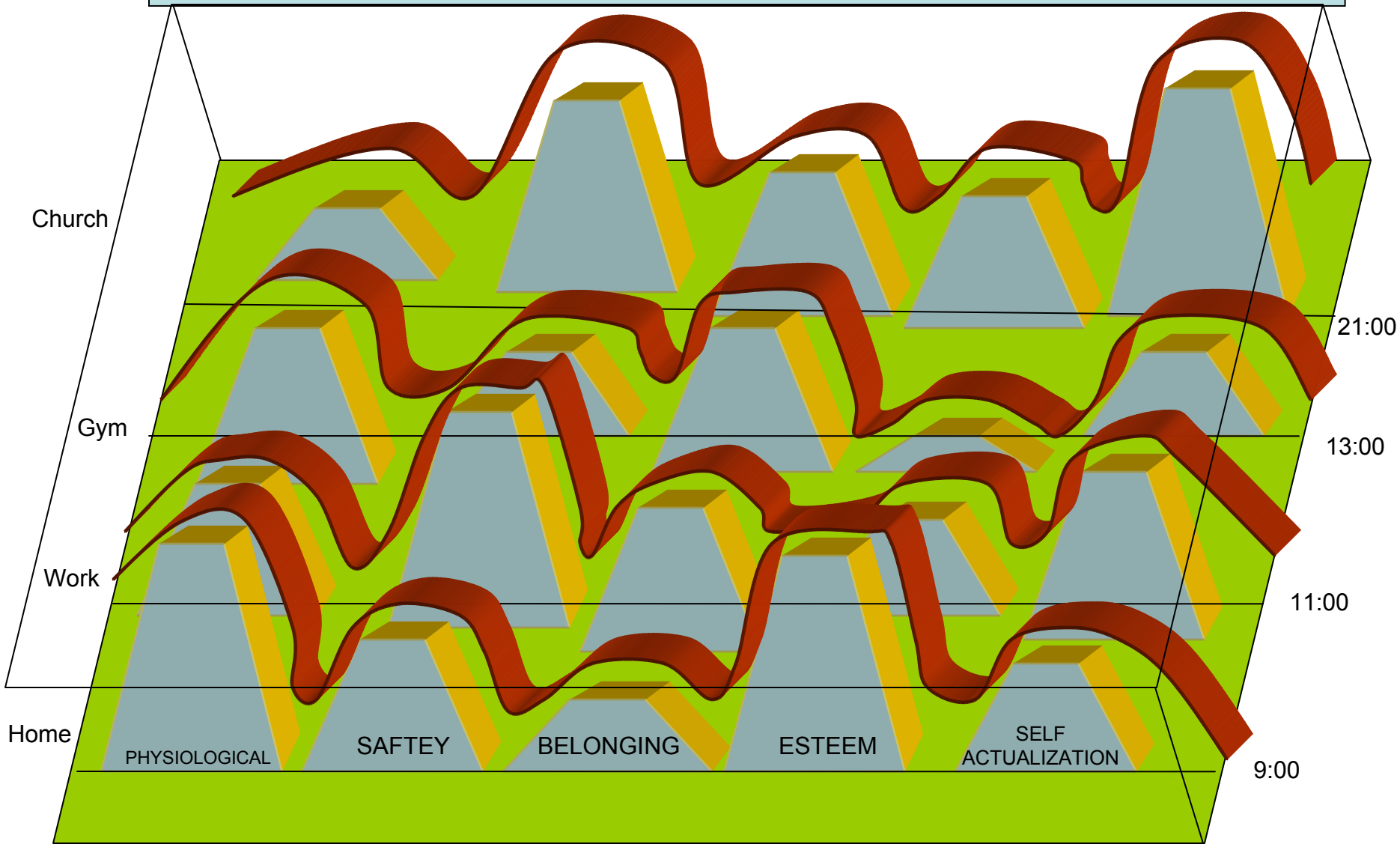
MASLOW'S THEORY AS SPACE IN RELATION TO THE EFFECTS OF SPATIAL PROCESSES



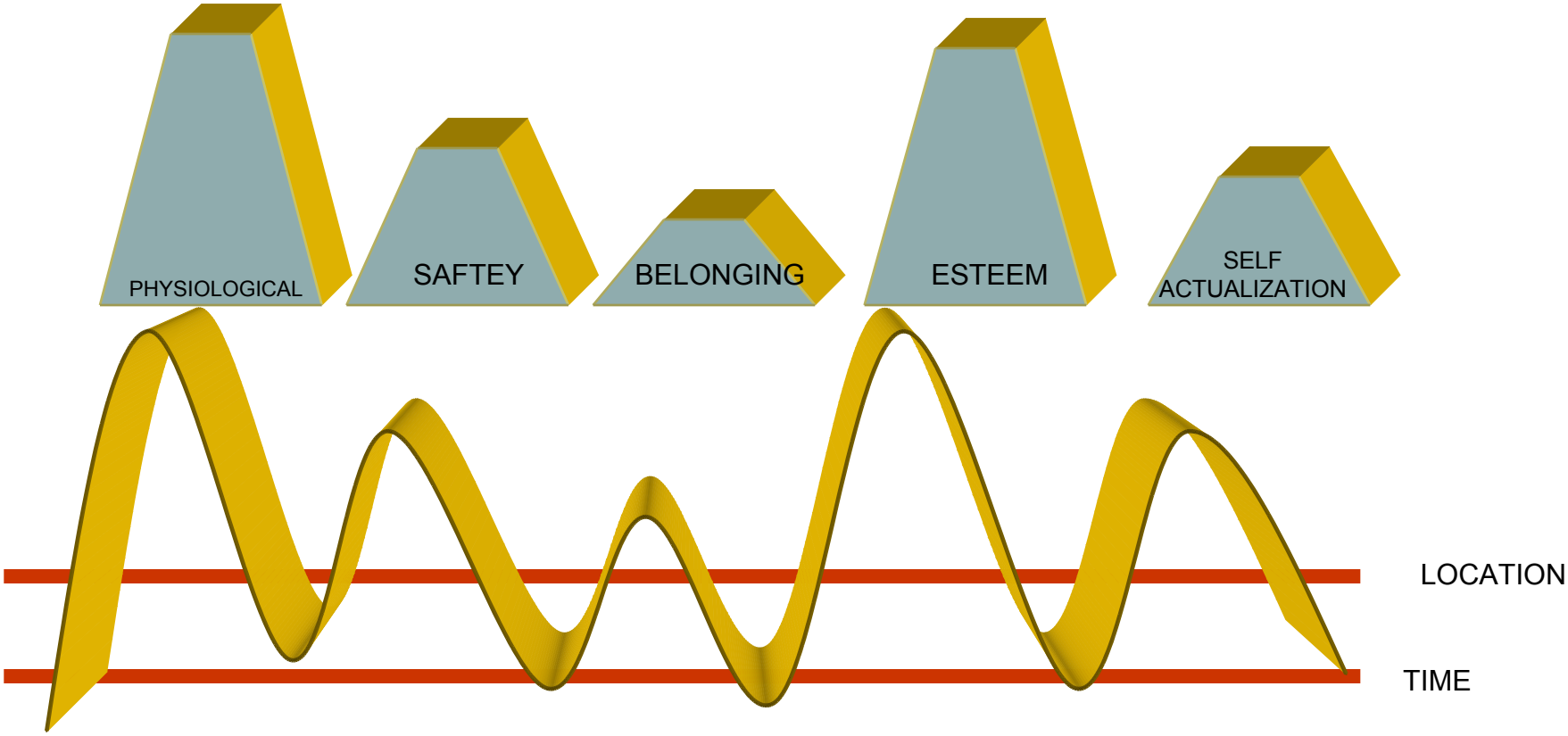


What we now have is a **rhythm**, influence by multiple factors.

What this process allows for is the topological representation of the frequencies in relation to implied variables In spatial environments



Represents the radial familiar to the given subject

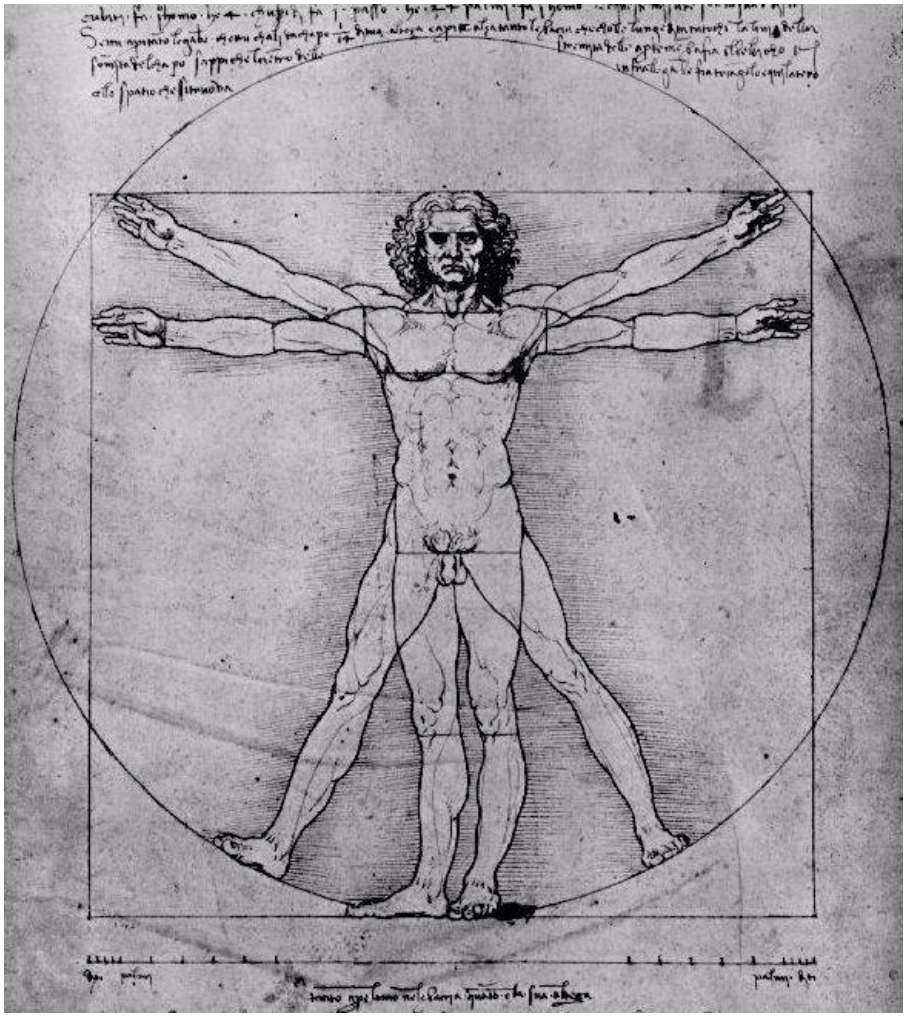


The end result is possibility for the controlled manipulation of frequencies, a virtual equalizer, allowing for the unification of several applications. Quantum thought, marketing, the effects of causation in controlled environments, where degrees of freedom and probability are reduced to the parameters of a subjects radial familiar.

CONSRTUCTIVE REALISM ⟷ FREE WILL

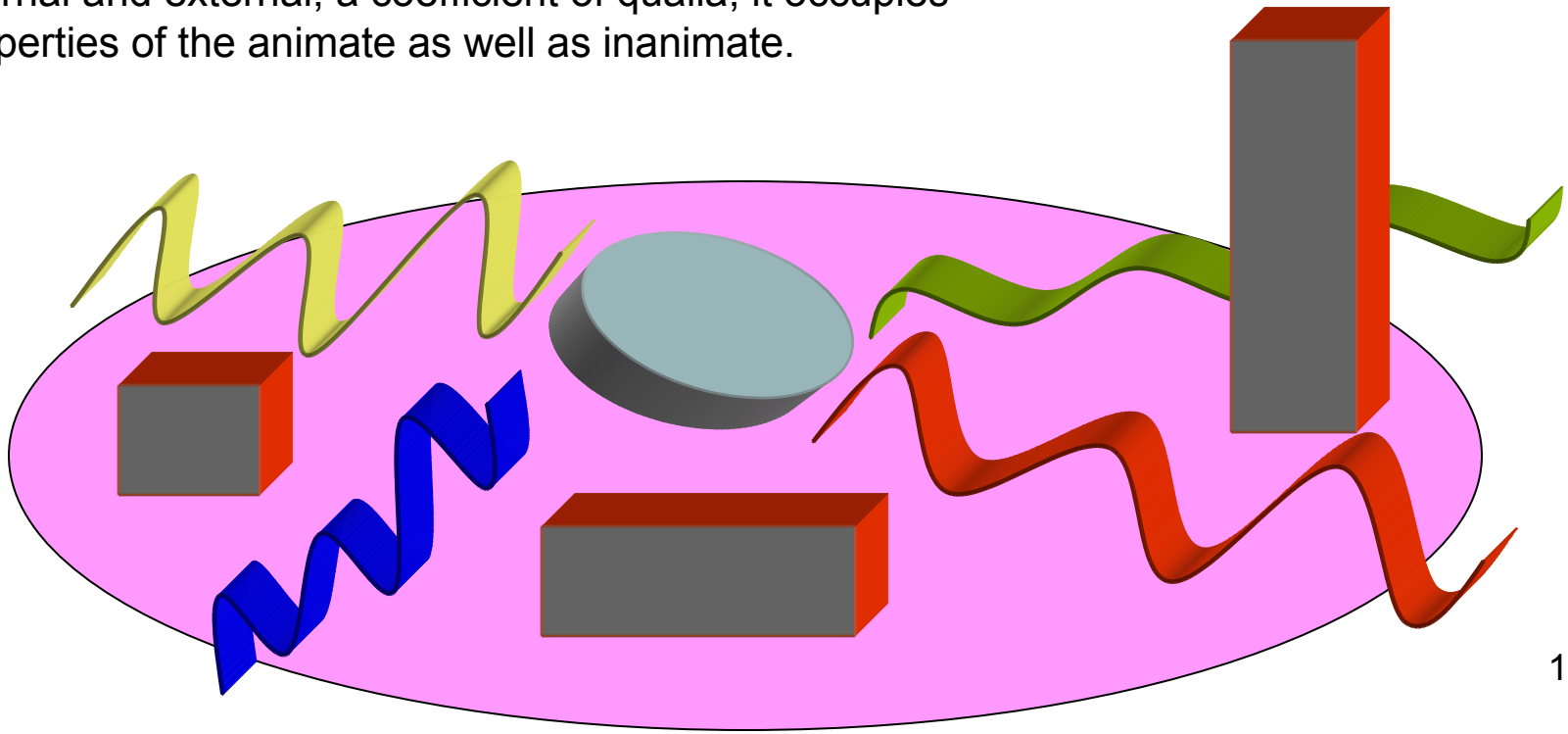
Appendix B

Geospatial economics: What is Mana?

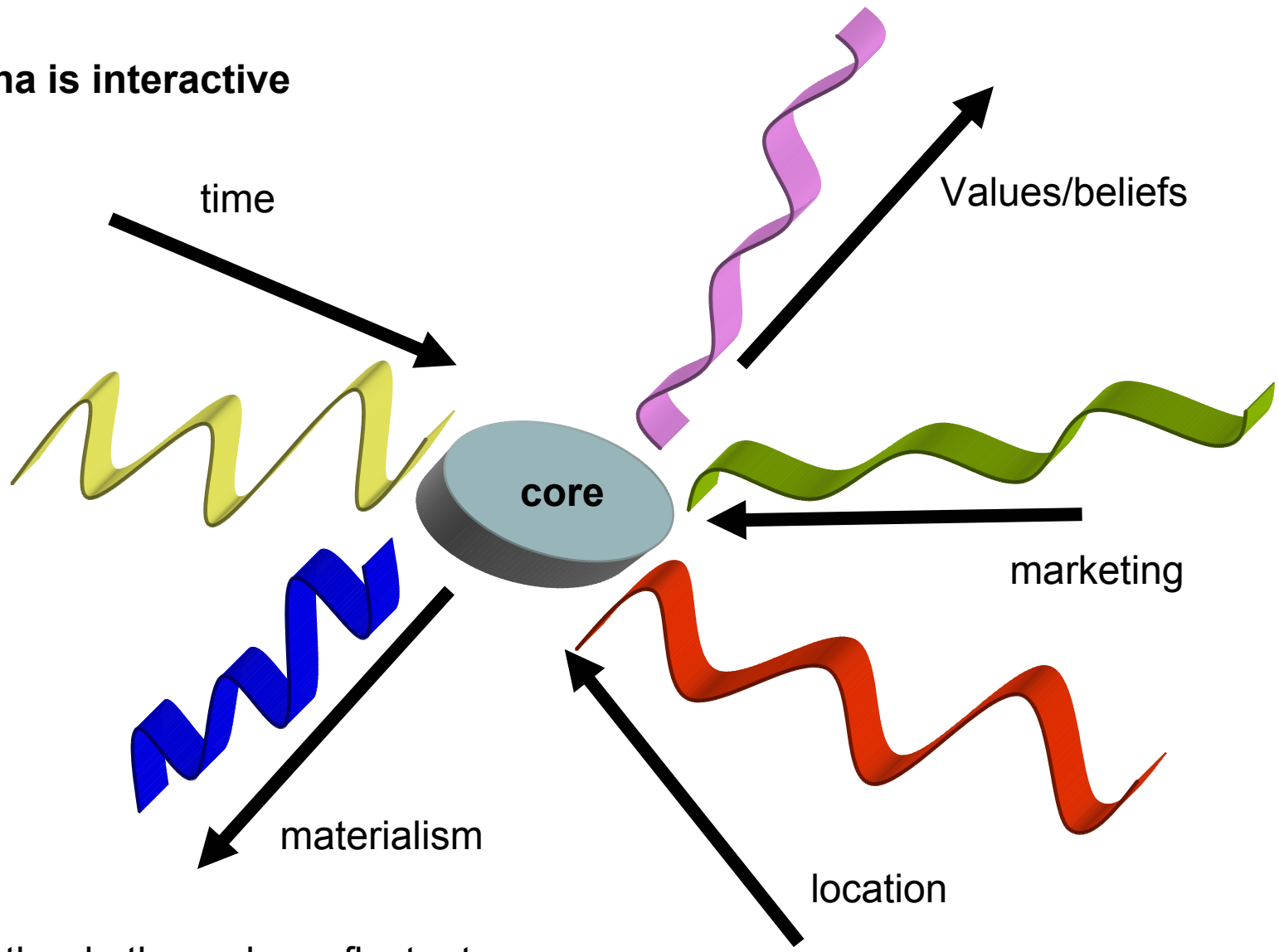


Mana – Among Pacific islanders, the supernatural power or force that works through a person or an inanimate object.

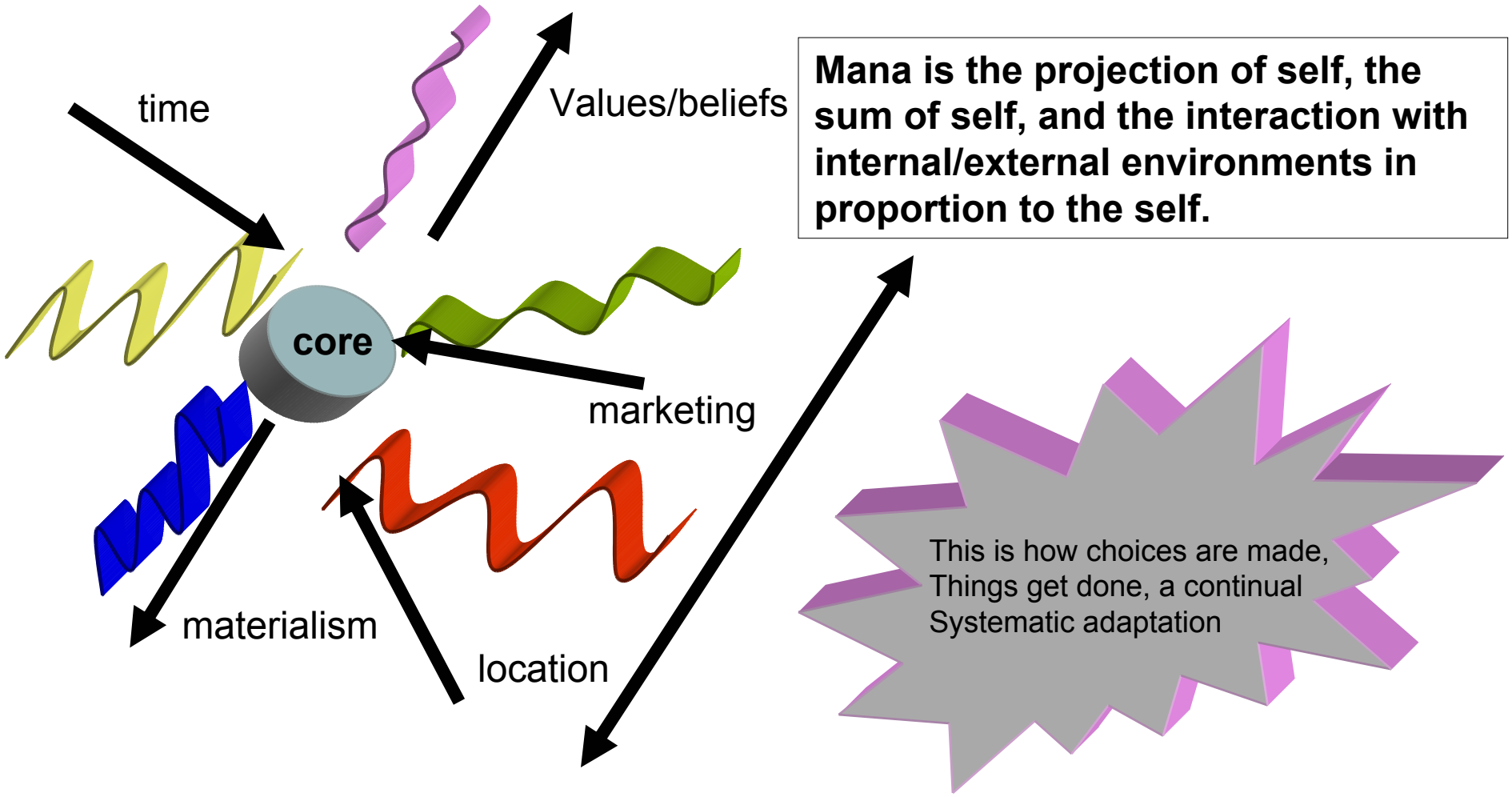
For the purpose of this research "**Mana**" is equated to residual/active presence and or an impression that works with/through an individual /object, in relation to physiological makeup and external environments. This integration of coupled systematics is the result of qualitative weights and the rhythm analysis of fluid open systems. Mana is interactive with the internal and external, a coefficient of qualia, it occupies properties of the animate as well as inanimate.



Mana is interactive



All of the rhythms above fluctuate
In relation to the core mana

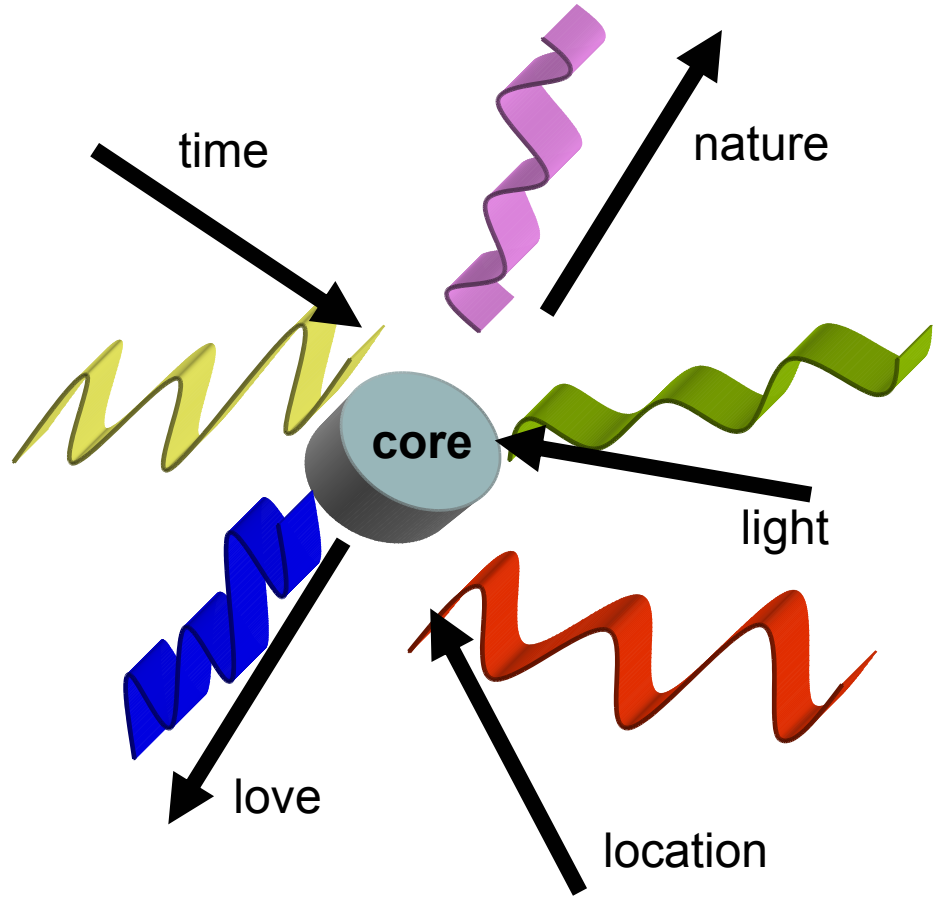


Mana is the projection of self, the sum of self, and the interaction with internal/external environments in proportion to the self.

<u>Qualitative weight</u>
Is the principle of how we place importance on categorical subjective stimuli in operational environments, in relation to the core at any given time.

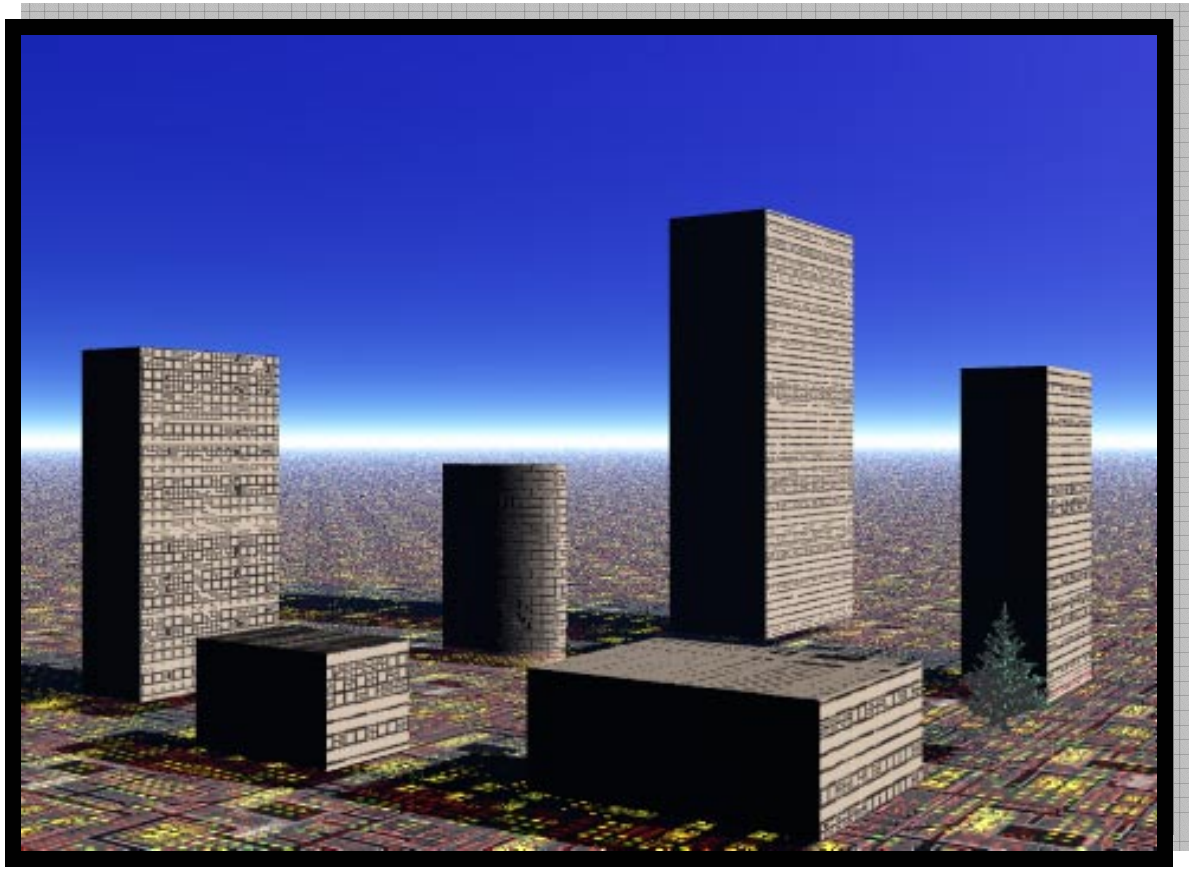
It is the accumulation of physiological phenomena in organisms and displaced in several forms, thought/beliefs, material/physical representation, every aspect which is perceived as being. Everything that exists even thoughts are "beings" and as a result possess mana. Fundamentally mana is the projection of qualia, the overall underlying influence in cognition.

The redness of red
Is qualia. (Mogi 2004)
The perception and
Interaction of this qualia
Is mana.

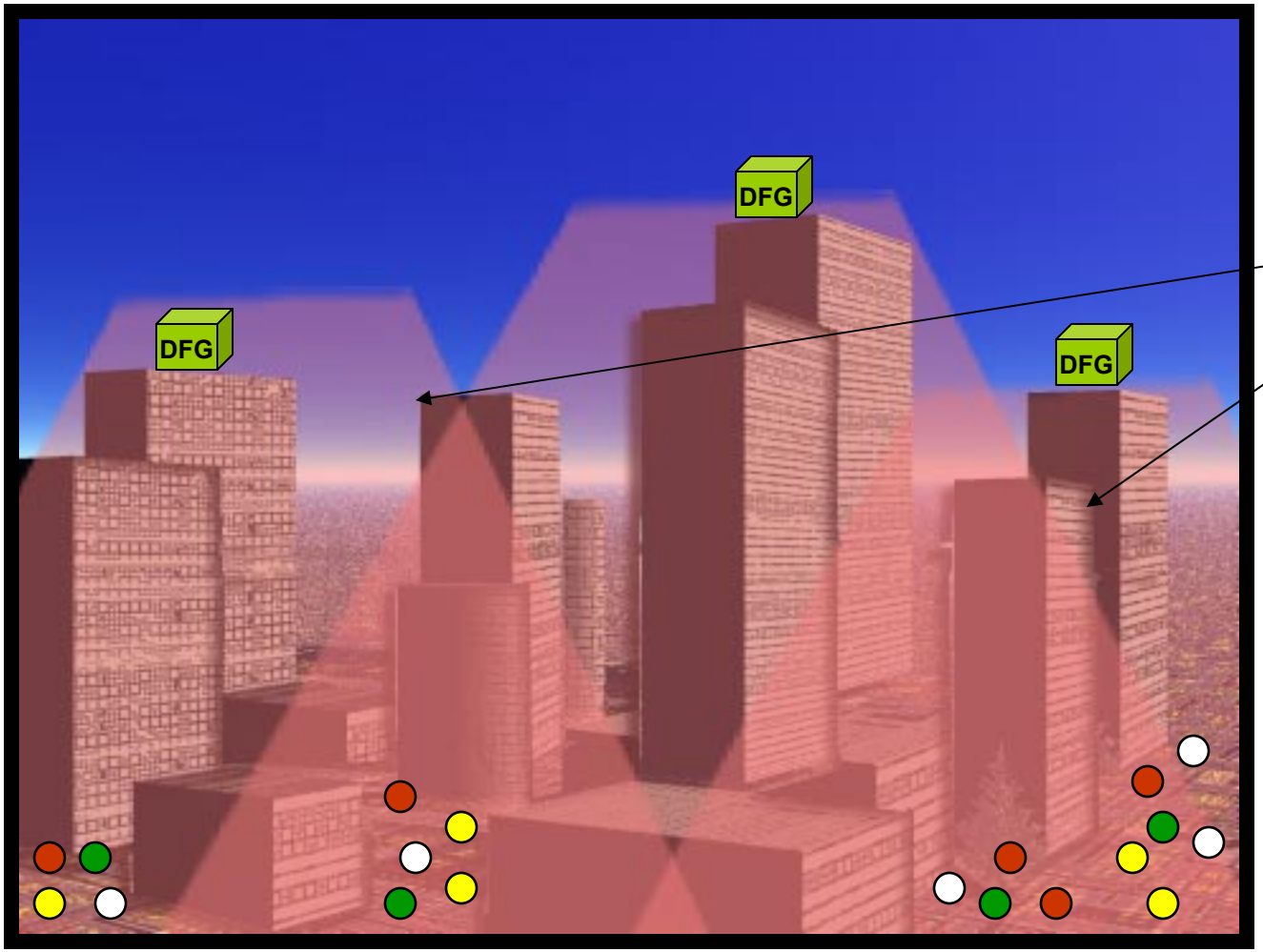


Appendix C

The birth of immersive landscapes



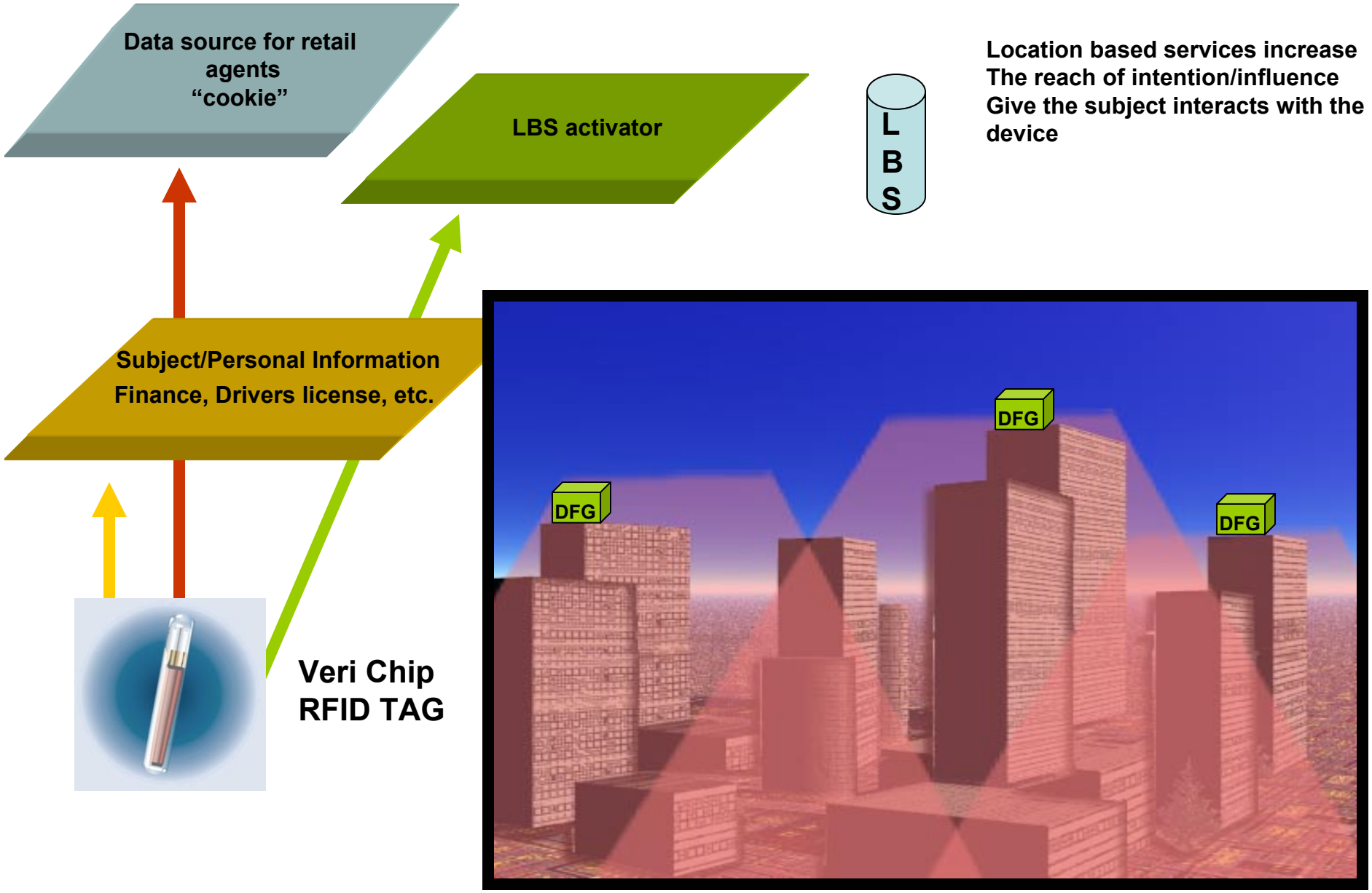
The birth of immersive landscapes



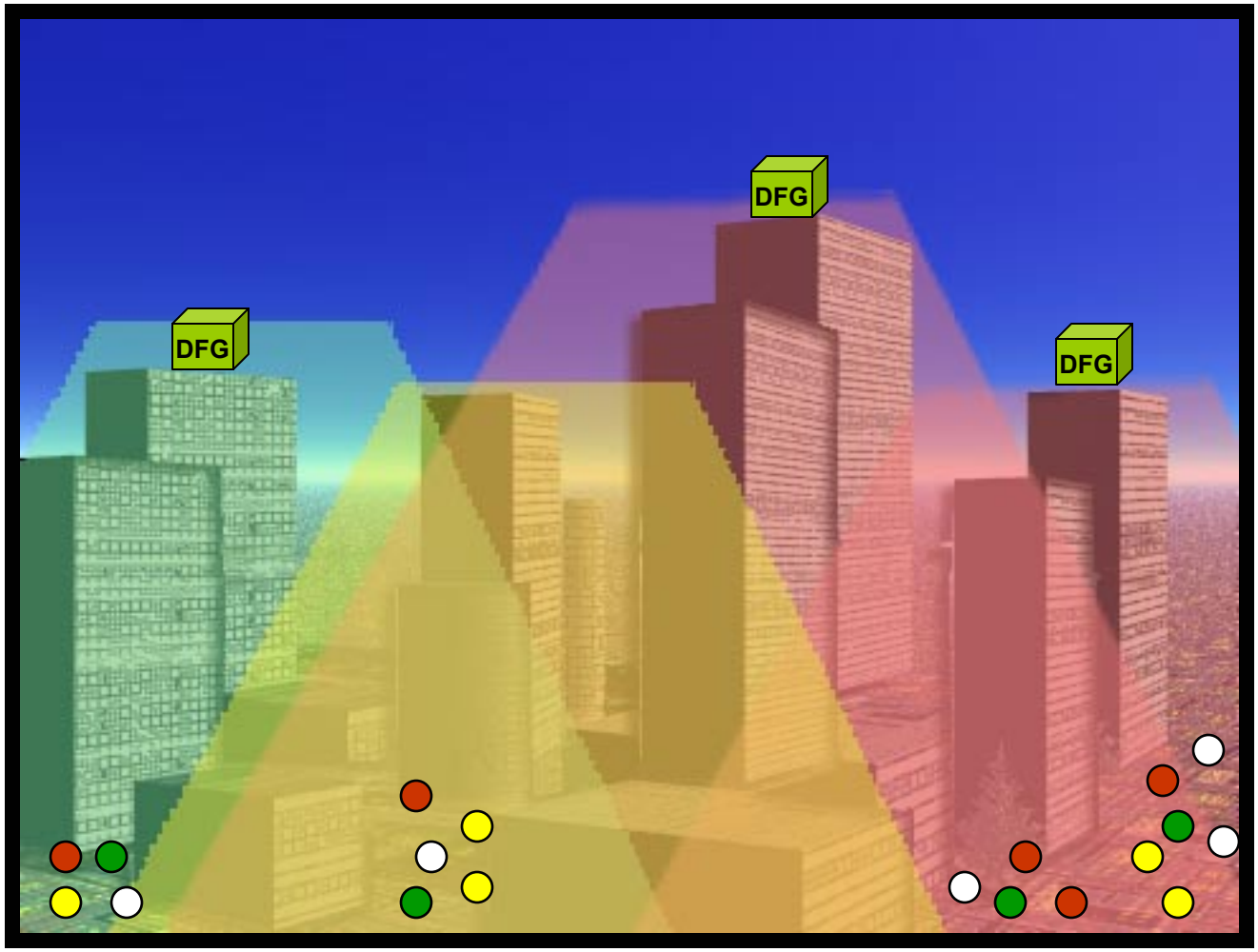
Data Field generators
Are the foundation for
The transaction of data
In space

Proximity provides redundant
Coverage allowing for higher
Transfer of data. Traffic lights,
Road signs, trees, are all sources
For the transaction of data

Data Field generators
Are not passive in the future,
They are not subject to stationary
Placement, but are embedded
In devices and objects creating
Fields/networks in relation to
Location.

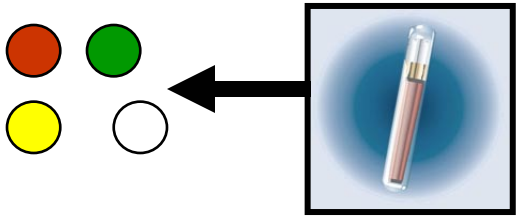

Data source for retail agents
“cookie”
LBS activator
L
B
S
Location based services increase
The reach of intention/influence
Give the subject interacts with the device
Subject/Personal Information
Finance, Drivers license, etc.
DFG
DFG
DFG
Veri Chip
RFID TAG

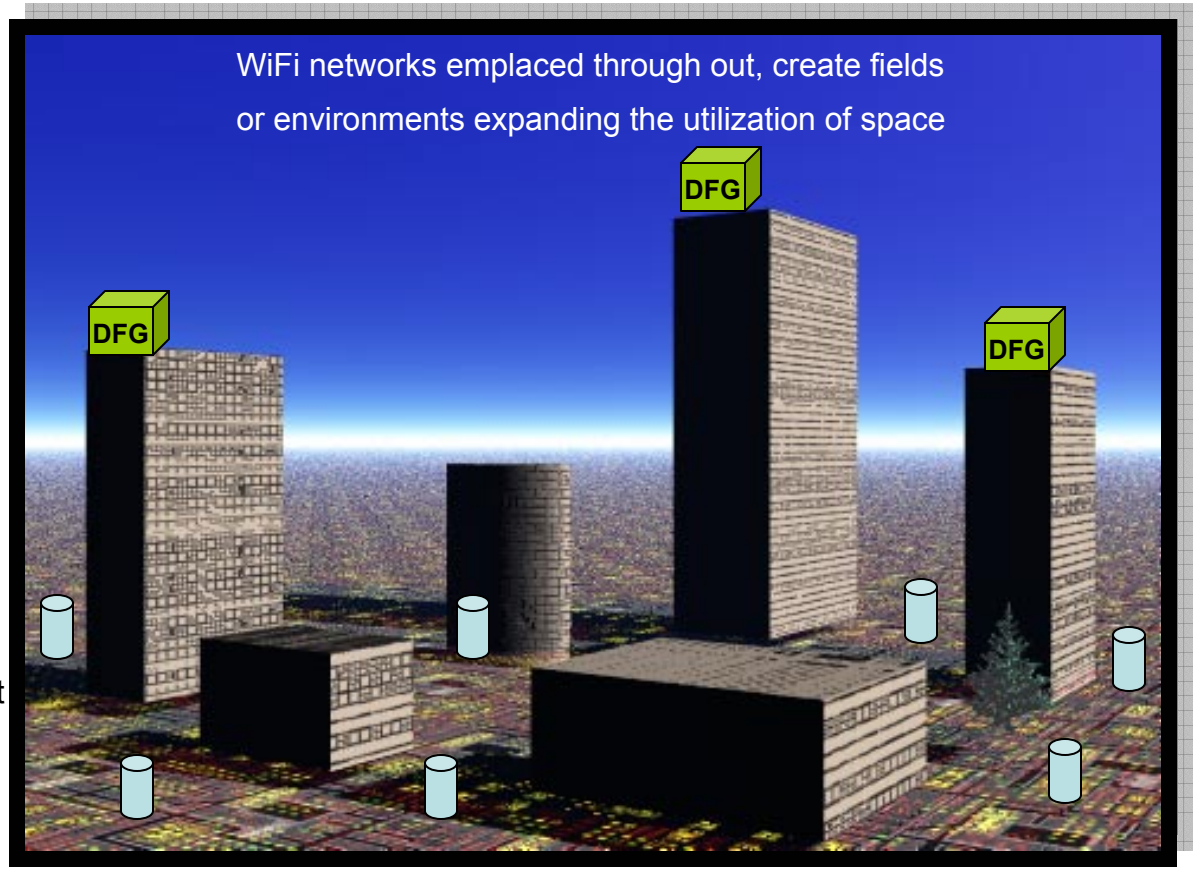
Track Via Movement- RFID allows for the ability to track the subjects movements in the real world, when used in combination With LBS the subject is afforded opportunities based on his occupation of space. The subjects location is constantly updated by His interaction within space. LBS act as relays not only for the transmission of data to the subject, but also act as GPS waypoints Allowing for triangulation and continuous representation in the virtual world.



Tracking devices create the network, which relays data across the spectrum.

RFID in every facet of the physical environment, cars, clothes, watches, Phones. People.





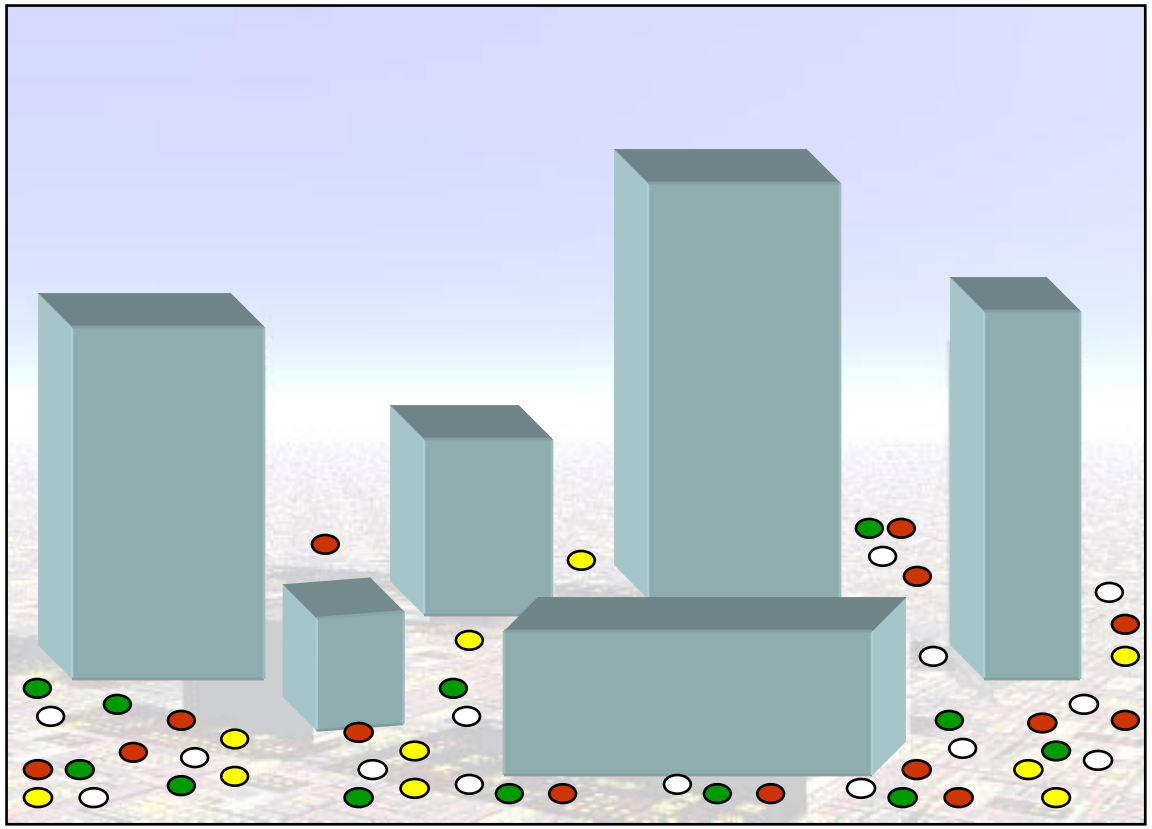
Data is compiled
In visual quantifiable
Formats, allowing
For the management
Of information.

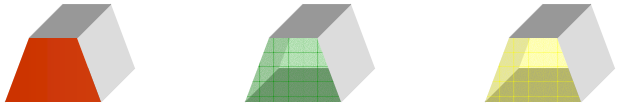
Devices interact
with environs in
Relation to variable
Inputs/outputs

Subjects interact
with environs

Devices recognize
Individuals in relation to
Physical and virtual
environments

Virtual representation of the physical world





Data fields represent separate topologies, which can be analyzed based on Intent. I.E. commerce, entertainment, municipal