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Knowledge Construction from Psychoanalytic and Motivation Theories to Software Design and Practice

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Abstract: ***This paper traces the pathways to comprehend and solve problems leading to optimal solutions for constructing knowledge to solve most software-based problems (i.e., force the computer systems to find intermediate solutions and link the steps to get to the final goal(s)). Having defined the goal, the methodology is generic and modifiable to find the modular blocks of available routines or application programs (Apps) that are dependable and proven. The steps are to continue the processes in non-real-time and verify the validity of each step, mini-step, micro step continuously till the procedures at every modular step is evident, reviewed, validated, and constructed. The approach is practical in every discipline and every practice from making ant-killers or building flying objects, cooking a meal or building large corporations. However, a certain amount of discipline and information gathering becomes necessary such that the subsidiary steps, programs steps can be duplicated, refined and recreated and implemented in the final solution of the entire problem. In reality, these steps are initial. but their modularization and integration are not. At a noun-object (NO) level this becomes a roadblock, a frustration, and/or defeatist, especially when the problems are large, unresolved and/or only tentative. The progress to finding a satisfactory solution becomes indefinite. Profile and personal attributes of the problem solver influence the overall solution. When solutions are circumstantial, probabilistic, hearsay, and/or incomplete the effort appears to frustrate the unprepared, uneducated and the meek. The discipline, the mathematics, and the integrity of mind conceive through the fragmented parts of the solution and put them together as one graceful solution and an invention result as a creation if steps in the solution are novel. or as a plain old solution. A variety possible solutions from being (a) a breakthroughs (entirely original at every step), (b) an invention (if some of the steps are original), (c) an engineering solution (if the steps are simply aggregated) with appropriate interfaces in the steps, (d) a computer aided design (CAD) or (if the steps or their organizations are performed by computers or simply an Application does the seeking and searching of intermediatory steps is done by computers and communication network addressing within knowledge bases. These steps are presented in detail in Reference [1]. In the 21st Century since "Knowledge" has expanded beyond average comprehension of a college graduate, only breakthroughs (a), inventions; (b); and (c); (d), and (e) have survived the steps in Figure 2. This Figure indicates the state of Mind in a steady state to satisfy the inner needs of Self and Family to live a private and personal life. The responsibilities to society are extraneous and added from time to time as shown in Figure 2. The mind performs these duties a through h_x on a daily, weekly, etc., time-frame to live one a time frame from t to another $T+T(_{i,j,k,}$ ....etc.). Maturity emerges and responsibilities become adaptive but firmly placed in their own time-slots. Unwritten oscillations hide behind these shifts because of human populations and cultures, and these oscillation are far from being steady, predictable, or sinusoidal; human nature is cast in an unsteady and unpredictable format at best, and knowledge and social systems also follow the rhythms.***

Keywords: Oscillations of behavior, knowledge and behavior, uncertainty in life, a fact of life, pyramids of behavior, in all life forms

1. Introduction

This paper is written for the ultimate human users who deploy the Internet and its use in everyday life. Life is for people, by the people and written with serving their best interests. Helping network owners is not the purpose[1] nor limiting Information and Knowledge from users.

The technical content of this paper covers long spans of time from Freud (1890s) to the current Knowledge Sciences (2025). It a request to have patience and due diligence (especially Section IV) to dig in the coverage and contents. The contents do not carry computer and management sciences till the computer architecture and network sciences are intertwined with iterative cyclic time domain practice of affirming and reaffirming the prior steps. This methodology is common in the design of elaborate programs and applications (such as accounting, matrix analysis, vector algebra, metrialogical science, etc.).

I.1 Classic Contribution of Freud

Sigmund Freud (1856-1939), was an Austrian neurologist [2] and an early founder of psychoanalysis. He discovered a method for treating mental illness and wrote about the theory of human behavior that is centered on the unconscious mind. Psychology was introduced as a scientific tool to comprehend human behavior as a three level (id, ego, and superego) pyramid that characterized behavior and personality. An expectation of

1 It is known well that commercial deployment of network services has generated huge fortunes all over the world. The revenues and profits come from the people held captive in society in their ignorance of how cheap Internet can be made available for the people, by the people. Making it available the as freely published news items (instead of hiding company secrets) of vendor services, their costs, their revenues and their costs would relieve the users of the high price they pay Teaching this information as a science like arithmetic dealing with dollars and cents would one of first steps like setting thermosets in winter. Knowledge in this direction exists; it is making it generally unavailable that has people is making the rich billionaires in Government assisted Knowledge Freeze!

behavior of the human types was partially explained as a feasible treatment.

1.2 Abraham Maslow Theory of Motivation

Abraham Maslow (1908 –1970) was an American psychologist [3] wrote about a five level hierarchy-of-needs, a theory of psychological health predicated on fulfilling innate human needs in priority, culminating in self-actualization. Maslow was a psychology professor at Cornell University, Brooklyn College, Brandeis University, School for Social Research, and Columbia University. He stressed the importance of focusing on the positive qualities in people, as opposed to treating them as a "bag of symptoms".

1.3 Knoweldge Age and A Scientific Basis

Knowledge and science have a place in predicting the behavior of Noun Objects (NO's; humans, groups, corporations, Nations, societies, etc.,). Maslow's motivation is not always good and praiseworthy, gardens do not always flower; counter forces also exist to control movement of objects. The resulting movement has velocity (speed and direction). Absolutely zero velocity predicts the lifelessness of objects. Newtons equations (with or without Einstein's corrections) thus prevail for an object to "be" any scientific object of any consideration. Such being the consideration, scientific basis becomes applicable to render objects to be useful in animate and inanimate circumstances. The mass, resistance and friction, viscosity, fluidity, elasticity of shape all enter the equations for the overall change and rate of change of momentum of "point" objects and solid objects in translatory, and in both rotational changes of momentum. Gravitational, natural, and artificial forces abide these (rather) simple sets of equations of motion of objects.

Electrons, protons, neutrons also follow the laws of nuclear physics. Photons and subatomic bodies have their own specialized rules that govern their movements. Items, large or small, microscopic or macroscopic, nuclear or cosmic adhere to their specific laws. Artificial and natural rules of intelligence modify these laws incrementally and alter the behavior of objects accordingly.

1.3.1 An Intermediary Path for Life Noun Objects

Life Noun Objects **(LNO's)** bestowed with greater adaptation and intelligence, have the flexibility to suit the environment, application, and time for enactment of Human Verb Function **(HVF's)** by particular **(LNO's)** bring a certain number of options based on discretion, prior experience and expertise. The specialized life knowledge module (LKM) now becomes

(a) LKM = (LNO) * (L*F), i.e., a life NO performs an action on another lifeless object.
(b) = (LNO) * (L*F), i.e., a life NO performs an action on a live object according to a preset procedure,
(c) = (LNO) * (L*F), i.e., a life NO performs an action on a live object according to a preset procedure to verify a new process,
(d) = (LNO) * (L*F), i.e., a life NO performs a series of actions on a live object to maximize the probability of success.
where **(L*F)** is Life Based Convolution[2].

To accommodate the numerous differences between POCS and human social systems, a possible seven layer software structure (Ai through Hi) is suggested between the inner most layer (at Hi) of mind and the external environment (at Ai) and shown in Figure 01.

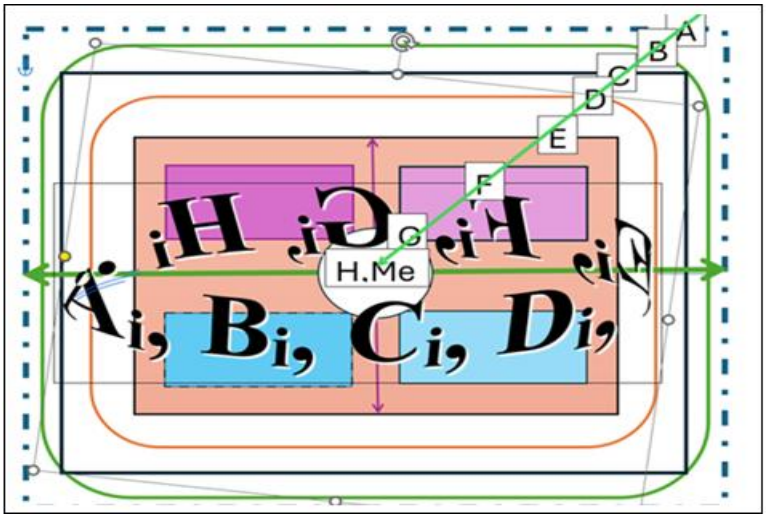

Figure 1: Well Balanced and Well-Planned activities of NO's in the Rectangles in the Figure with emphasis on Knowledge and its Role in Coordinating the Social roles of surrounding objects that hold the Roles and Activities in a quasi stable sate over a period of time.

[2] The processes (a) through (d) are akin to the four types of OPERATION CODES [8] (or OPC's) in Plain Old Computer Systems (POCS), Such freedom is not permitted in machine code for any CPU. The syntax of Machine Instructions (MI's) is firmly enforced in POCS type of computer, but the MI itself can be modified and executed in the CPU provided it complies with syntactic and semantic code of that particular CPU.

In Figure 1, a semi-stable state can exist till the balance shifts between the NO's, their relationships with one another and society in which they exist is also stable. This relation in social conditions is bilateral and voluntary. Either noun object (NO, or no) can terminate, or modify the stability at the boundary D making the relation tenuous. When society and the intentions of the well-placed leaders starts to sway, the localized no's in the environment follow the actions vf's of the leaders. Instability starts in small steps and overtakes the actions (i.e., vf's of) the "hackers. Generally the downward spiral feeds forward based on the self-interest of selfies.

ersonality of the political social elements who respect the rights of humans, populations, and morals are included in this diagram. Inside and outside the rectangle 'D' are the two sides of responsible human beings (good inside and evil outside). Inside holds the conscience of truth, honesty to protect their personal morality to be fair and uphold all the means of deploying good (i.e., +VF's in the society) and also resist the forces of corruption and dishonesty) from the society and its agents from contaminating the contents of rectangle of H and Me; G, F, and E outside of 'C'. the forces of "bad" (the evil) to kill the good inside if C. The battle makes the outside bounds of C and the inside of bounds of D curved, deceptive and opportunistic!! The converse is also existent so the good "sees" the evil as bad and bad "sees" the good as good. Confusion and tyranny can last for indefinite periods of time. Vacillations make societies and cultures go and forth and instability becomes quasi stable in long cycles of dilemma good and evil become the two sides of a tossing coin.

Knowledge machines become impotent to escape the riddles of human conscience. Human intelligence is the piece of bread in the lives of two monkeys and the bread becomes the livelihood for survival of the improvised and also the sick greedy politician trying to multiply their wealth. But being intelligent and interested in learning from hindsight, the hope emerges favoring long time intelligence of the entire species rather than the short-time greed of the selfish. Human intelligence now out plays as the savior of the dumb intelligence of the past.

2. Computer, Information and Knowledge Ages

Most protected semiconductors and optical memories are immune to time if the false intelligence does not override the long-term truth. A converse irony is also true. So, the hope for a more evolved species stays alive, however slow it may be, else the obstructive Artificial Intelligence can trap the evolutionary trapped from evolving. Negative evolution is also a distinctive decay of NO's or VF's. Knowledge ages can freeze for long time spans. In the past jerks in the movement of knowledge (in positive (science, architecture, arts, poetry, etc.) and in negative (e.g., civilizations, works of art, etc.) have been observed.

Figure 2 indicates the state of mind of human, society, culture, etc.) in a steady state to satisfy the inner needs of Self and Family to live a private and personal life. The responsibilities to society are extraneous and added from time to time as shown in Figure 2. In a positive way, mind performs these duties. A through H_x on a daily, weekly, etc. time-frame to live on a time frame from Maturity emerges and responsibilities become adaptive but firmly placed in their own time-slots

Figure 3 depicts a healthy human mind that abides by the laws of psychology, society, and environment. It manages to perform the duties to live successfully and contribute to the welfare of the civilization and improve it. The dashed circle indicates the entire personality of mind, self and society (MS&S) as it has been perceived by George Herbert Mead [4]. With current tools of refined IT, and its constant dynamic improvements, the contributions of Mead have a dramatic impact in the current society.

The Single line (***ABCDEFGH-Me***) in Figure 1 is also shown as an elliptic path (see Capital -Bold-letters) in the subsequent Figures 2, 3, and indicate the continuity in the mind of NO's and the external environment(s). The purpose confirms the mental processes are short lived, continuous and the external environment is relatively more stable. Though the functions in the rectangular boxes are reflective and capture the ongoing processes in the external environment.

Further the mind can attend to many conditions in the environment as indicated by the Subex (*i*), but the subex i can be *i, j, k, …* etc. The mind imitates not only the (Multiple Instruction, Multiple data or) ***MIMD*** architectures of computers and networks, but more than being ***MIMD***, the mind of any NO, it is in reality (***MIMD+MTMR+MIMO)*** (for Multiple Instruction, Multiple data environments); Multiple Time frames, Multiple Realities; Multiple Instruction for Multiple (noun) Objects, etc.,) Machines that represent the functions of complete and complex (human) nature are many machines in one Noun Object! These types of most complex machines do not have architectures yet, the HW, OS, nor ***Multiple Intelligentsia (MI)*** to imitate life many mindful living noun objects (NO's).

Hence the mind-machines fall deadly short in imitating the live mind of creature(s) of evolution and nature. It is our anticipation that such machines may be abused and their control (if it was possible) will kill the intelligent race before killing itself or the networks connecting such machines. History has enough proof from the Chernobyl disaster [5] but Nature has prevailed and some forms of life have returned. In the converse syndrome, appropriately deployed machines may evolve a new species is with superorder to offer a set of grammar for the super ***Multiple Intelligentsia (MI) sustems.***

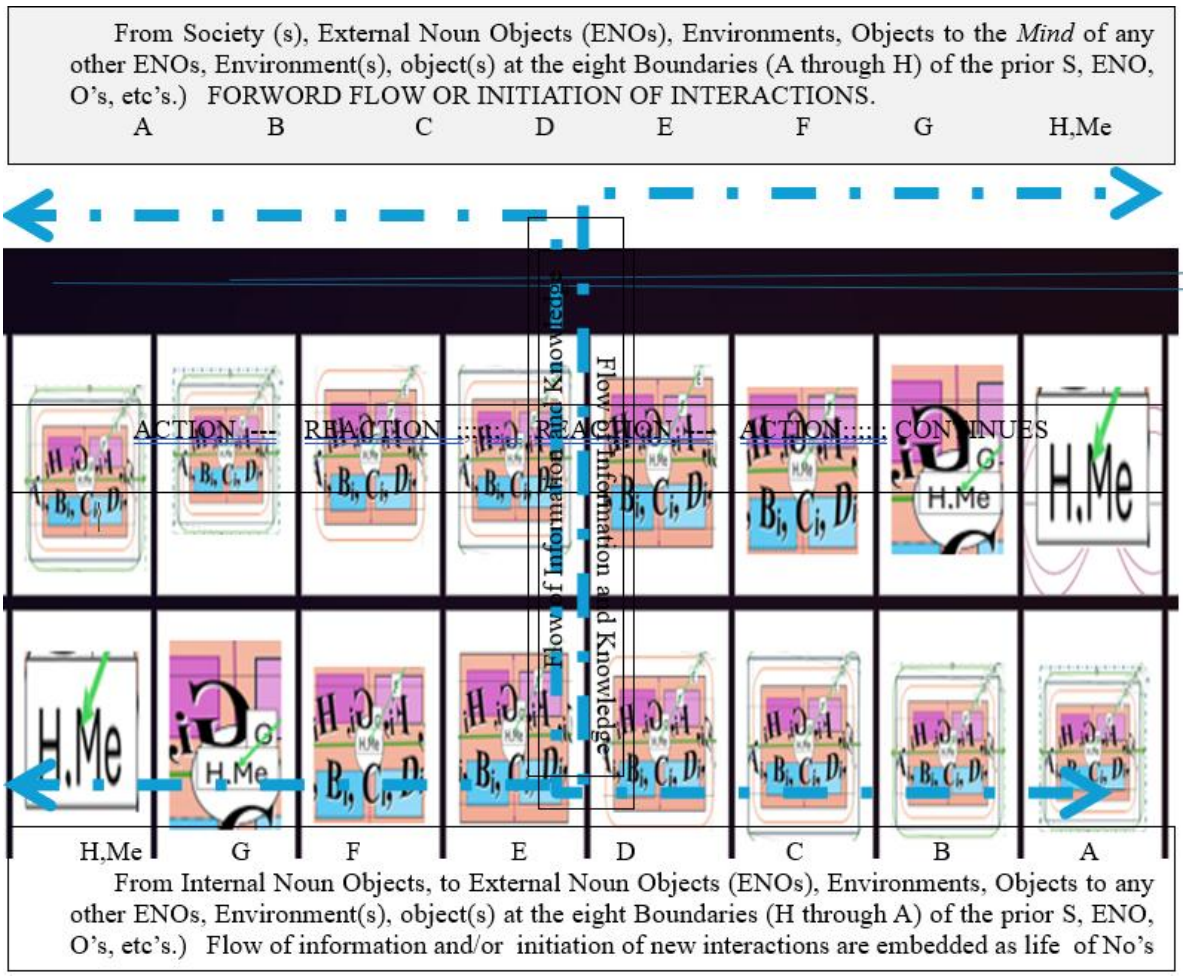

Figure 2: This Figure indicates the state of Mind of a NO in a steady state to satisfy the inner needs of Self and Family boxed from A though C to live a private and personal life. It also shows the demands from the Society D through H to facilitate the innovation and accommodate the NO make and realize the success in the society. The boxes are accessed sequentially or in group depending on the Individual Noun Object to flourish in the environment. The responsibilities to society are extraneous and added from time to time as the innovation gets enhanced. The mind performs the duties A through H_x repeatedly and monitors t

The presentation (Figure 2) in this section opens a premise for thought processes as possibilities but with futuristic science based on current science(s). This venue appears more logical than one in which futuristic science has no hard physical science, no computer or knowledge science, nor mathematics (as we know the in the current times). At least, there will be some continuity rather being discontinuous and reemerging from total darkness and repeating the science and history of evolution.

Figure 3 continued from figure 2, also presents the concept of time in evolution. Nature needs time in cycles, order in sciences, a direction of progress, numerous iterations and iterators make verb functions (VFs or ∑ vf's) to happen. Instantons change(s) to occur on life-noun objects (LNO) in physical or mantel space need infinite energy. This basic law of physics has survived millennia. If appropriate convolutions (*'s) have to occur in an orderly fashion, (i, e., ***no*vf***) then an element of knowledge ***(Δk= no*vf)*** is generated since an action has appropriately occurred by *vf* on *no*: greater time and patience becomes necessary; This is exactly what has been happening from *t=0* since millennia. Hence, the following equations start to follow:

(a) (Δk= no*vf)
(b) (∑Δk= no*vf); (∑Δk= Δno*vf); (Δk∑Δk= Δk ∑Δno*vf); etc.,
(c) (πΔk= no*vf); (πΔk= Δno*vf); (Δkπk= Δk πΔno*vf); etc.,
(d) (π∑Δk= no*vf); (π∑Δk= Δno*vf); (Δkπ∑k= Δk∑ πΔno*vf); etc.,
(e) (π∑Δk= no*vf); (π∑ΔK= Δno*vf); (Δkπ∑KK= Δk∑ πkKKΔno*vf); etc.,
(x) ..... xyz ..... xyz [[[[[..... ///// etc.... etc.....

This series is expandable in many innumerable ways. The operators ∑ and π are commutable. K and k are also expandable in many innumerable ways, depending on the reality and instant in the physical world. The Mind of NO or no's simply follows the real world and many micro or maxi Objects can be constructed and then imitated in reality and stored in the mind as (element(s)) of knowledge.

A new order is thus created in HW, SW, FW, and in networks and stored in memory as a module of memory in machine. Any

such modules or groups thereof are shown in A through H in Figure 3. These may be named as routines, macros, or even as programs and combined to generate large or more modest machine modules.

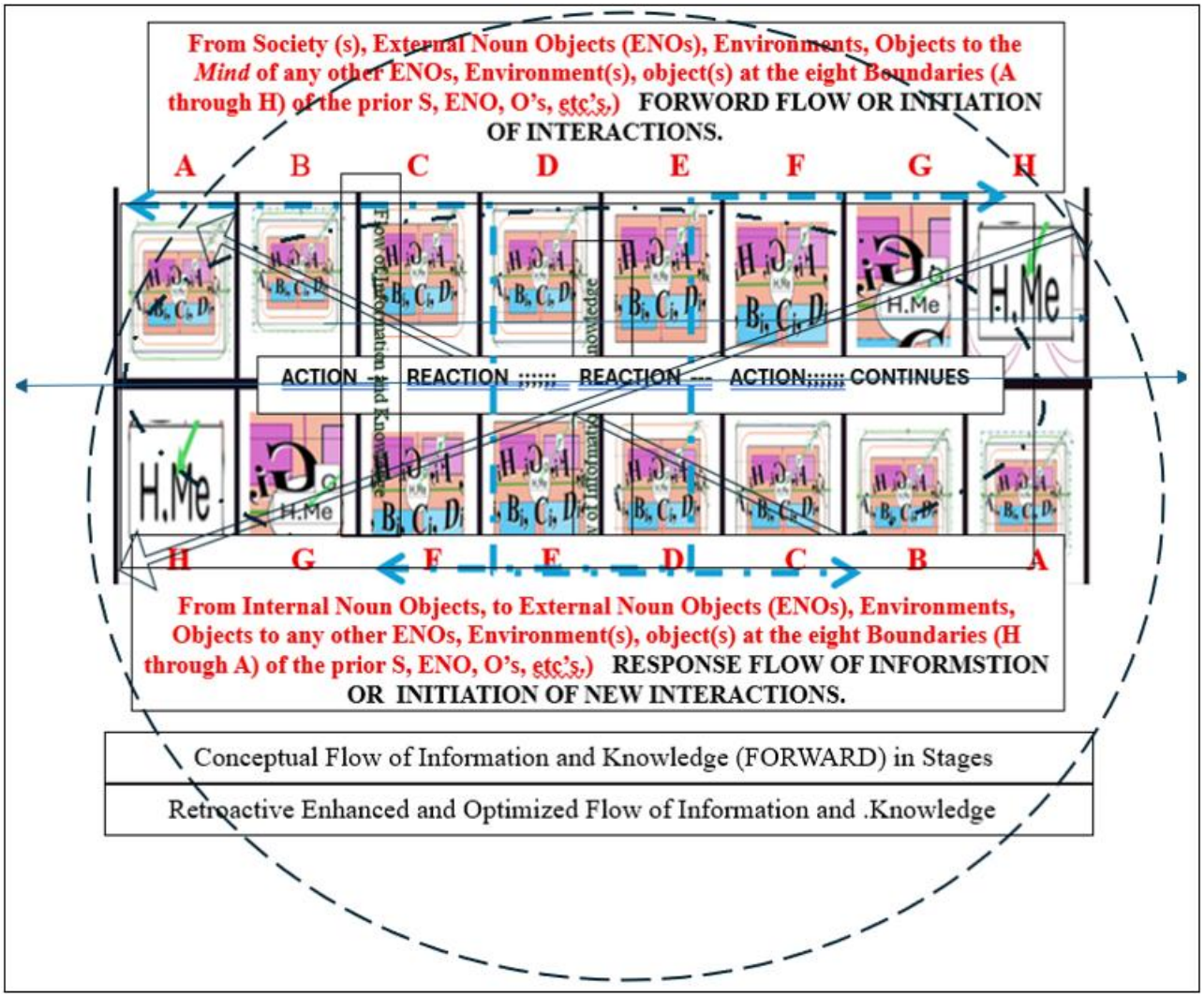

Figure 3: This Figure indicates the state of Mind in a steady state to satisfy the inner needs of self and family to live a private and personal life. The responsibilities to society are extraneous and added from time to time as shown in Figure 2. The mind performs these duties A through H_x on a daily, weekly, etc. time-frame to live on a time frame from *t to* $T+T_{(i,j,k,}$ *....etc.)*. Maturity emerges and responsibilities become adaptive but firmly placed in their own timeslots.

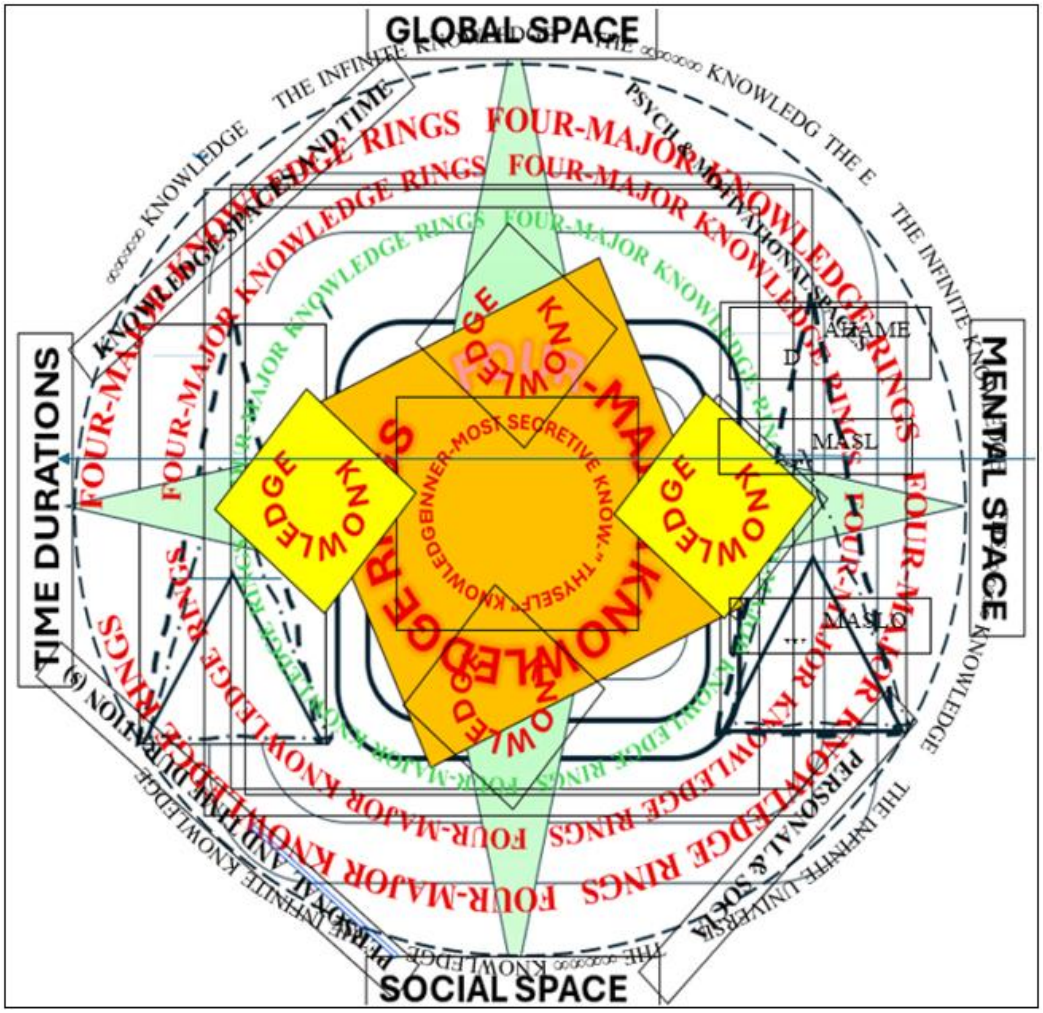

Figure 4: State of a human mind that abides by the laws of psychology, society, and the environment and manages to perform the duties to live successfully to the welfare of the civilization and improve it. The dashed circle indicates the entire personality of Mind, Self and Society (MS&S) perceived by George Herbert Mead [4]

This figure proposed by the author depicts the four major spaces (Global, Mental, Social and Time Spaces) in the human NO and its organization (mind) to connect the social and intellectual preferences of the host NO. Figures 3, 4, and 5 are closely connected and keep MS&S in dynamic quasi equilibrium for given increments of time $'\delta t'$ within larger interval(s) of time 'ΔT'. Life, thus goes on in four dimensions of space, mind, society and time, well connected in healthy minds. The contents of the figure are in tracking functions in the mind of humans. It connects the mind with society to dominate humans with family and friend and concept of LOVE is implicit. It connects the human to living feasible in discharging the duties to earn a living. It connect a human to self Needs of Maslow [3] in arrangement of time in the day, in the seasons, in young age, middle years, old age and life in general. Most importantly connect and synchronizes lives of self, its own mind and everything in the environment. and piety the share and care!!!

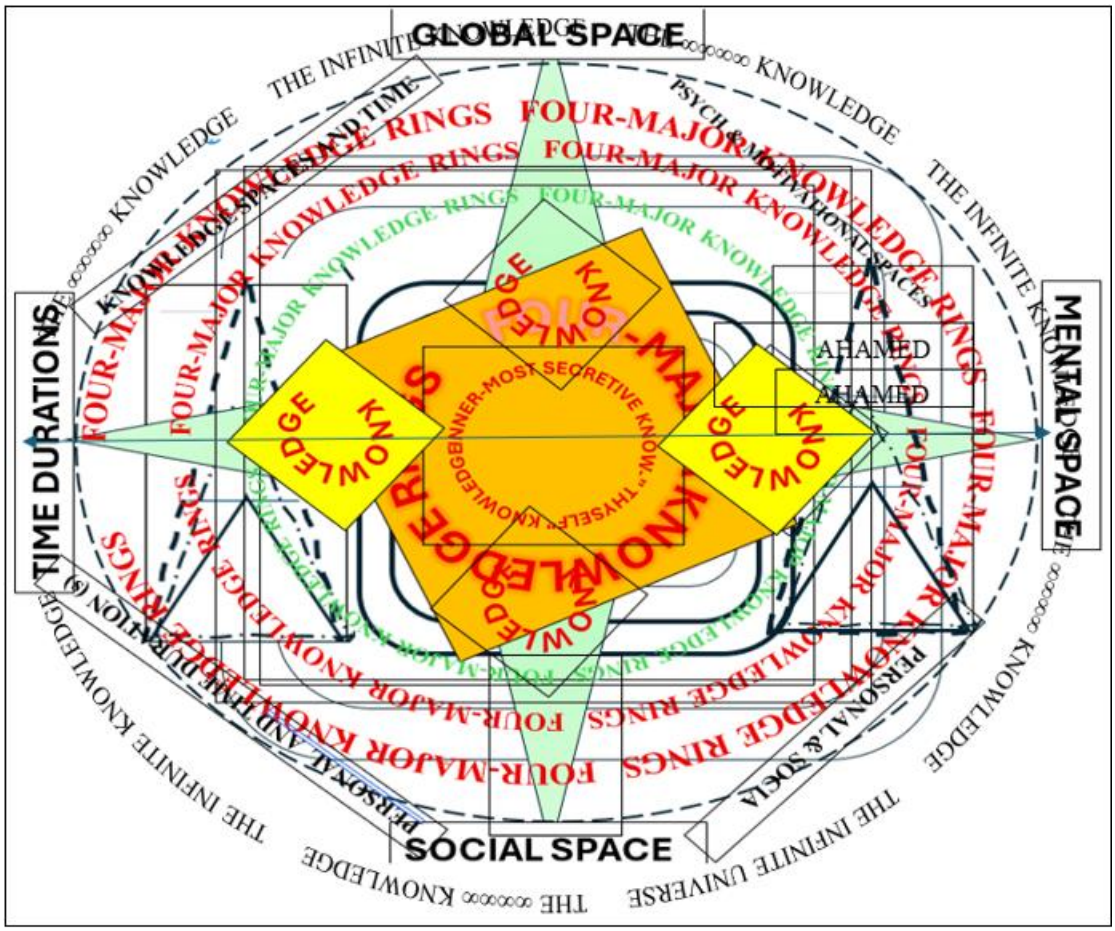

Figure 5: Depiction of a Well-Balanced and Well-Planned activities of NO's in the Rectangles in the Figure with emphasis on Knowledge and its Role in Coordinating the Social roles of surrounding objects that hold the Roles and Activities in a Quasi-stable state over a period of time. This diagram depicts a semi stable state till the balance shifts between the NO's, their relationships will one another and society in which they exist. Personality of the politicians, social elements who respect the rights of humans, populations, and morals are included in this diagram.

In Figures 3, 4, and 5, *time*, and the maturity of the society at that particular instant *'t'* play a decisive role in social and intellectual role in *'δt'* seconds (their own *time-frame* of *'t' and δt'*)). Time domain oscillations, accelerations, and decelerations can result depending on Mental Mass of social noun objects *sno's*). and social force(s) on these noun objects. Mental equivalencies of Newton's Laws of Motion [6] (with or without Einstein's correction for moving social objects can be drawn. Natural Intelligence vastly dominates the applications of Laws of Social Sciences. Artificial intelligence (AI) generally freezes and dies a natural death in these circumstances. The nature of such variation is similar the Laws of Motion or Rotation of Physical Objects. These provide the starting points of Laws of more advanced Mental Objects in Virtual Spaces.

Unfortunately, the writings of Freud and Maslow do not even carry a hint or a Reference to effects of *time* as independent variable element(s) in social science. However, the Books on Knowledge Science's do *(or may*) bring their effect(s) in he broader domain od scientific literature at the boundaries where matter and mind meet.

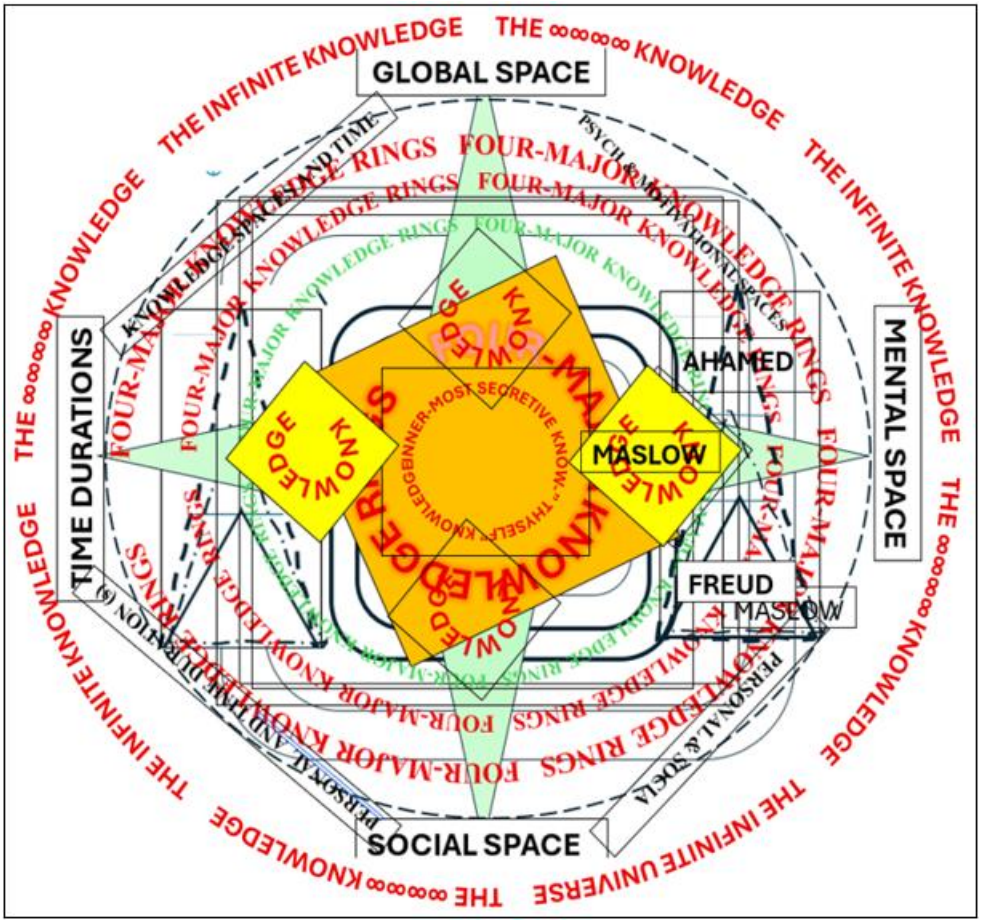

Figure 6: Balanced and Well-Planned activities of (Large (NO's) or small (no's) in the Rectangles in the Figure with emphasis on Knowledge and its Role in Coordinating the Social roles of surrounding objects that hold the Roles and Activities in a Quasi-stable sate over a period of time. This diagram a semi stable state till the balance shifts between the NO's, their relationships will one another and society in which they exist. Personality of the politicians, social elements who respect the rights of humans, populations, and morals are included in this diagram.

All the *ΔK's, ΔK's* and resulting *ΔK's* get disorganized, chaotic, illogical, illogicsl, absurd, and perhaps illdefined (as in case a new type of mental sickness). This could be sick, mad, incoherent, etc., mind and the state would be a cause of "epillsy of the mind". The basis of conflicting NO's and * and/or NO, * and VF should be investigated via computer solutions of hidden realities of some species in nature and more research would be in order. A new basis of social language should be written to tackle new generation of social language computers, switches, logical gates, networks becomes imminent to reduce conflict. Chaos and conflict can be inflictd in societies. By the same token harmony and peace could also be introduced. Computers, networks can play (undesirable) psychological games with human, the ensuing no's (e.g., their offsprings and relatives) for individuals. On a broader scale, these unbalanced state, the political leaders, expoiltors, and the Military industrial complexixex of 1960's and 1970's, such disturbances can kill the initiative of races of cultures to evolve into a more advanced civilizations.

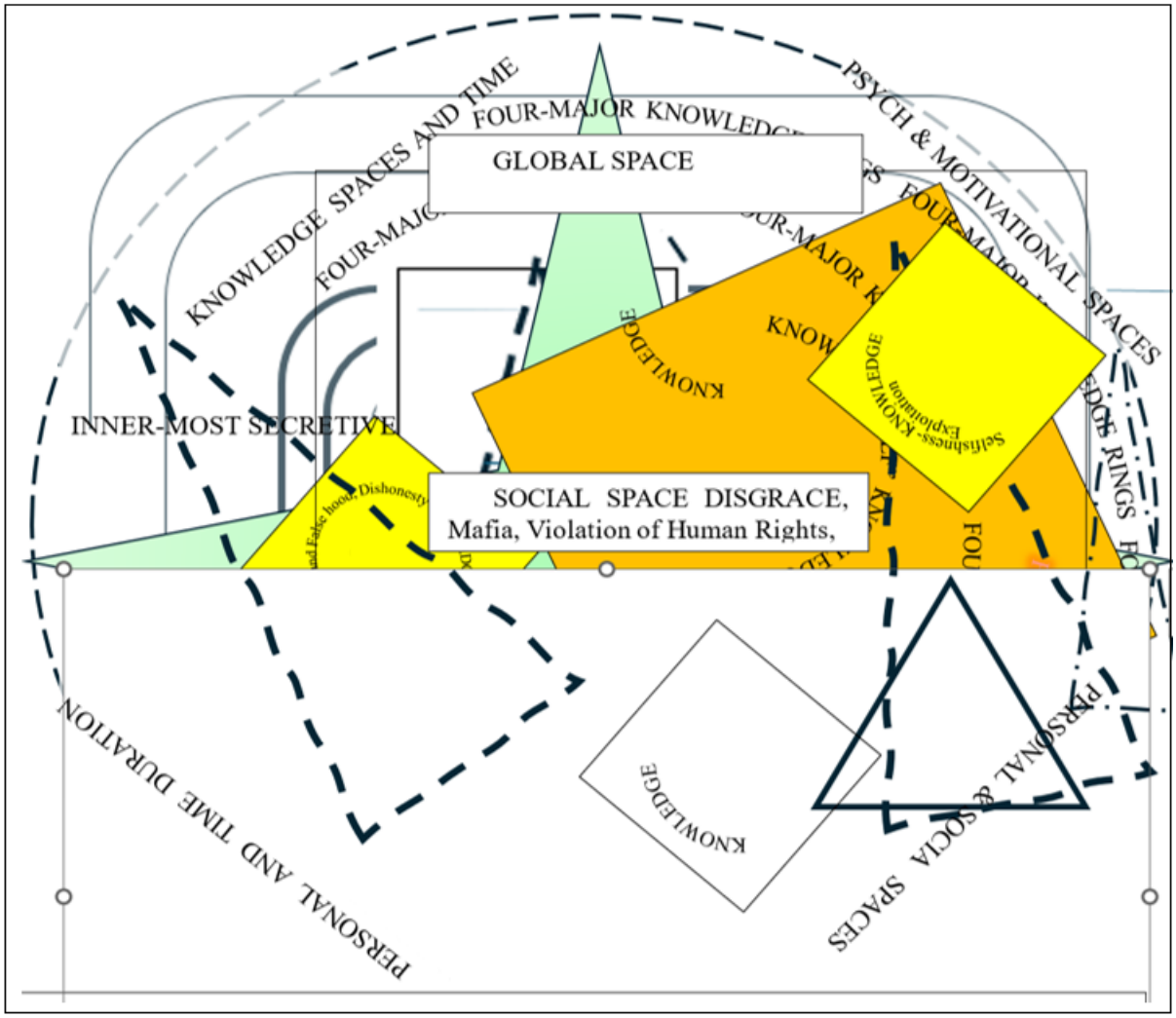

Figure 7: Portrait of an Irrational, Disorganized, Discontinuous, Disastrous, and Chaotic mindset that has timing and biased tendencies in the actions (VF's), connectivity The lines between A's, B's, C's , etc, through, H's initial thinking (►, forward, design mode) and then in the respective social objects (NO's), and their relationship's and the convolutional relationships (*) 's.

When the noun objects, (no's. vf's and their convolutions (*) i.e., ***Δk= no's*vf***)), are synchronized appropriately in accordance with the initial design and thought patterns, this figure in Figure 7 returns to Figure 4, 5, or 6, and element of knowledge can be implemented to fulfil to accomplish its function.

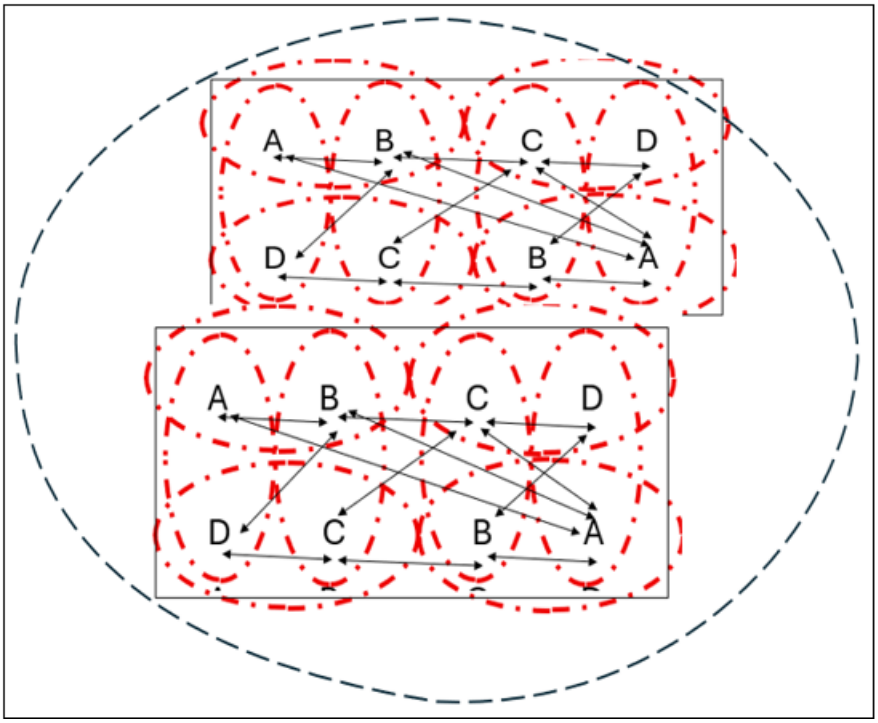

Figure 8: Activities and organization in life to gratify a simpler four segments (A, B, C, and D) or blocks of Knowledge (BPK's) or time periods to fulfil the needs in human lives from the historical writings of Freud, Maslow and modern demands of the Knowledge Society that spans all the sciences, mathematics, computer and network sciences and yet live a significant life by the teachings of great historical and social philosophers.

The updating of (all) the components and devices is incorporated in this simpler diagram, The effects of knowledge age through the SW, firmware, and connectivity's via the component chips occurs from the network operating systems (NOPS's). This particular aspect makes any system (medical, educational, social, cultural, etc.,) systems quite fallible and unpredictable since all the versions of all NOPS's are not coordinated (especially in Windows 11) and the responsibility now falls the WIN11 users. This function and its responsibility is in the realm of the Operating Systems designers that they should discharge it and not burden the user with it . It has become a waste of effort and energy for the users! This appears as a unwanted stunt (to generate more sales of W11 of new (and mostly undesirable features) of the W11 Operating System with so many versions and so many updates for the updates. Further, this particular undesirable interjection on the part of NOPS designers is a profiteering ploy. A perfect example of poor management and release of superposed cluttered systems! The Operating Systems for computers need to clean their intentions for generating more profits. This will help users to **innovate, effectively design and write efficient user programs** with more time and energy to design and write sophisticated useful **user programs**

3. Conclusions

The conceptual imagery of thought processes in any life-form (especially, the human mind) is developed through this paper. The writings of Freud (his analysis in treatment of mental disorder), and Maslow (his motivational theory) are used as foundations. The higher needs of humans (especially the search for purity and lasting truth are deployed to construct upper-most layers structure of Need Hierarchy. The ultimate effects of human intellect are pull into continuity of lifelong efforts of social scientists. All the sciences are integrated at this level. A core of knowledge based of information gathered from the findings of all the scientists is funneled through ethics and wisdom from ancient cultures and the Greek philosophers. Reason, logic, mathematics, structure, algebra and connectivity are implied to join truth with longevity of concepts, virtue with human betterment, and beauty with grace. Computer based rules of syntactic, and semantic analysis form and mold the graphics of depiction and flow diagrams depict their representations. Human character and ethics ultimately bring the personality into light.

Outside enclosures A, B, and C hold the contents of the Real world that surrounds a Any Noun Object (NO, like an individual, a corporation, a town, or a cosmos(es); the space between rectangles C and D holds the sensing devices at the periphery (skin) of the noun object NO, and finally the rectangle D holds the superficial imagery of the surrounding enclosures A, B, and C; ; the rectangle E holds the subconscious imagery of the surrounding enclosures A, B, and C; and finally, finally the rectangle D holds the subconscious imagery of the surrounding enclosures A, B, and C. Lastly the rectangle F' inside F holds the retractable imagery of the whole of the "world" outside the NO and the deepest unretractable layers of any NO. In summary, there are 7 layers at interactive play between the deepest-past of NO and the impressions of the mind (in the brain) of a human mind (i.e., the NO in this case)

The updating of (all) the components and devices gets incorporated in this simpler diagram (see Figure 8) by the Network, SW, Devices, and their Driver's , etc., dependencies even with four simple major SW block ABCD and any following instant's *'(t's)'* to A_p,B_q,R_s,T_x causes errors', unpredictability and greater frustration in applying and in debugging complex systems[3]. With more elaborate systems (see Figure 3, and with time dependent loops *ABCDEFGH-Me* continued through *ME-HGFEDCBA* (for application, debugging, enchantment, etc.,), needs extra (unproductive) time for larger system designers and their users.

The effects of knowledge age through the SW, firmware, and connectivity's via the component chips occurs from the network operating systems (NOPS's). This particular aspect makes any system (medical, educational, or social, etc.,) systems quite fallible and unpredictable since all the versions of all NOPS's are not coordinated (especially in Windows 11). If the designers of NOPS have not resolved all the pitfalls of prior versions, then the responsibility of falls on WIN11users. This is a waste of effort and energy for the users! The *ploy* appears as a unwanted stunt (to make more sales of new (and mostly undesirable features) of the W11 OS managers! Further, this particular undesirable interjection on the part of NOPS designers is a profiteering collusive ploy!

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[3] These more complex systems are generally necessary in defense, medical, geological, etc., applications.

Author Profile

The author holds his Ph.D. and D. Sc. (E.E.) degrees from the University of Manchester and his MBA (Econ.) from the New York University. He taught at the University of Colorado for 2 years before joining Bell Laboratories. After 15 years of research, he returned to teaching as a Professor of Computer Science at the City University of New York. The author has been a Telecommunications consultant to Bell Communications Research, AT&T Bell Laboratories and Lucent Technologies for the last 25 years. He received numerous prizes for his papers from IEEE. He was elected a Fellow of the IEEE for his seminal contribution to the simulation and design studies of the High-speed Digital Subscriber Lines. He has authored and coauthored several books in two broad areas of intelligent AI-based broadband multimedia networks and computational framework for knowledge. His doctoral students have continued to contribute to knowledge processing systems and wisdom machines proposed by him during 1999 to 2007. In 2004, he wrote the book on Scientific Innovation, for new doctoral students based on his teaching and mentoring the best of his 20 Ph.D. students at the Graduate Center of City University of New York. Much of the innovative feedback has come from the doctoral students mentored during 1990 through 2007. He holds over 20 American and European patents ranging from slip-meters for induction motors to medical networks for hospitals. He has continued to author several technical books and papers during 2013 through 2025 and a thirty-chapter book is the culmination of his quest for the Science of Knowledge on a computational and a scientific basis.