Demand Theory
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Professor Stephen Prueitt
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I turn to some private history, as I have often done in this book[1]. The theory that I have developed seems so different from other theories about learning. This difference may be usefully placed under scholarly examination. My theory of multi-coherence may also be contrasted with certain traditions in traditional Western philosophy. Western science, and Western folk psychology, generally speaking, has long held that only one single view is the correct one. The goal is to find that one view, and hold this view securely.

Mono-coherence manifests in the idea that a single equation might be found to unify all natural science. Even far back to ancient Greek times we have the notion that all natural things are represented as a ratio of integers. My view directly contradicts this view, but in a careful way. I am careful not to imply that mono-coherence is not useful, as it is perhaps the most useful of all viewpoints, at least as seen from that one view. In my work we observe that the brain uses coherence to support cognition. Multi-coherence may be a higher level of cognitive function that what is common today.

Scientific reductionism is one legacy from mono-coherence. As one might expect, from a theory of language and perception, the power of reductionism hides from us something. What is missing is an understanding of non-deterministic phenomenon. Various scholars have attempted to address both the paradigmatic deficit and to advance a clear understanding of the natures of emergence, non-locality and induction. This scholarship is not in the funded mainstream of academic disciplines, but is securely there. I surround myself in this literature.

Three open questions are found in reductionism science. The position that I have come to take is that these questions must be ignored by reductionism, since no solution to the flaws in reductionism is possible within reductionism. We are stuck in a Gödel situation. Those who are proponents deny the presence of a part of physical reality existing

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[1] Three pages was taken from The Education Bridge, starting from page 171. These three pages were then extended to “Community Intelligence and Demand Theory”. See www.secondSchool.net/bridge.pdf

around us.

We make an observation. What we as individual human beings demand from life is not fully reducible to our experiences. Let us look a bit closer, and take a specific instance. Demand pedagogy arises from my experience with practices in graduate schools, in Texas. The pedagogy is not reducible to these experiences, however. The pedagogy may be seen as a response to experience contextualized by awareness developed from American Indian culture, and from various esoteric disciplines such as the practice of yoga and mediation. Deeply religious childhood studies in the Bahai Faith set the stage for an appreciation regarding the Divine purpose of living, and of the nature of spiritual belief. My childhood interest in Buddhism was to develop into an understanding of the limitations to any viewpoint, and in particular to the formalism of mathematics. The nature of limitations is also seen in the knowledge representation standards developed by DARPA during the 1990s and the first part of this century. These experiences were part of the causes of the pedagogy.

During the three academic years, 1980 -1984, my professors conducted graduate mathematics class using the R. L. Moore[2] method. The correctness of Moore's methods led me to see deeply into stochastic theory, measure theory, topology and real analysis. I applied this understanding to numerical analysis as taught by John Neuberger. In later years, I was to extend this knowledge of pure mathematics to applied modeling using first order difference and differential equations. However; in 1984, the purpose of my deeply personal investigation was to understand why freshman students at UNT were unwilling to learn college algebra. During a fourth year at The University of North Texas, I earned 18 hours credit in a program designed to award a PhD in the college teaching of mathematics

The students expressed not only disinterest but also a profound inability to learn even the simplest part of college algebra. How was this to be explained? The students wanted me to explain why mathematics was important. Why did I need to explain anything, regarding this matter? The question, "why must we study math", was simple to ask, and very complex in its natures. I was to come to believe that these students had adapted to very poor instruction and developed an acquired learning deficit. Over the

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[2] Charles A. Coppin, W. Ted Mahavier, E. Lee May, and G. Edgar Parker, *The Moore Method: A Pathway to Learner-Centered Instruction*, (Mathematical Association of America, 2009).

decades, I was to establish a mathematical model of an acquired learning syndrome.

The Moore method is participatory. To be successful, one must participate in advancing one's learning. Graduate students, in small classes, develop specific lines of thought while the professor provides minimal guidance. In this type of graduate work the professor stands ready to recognize when the lines of created mathematics was in fact moving in the direction of original work. In principle, there are four intentional agencies involved; the student, the class, the professor and mathematics itself. As we apply this principle, the professor must stand aside and allow the students to express an understanding of the topics in the curriculum. The consistency and logical force of mathematics acts in its own behalf. To experience this is to become a mathematician.

As mentioned, this experience as a graduate student learning from the Moore method lasted three full years. During the two years before this, 1978-1980, I had earned master's degrees in pure mathematics from Southern Methodist University. For my master's with I focused in number theory, history of mathematics, and abstract algebra. My work on a PhD in pure mathematics came to a close in the fall of 1984. I took and passed comprehensive PhD level qualifying exams in real analysis and mathematical topology. I did not however have an original thesis in pure mathematics. My transfer from the department of mathematics to the School of Education at University of North Texas, in 1984-1985, was as an "all but dissertation" graduate student with a grade point average of 3.65. I could have sought the PhD in pure mathematics, as this was what was expected.

Looking back, I now understand. This School of Education program was part of the maintenance system for the crisis in American education. As the year progressed, it was agreed that promises of a PhD in one year would not be meet, and that the College of Education at UNT would deny my application to write a PhD on the Moore learning method as applied to freshman learning. A committee of five professors, unanimously agreed to not accept my work. In August 1985, the family moved to The University of Texas at Arlington. Our third daughter was born shortly after the move. I completed, in December 1988, an applied PhD thesis on mathematical models of learning in biological systems[3]. It would be seven years, three years in a postdoctoral research position at

[3] Prueitt, Paul S (1988) *Mathematical Models of Learning in Biological Systems*, The University of Texas at Arlington, PhD Thesis

Georgetown University, before the first phase of my work on a model of biological intelligence was to be completed. In *Chapter Eight, Applied Research on Mechanisms known to be involved in Learning, The Education Bridge,* I set down the outline to a second phase of work; work I wish to complete before I am pleased to pass from this life.

The Moore method is a depth first method, which works only after the student engages in the self-study of mathematics. This is one central reason why it is considered by most to be for graduate studies only. My interest was in opening access to self-study to everyone, and in particular to those who I saw as being harmed by an absence of the type of childhood education I have been blessed with. During the four years at North Texas, I saw pure mathematics open the doors not only to mathematics but also to the history of human kind and natural science. This door was not the only one opened to me, as I saw also into important issues related to the use of computing as an aid to natural intelligence. I came to believe that without an understanding of these issues, the individual and our as a whole society suffers in a needless way.

This long period of study gave me a foundation in which to, later on in life, understand myself as an individual. The deep insights of various historical teachers assisted me, in particular what we know of the life of the historical Buddha. Part of this understanding was that the world, our social world, was reproducing negative cultural histories as part of a process creating imbalances. This cycle is where most of our suffering is derived form. To seek to reduce the causes of suffering one might attempt to understand this reproduction process, and to outline remedies. This is what I have strived for, and is the only purpose to my life now.

I am caught up in these histories, as was everyone around me. What I was piecing together was a modern view about many of the issues that the Buddha is reported to have addressed. My second daughter caught some of my inquiry and is completing a PhD in Tibetan studies at Emory University. For this I am extremely proud as a father, as also I am of the other two daughter's accomplishments. The physical laws act through complex structural constraints to produce the social reality. But there is more to what causes us to have specific interests. This "other" is what I have always regarded as a basic signature, unique to each individual. My work has become about these other causes, and about how the physical world reacts to the demands of living intelligence.

The particular investigation I proposed to the education professors in 1984 is then

generalized to an abstract theory. From this work, I have proposed the development of a body of scholarship on the nature of demand. The actual biological mechanisms are conjectured to be both similar to and different from how an academic discipline sees human knowledge representation. The general model was developed while I was consulting federal agencies during the period 1991 – 2001.

Mirroring what we know about the formation and use of natural language, formal standards associated with knowledge representation involves a technical reification of machine based ontological modeling, and inference engines. Reification is the process of identification of an axiomatic base, from which to derive ontological models. This concept maybe refined through an understanding of organizational stratification in biological processes supporting natural intelligence. The refined concept of reification has clear science.

For me, an understanding had awoken. Natural science may be formulated consistent with organizational stratification, a necessary element of a theory of reification. The problem I faced was that this refinement of natural science was not desired by industry, and federal program managers had become submissive servants to industrial complexes. The generalization had consequences; however, to the questions I posed to the education professors in 1984.

I developed a conjecture, one that is not as yet proven. The method in which mathematics is treated, and taught, disallows an understanding of how human thought arises in an individual; e.g., from a biological substrate. This conjecture causes defensiveness immediately. There is no conspiracy. Conspiracy is not how the acquired learning deficits arise. The nature of social intelligence simply has some unhealthy influences. So there is no reason to be defensive, and to attack me simply because of the conjecture. To understand why there is a crisis in American education we might come to understand these influences. We might work on shaping social agreements in a new way. This objective is why *The Education Bridge* was written.

The understanding is simple. The constraints placed on intellectual and emotional growth are distorted by a specific viewpoint about the nature of the individual and of society. So if there is a conspiracy, it would be one in which we all are equally involved with. We as a society buy into something specific that is not real. Consumerism is a one word description of that reality. The issue regarding the rejection by the professors

of education, in 1984, is more complex that mere consumerism.

My understanding was in contrast to the dogma taught by colleges of education, where no knowledge of biology or natural science is found. These professors had no understanding about the nature of mathematics, except that the average person did not have a capacity to learn the college level curriculum. They stated this assertion on a number of occasions, to me. I feel that these professors ignored all evidence except that which is suited a narrow view of human nature. In this way they formed a type of a high church; a fundamentalism, as I was to find out. Part of this belief system is to ignore the creation of disabilities due simply to how we are treated as children.

My advanced knowledge in the sciences led me to see that our acquired learning disability is a natural behavior. The kids were smart to reject what was being taught, as well as how it was being "taught". The system was teaching the kids that they cannot learn, and should not expect to learn, the curriculum in college mathematics. The understanding has large numbers of consequences. Some of these are regarding theories of learning in biological systems. Some consequences are social in nature.

A number of these consequences may be discussed, but not all at the some time. The nature of racism and sexism are well documented, and will not be addressed by me in my work. The consequence of self centered behavior by the advertising industry, and all of its complexity, is one that I will address. The choice here is pragmatic, as the phenomenon of sexism and racism seem beyond my capacity to suggest a remedy. However, *The Education Bridge* proposed a specific fix to the nature of excessive consumerism and the causes of this excess.

I came to see that the intention of the advertising industry had taken control of almost all individual human action perception cycles. The action perception cycle is the key phenomenon involved in the development and expression of human intelligence, and is why AI will never be "intelligent", in the sense that living systems are intelligent. This control is the purpose of the advertising industry. The members of this profession will immediately claim, in a memetic fashion, that they have not been able to accomplish complete control over consumers. The mimicked expression of this fact is polemical in nature. When one looks carefully, one agrees that the industry has not accomplished its goal. One also sees clearly that great changes occur in the consuming society simply due to the immediate consequences of this industry, and industry that might expend

several trillion dollars pre year in the United States alone. Advertising as part of political campaigns is increasing and will reach new records during the 2012 U. S. presidential elections.

The purpose of advertising is to sell products to consumers. Long-term structural changes are made in our society through advertising. Political elections are controlled by media exposure, far more than by "free" intentions of individuals. Advertising has corrupted out political system. The discussion of these matters is blocked by memetics. A collective "agency" has developed but no one is supposed to talk about collective or community intelligence. We can talk about AI, but not community intelligence. Perhaps without intending this as an outcome, textbook publishing entities became part of the system that maintains the crisis. It is thus at the textbook industry that the supporters of the *Education Bridge* will find the first great battles.

It took me twelve years consulting for federal intelligence agencies to understand the profound affect that collective agreements make. During this time I saw federally funded corporations making use of the most advanced thought in cognitive engineering and on knowledge representational standards. However, the purpose was distorted. Certain unsolvable problems were defined, AI being the most obvious, where almost infinite amounts of federal funds might be spent. Sales and marketing controlled industry responses to national crisis. The federal responses harmed and killed many human individuals. The situation has improved since President Obama took the presidency, but our national response is still based on mythology and bias against the under served. There are issues here, also. We set these aside for now.

The advertising community might be said to have a collective groupthink, much like the intelligence community itself. As in natural intelligence, the systemic intelligence manifests through individual decisions, and is thus stratified in nature. The purpose of many internal agreements is to create and maintain the ability to mislead consumers, including a consumer who wants to be misled. There is a singleness of purpose, shared by all members of a community.

Specific mechanisms develop so as to use structural constraints to achieve this common purpose. There are voting procedures, where the many become a single intent, and the intent is simple and supportive of consumerism. Entire academic departments are maintained around this concept, teaching all of "us" how to shape a consumer society. A

consumer society is a good thing, it is said. A singular coherence manifests with great power and permeability. Buy. Buy now. Buy more.

The natural world is; however, not a singular coherence. Rather there exist other minds, and other natural forces, in a multi-coherent expression of free will expression within the structural constraints of physics, chemistry and biology. The connection between how mathematics has come to exist and how thought develops in the individual is hidden from most individuals, as a consequence.

The control by advertising agencies has other consequences. These consequences are not within the scope of *The Education Bridge*. The topic is left for others to discuss. The *Bridge* is concerned with ending the crisis in American education, and this crisis has specific mechanisms that must be understood. It is also not sufficient to understand, since understanding might be accompanied with an absolute inability to act. Like the passenger in a car, just before a head on collision, we fall into something that appears to have no solution. And we must develop new infrastructure so as to allow the individual to step outside the existing system. This requires funding, a lot of funding.

So what might be done, if these perceptions about society and self are to be acted on? My answer took almost forty years to be formulated. This work requires a theory of organizational stratification to communicate. Layers and layers may be used to give details regarding stratification theory; however, all of this distils into a very simple objective. We wish to end the crisis in American education. To end the crisis in American education we must look to natural science. But we encounter profound difficulty, as members of a consumer culture.

Natural science takes time to understand, and this fact steps in. We are prevented, as a culture, from seeing nature as it is. The agent in charge of this prevention is the K-12 educational system; itself, taken as a whole. A model of how this agency acts is available in *The Education Bridge*.

As remarked, we are prevented from specific types of discussions. Even easy to make observations, are not allowed. For example we may not talk about our understanding of organizational stratification. These types of understandings have not been integrated into our K-12 science education. We see this deficit clearly. Nature is viewed by 95% of school children as not understandable. I suspect that this is actually ok by many local school board members, where religious based ignorance is often profound and

persistent. I suspect also that there is deep intelligence to this common perception, because natural science as taught is not correct. Moreover, the purpose of education serves another master. Education serves consumerism. But there is a question of relevance. The individual most wishes to understand his or her own self. There is a private struggle that leads to a change in how mathematics and science is taught.

How does the educational system achieve these results? Here again the answer is simple and straightforward. Relating the nature of self to Newtonian mechanics and the supporting mathematics serves as an unsolvable task. Thus the system has the opening it seeks. First, “we” individuals are treated as if in categories. Second, we are exposed to materials that we have long ago “learned” are not learnable. Ever more poorly developed curriculum may be created which is simply not useable. By making the assertion that average individuals cannot learn college level mathematics, the system achieves several objectives.

Because students fail, more educational materials may be produced and marketed. Mathematics textbooks decline in effectiveness each year, and are now huge books often weighing thirty pounds, and having twelve hundred pages. These are the college algebra books. Who in one’s right mind would even pick up such a monstrosity? Moreover, most under served individual cannot afford the almost two hundred dollar price. These books are revised and re-adopted by colleges and universities with the direct effect that new books must be produced and supplied yearly. The textbook industry is very large and growing in size. Perhaps an investment in this industry is a good place to put one’s retirement savings.

The response by the education community is to assert that the nature of self is not part of what might be investigated by natural science. Agreements are made. The collective intentions work from a private sector having hidden individual control and collective intent to sell products. The education community finds means to sustain a consumption of poor pedagogy and even poor instructional materials. The system does “work”.

Collusion is an easy term to use, but is not adequate here. We wish to see nature as it is. There is a common intention shared by two systems, education and the textbook industry. This objective is not the same as one is led to believe. The K-12 system predicts mostly failure based on the notion that the people simply cannot learn. This prediction is self-fulfilling and self serving.

Our proposed private-public partnership creates a new open source three-dimensional Internet, using virtual world viewers rather than web browsers. Within this virtual world infrastructure we deploy monitoring mechanism, and then apply regulations protecting individual information from public exposure. We solve the un-solvable concern. How this is done is discussed in the four notational papers posted at www.reverseTwitter.com.

The strategy is to create a three-dimensional fully monitored virtual world system, designed for public sector functions, such as voting and education. This "world" has both structural constraints and cross scale expressions; e.g., mechanisms acting at several time scales. The information technology is profoundly different form what we have now. A computing backplate is the core engine and acts using a very small distributed ultra stable and provably secure peer-to-peer open source operating system. It could be extremely disruptive to the current social order. This is of concern, of course.

The computing backplate provided a lesson in physics. The issues of non-locality, emergence and induction are framed in a theory in which organizational stratification may be observed as a natural fact. Once this framing has occurred, kids might understand. They might act on this understanding. A ground swell might arise.

The kids may create a bridge that leads to a reasonable future, one not condemned by fundamentalisms such as consumerism. What the *Bridge* proposal to the President asks for is the start up funds. The amount is carefully developed, along with a complete specification for a complete standard controlling a three dimension Internet. One hundred million dollars is sufficient to fund an eighteen-month software development activity. The complete specs are in the form of a multidimensional framework developed by my colleagues and I.

Our position is that by accepting natural facts, clearly derived from nature, we change our perception about what is possible. A shift occurs regarding our understanding of intellectual and emotional coherence. Religious belief is in particular challenged strongly. This challenge is met, again paradoxically, by seeing a Divine presence in the way in which organizational principles are expressed in nature. This Divine presence is seen to organize the structural constraints in what appears as a type of intelligent design. We recognize also that humans express this design capacity.

The *Bridge* offers a solution path. Virtual worlds may be used to create a counterbalancing force, acting as a utility function on our evolution. The children might serve up a new type of community intelligence designed to build a bridge to the future. Educational materials may be freed from continual ownership. An understanding of nature may be provided to our children.

Excerpted from *The Education Bridge*,
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