The Heart and Soul of Higher Education

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***Abstract**: The beneficial outcome of scientific knowledge for any society of the modern era is just too overwhelming to be replaced or to be disregarded. And yet, there also seems to be something deeply missing in our current system of education. Nearly two thousand years back, the Indian sages had achieved the glory of discovering, formulating and spreading the art of unification, and we called it Yoga or the Brahma Gnana. The huge challenge that awaits us is to discover something similar -- the kernel that can unify the vastly varying subjects taught in our universities - something that can be called the yogic science built on the very foundations of the physical and biological sciences of our times. As things stand right now, our universities may be acclaimed for their hundreds of thousands of specializations, but not in the least for bringing out holistic human beings who would command the respect of the entire world. In this paper, we explore how the findings of cognitive neuroscience and the splitting of consciousness back to its basic sensations, can not only produce a new discipline of science; but indeed can turn out to be the heart and soul of Higher Education.*

***Keywords:** Fundamental fields; Basic sensations; Cognitive neuroscience; Art of Unification.*

I. INTRODUCTION

In the 13.8 billion years in which the universe has expanded, an implausible series of qualitative developments has occurred as well. Any living being easily impresses us as something more than a mere conglomeration of physical and chemical structures. The art of language is an extra-ordinary development that not all species managed to acquire.

Now, the challenge of any holistic education literally boils down to this. Will it ever be possible for us to capture the kernel, the pattern or the source of this mind-boggling quantitative and qualitative expansion that we have so credibly established to have occurred in this universe?

While we are still far away from any such master-stroke of an achievement, one can at least assert this much. The system of education has gone through radical changes across the globe in the last few centuries.

The major cause of such stunning changes is no doubt due to the new knowledge acquired in science and technology. Scientific discoveries keep altering the way we run our businesses and the power with which we can control things and people around us. And there's no denying the fact that a series of major discoveries occurred only after the invention of the printing machine -- that occurred in the late 1530s. Under this broad classification of human progress, Educational system can also be easily separated into: 1) The Generic Model of the Pre-scientific Era and 2) the Generic Model of the Scientific Era.

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Unable to resist the wave of technological, economic and political revolutions of the postmodern era, the age-old Indian values and principles together with the system of Education have gone through a tsunami of changes. The uniqueness of Gandhian movement, for instance, couldn't withstand the world-wide trend of switching over to new technologies. Spinning khadi on a Chakra is no longer the preferred symbol of the masses. We might have succeeded in driving out the British utilizing such emoticons; but the system of education introduced in the British Raj has only been promoted on multiple fronts and this monolithic culture seen across the globe impacts our thoughts, emotions, economy and politics.

Nearly two thousand years back, the Indian sages had achieved the glory of discovering, formulating and spreading the art of unification, and we called it yoga or the Brahma-gnana. Today, more than 70 years after the independence we have little clue as to how to insert this valuable traditional knowledge into the modern curriculum. Our universities may be acclaimed for their hundreds of thousands of specializations, but not in the least for bringing out holistic human beings, who would command the respect of the entire world. It's a well-known fact that our education has caused irreparable divisions, antagonism, hierarchical power structures, keeping large sections of people still under poverty, unemployment and underemployment. Millions are leading a highly stressful, unhealthy and insecure life.

Far from bringing out a holistic human being, which was probably the major aim of all education in the past, today we pay through the nose to gain a degree or a skill that can pay back to us the money that we had spent.

The final objective of education was one of character building, not merely in the traditional cultures of India. Across any major culture of the world, the highest form of knowledge that can unify all other disciplines was always given a pride of place. In Greco-Roman world, philosophy and theology were regarded as the queen of sciences. Thiruvalluvar (31 BCE) summarized the great tradition of Sangam literature and the objective of all forms of education in a small couplet. The world-renowned saint and poet raises the following question in the very first chapter:

"What's the point of education, if it wouldn't lead you to bow before the Lord of Pure Knowledge?"

In North India, as mentioned earlier, Vedanta was acknowledged to be the highest form of knowledge. It is this kind of the fundamental spirit of education, the unifying element or the connecting link between all sciences that we still need to discover for the postmodern era -- strictly through science itself - employing nothing other than scientific terminology and rigorous arguments.

Hence the question we would raise in this study are the following.

Have we identified the potentials of modern science which can rise up to the role of interconnecting all of them -- something that can be elevated to be the queen of all sciences?

Have we taken head on the challenge of forming a holistic human being as the prime objective of Higher Education, however narrow our fields of specialization might be?

Can we regain the yoga of interconnections in and through the current forms of science?

II. REVIEW OF LITERATURE

While studies focusing on the kind of questions we have raised are few and far between, there are some interesting ideas put forth from the academic community itself. Dr. Satpathy and Muniappan (2009, 2) have explored the possible role of the knowledge of 'self' from Bhagavat Gita in developing human capital. According to them, "Man's understanding of the world around him is proportional to the understanding of the self. There exists a correlation between the self-knowledge and the outer world. …. Self-knowledge begins with self-observation, self-examination, and self-evaluation and thereby developing certain qualities that are called Divine Qualities, enlisted by Lord Sri Krishna in the Bhagavad-Gita chapter 16 verses 1, 2 and 3". (Satpathy, Muniappan 2009, 2)

The final objective of self-knowledge, as per Gita, is reached when the individual bows down and focuses entirely on Lord Krishna. Hermeneutically, the authors interpret such slogans in a unique way. The reference to Lord Krishna is only a reference to the Supreme Truth as per the new interpretation. This is a valuable attempt of the authors to make the slogans of Gita acceptable to people of all walks of life and religion. The conclusion reached by them is summarized in these words: "When one completely focuses his mind in truth he can very well test the significance of the Outer knowledge by comparing it with the Inner knowledge i.e. self-realization" (Satpathy, Muniappan 2009, 2)

While this is certainly an excellent way of doing hermeneutics, such interpretations have little connections with modern science and hence the entire terminology can be vague and problematic on many fronts. Even if Lord Krishna is identified with Truth, we have no clarity on what the term 'Truth' actually implies. Gandhi too sought to define God as 'Truth'. However until we explain everything from what we scientifically know to be evolving and developing in this world, many of our theories can remain high-sounding and ineffective. No matter how essential the term 'Truth' might be, it still remains absolutely vague from the point of view of science.

Further, there's no data, argument or evidence in this article to show that knowledge of the external world is indeed proportional to the knowledge about oneself. On what basis would anyone accept such proposition? Only when we methodically explain the connections between the physical, biological and mental evolutions leading further into socio-economic developments, one can perhaps recognize the intimate relation between all stages of growth. The proportionality, if any, ought to be demonstrated, explained or graphically defined. The truth we are talking of must indeed begin with science itself.

Just in case we achieve this, we can certainly develop it further to match it with the profound statements of religious documents. But giving deductive arguments, starting right from a slogan can certainly go wrong, as many other concepts of the pre scientific era still require clarifications. A scientific method alone would enable us to discover the natural connections between mind and matter. What we require, therefore, is a bottom-up approach, starting right from the world of science and not a top-down one, even if such methodology is called 'hermeneutics'.

Purification of self by adopting divine qualities, as advocated in this study, has also been around for millennia and they have been preached practically by all religions. The only difficulty is this: the natural selective forces in human beings are much too strong and unless individuals are given opportunities to understand these natural processes in accordance with the findings of neuroscience, we can't expect them to make a transition to a broader set of thoughts and emotions.

"The potential of the human mind is subject to, and limited only by, our individual beliefs or un-belief as to whether we can accomplish a thing or not. The power of the human mind is unlimited in its potential to create the results desired, whatever they might be, whether on the mental (spiritual) or physical plain." (Satpathy, Muniappan 2009, 2)

This again is a vague statement and there's nothing to show how the human mind can acquire a deeper ability to believe and how this belief will turn into material power.

Echoing a similar concern of lack of connection between individuals and nature, more from the point of view of the consumerist culture spread through modern technology, Ron Miller makes some interesting remarks on the need for a holistic curriculum. According to Miller, "Holistic thought is an attempt to reclaim the sense of connection to the world that utilitarian manipulation and advanced technology have steadily eroded" (2019) Terming the scientific culture as 'reductionist' and 'mechanistic', the author deplores that the traditional ways of finding meaning through human soul is deeply missing in the present era.

"This is to say that our considerable powers of intellect have served primarily to disconnect us from the world. Modern systems of education have fed these powers well, training young people how to gain knowledge over the world, knowledge at the expense of feeling, information without wisdom, facts without moral discernment. In the United States in recent years, technocrats in state after state have successfully forced educators to focus more and more narrowly on what they call "standards" — arbitrary packages of intellectual content that have little to do with deep understanding of the world but which give the technocrats useful data for evaluating and sorting students objectively. The increasing standardization of learning prepares young people to act aggressively, cleverly, and resourcefully in the job market and the competitive corporate world. It contributes little or nothing to decent communities,

loving relationships, or ways to transcend self-centeredness. Holistic education is essentially concerned with these basic sources of meaning, and seeks above all to reconnect each person to the contexts within which meaning arises: the physical world, the biosphere, the family, the local community rooted in a history and a place, the culture with its many layers of meaning — artistic, religious, linguistic, archetypal — and the Cosmos itself."(Miller 2019)

While the analysis of the present ills of the education system is truly commendable, the solutions offered remain vague. The division between the emotional, moral self and the economic, competitive outside world has been identified as the outcome of the current system of education. But what we truly require is to show how the natural connections between these realms must be scientifically explained to the students.

As per this blog, there can be no curriculum for a holistic education. The first principle it advocates is that it must begin with the uniqueness of the child that learns. "An education that connects the person to the world must start with the person — not some abstract image of the human being, but with the unique, living, breathing boy or girl, young man or woman (or mature person, for that matter) who is in the teacher's presence."(Miller 2019) It has also abruptly stated "holistic education teaches young people how to care about the world" (Miller 2019), and the article predicts that such an attitude develops more from the inspiration and model given by the teacher.

But the problem is precisely here. Since the teachers are the outcomes of the educational system that has entrenched itself for more than two centuries, we can't import ideal teachers of the kind envisioned here from outside of the system itself. Ideological discussions always lead to such impractical solutions. In an earnest desire to achieve religious or moral ideals, one can't discount the power of science and natural explanations. As a counter strategy, in this article we would present something very practical - something that begins with science itself -- something that makes a critique of science based on the findings of science.

The reductionist approach has given immense technological applications and the benefits of this approach are beyond dispute. Indeed what we require to show is that even the so-called soul or human mind as such is also reductively analyzable (Mach 1897). Individual sensations have evolved in ways that can't be reductively analyzed; but all other concepts and all other complex mental functions must emerge right from the uniqueness of minute sensations. It's true that reduction fails at some critical junctures in the history of the evolution of the universe (Nagel 2012) and the edifice certainly points towards the intelligence that has brought about both reductive connections as well as non-reductive ones. The fine-tuning one observes in the universe (White 2000) and the relentless selective processes that has steadily brought about outstanding results through evolution again invites us to believe in the cosmic mind that runs the entire cosmos. It's under this basic vision of finding the SOUL or the ATMAN of the cosmos in and through science, we would make our practical suggestions to improve the current education system.

III. THE NEW APPROACH

As everything evolves from one condition of Nature to its next level, it must be possible to find intricate connections between any two stages of development, the connections themselves being either reductive or non-reductive. By non-reductive we simply mean causal connections with no explanation other than arbitrary arrangement turned into an enduring scheme as designed by the overall cosmic intelligence.

The inexplicable (Levine 1983) and yet the repeating correlation between the electric firing of neurons and the corresponding sensations felt by an individual is an outstanding example of the non-reductive connections that we are referring to here. This intimate arrangement felt by each of us in and through every moment of consciousness invites us to believe in the creative and the intentional plan at work in Nature.

Intelligence being the most creative of all causal factors, any deviation from mathematically and rigorously explainable cause and effect is not to be considered, therefore, as a set-back to science. Rather, advantageous selections that have ensured further expansion of cosmic evolution clearly suggests the presence of an intelligence at work both for reductive and non-reductive series of developments.

Human mind has turned out to be creative only through the facility of attending to lots of data that generally relate to each other in causal connections. As conscious beings, we do experience the freedom to attend to one data rather than another. But this conscious selection can only be made on a set of primary data and memory that flows automatically through previously established pathways of neural connections.

A hard look at the available facts of cognitive-neuroscience combined with an analysis of one's own conscious skills (Mach 1897) can open up a new dimension of study that can play the role of unifying all forms of sciences. It can turn out to be the Vedanta, or the queen of all sciences.

IV. THE CURRENT SCENARIO

Physical science became the pride of human culture when it unraveled the features of the fundamental forces of the universe and the basic structures they give rise to (Carrol, 2016). Once we figured out the sub-atomic constituents of the Hydrogen atom followed by the periodicity and the step-by-step gradation of the other higher elements, a thorough idea of all constellations and configurations could be easily made out. A similar breakthrough occurred with our discoveries on the fundamental cell structure of the biological world (Denton, 1998).

The general theory of relativity and the voluminous data given by modern astronomers further enabled us to understand how all of space and time is in relentless expansion despite the contracting forces of gravitation (Hawking & Mlodinow 2010).

The electromagnetic field was found to be having the greatest speed ever possible in the universe. We mastered the trick of learning the nature of faraway objects, just from the spectral lines and gravitational waves emerging from them, be it the galaxies and stars still burning or those that have already burnt out.

In our own planet, the communication revolution, made possible through satellites and high-frequency wireless technology, ensured that our economies get inextricably interrelated. The world-wide-web operates thanks to the optical fiber network through which the digital data crisscrosses from one corner of the globe to another.

However the dumbfounding rate of integration and the power of reductive knowledge have also met with some critical failures and inadequacies. The quantum fuzziness (Gijsbers 2003) suddenly challenged the whole idea of the mathematically rigorous explanation that we had so assiduously built up. It also turned out to be a futile attempt to extend a natural explanation for the fine-tuning of fundamental forces and the extremely rare development of the phenomenon of life.

In his ground-breaking book, "Island of Knowledge: the Limits of Science", Gleiser (2014) gives us a fair idea of what could be probed through science and what would always remain beyond the reach of the best of our instruments.

Despite these given-ness (Mohrhoff, 2001) and irresolvable limitations (Cliff 2016) that we are beginning to appreciate ever more concretely, one can leave a sigh of relief that scientists have already managed to give us a blueprint of the evolution of the universe over the past 13.8 billion years. This in itself is a huge achievement. It is this spectacular feat of the modern and postmodern era that stands in sharp contrast to all the achievements of the previous civilization put together.

The major difficulty however arises from our lack of achievement in the understanding of the nature of the individual self, the ways of improving inter-personal, community and regional-wise relations. The world of science hasn't delivered the peace and integrity which remained the focal teaching of the classical literature and the world religions over a period of four to six thousand years. Meanwhile, the socio-economic complexities have soared high and there's no leader who can still guide us towards the cherished goals of humanity building right from the tenets of modern science.

This is precisely where the greatest challenge of research for our universities lies in. This is also the arena in which the preserved wisdom of the Indian tradition can make its unique and decisive contribution. If every superstructure is built of Quantum particles and fundamental fields, the manner in which our emotions, thoughts and decision making processes have evolved over a long period, ought to have at least a similar pattern of growth and accumulation. The mild electric current passing through axons and synapses give us the basic sensations and they are the non-reducible units on which an entire complexity of emotions, language skills and thought processes ought to have developed.

As neurobiology clearly instructs us, the unconscious learning processes enabled the species to adapt their bodily mechanism to the environment and to make appropriate responses in terms of bodily movements (Low 2012). The chemicals guiding the unconscious learning processes are different from the chemicals guiding our conscious memory and attention (Kandel 2006 & Makin 2017).

It is also remarkable to note that language is reducible to a specified set of sensations such as the sound and the picture of words and alphabets. It's only the basic sensations that can be retained in conscious memory and all mental processes including our language skills are nothing other than the qualia felt by individuals. And just as language is reducible to our basic sensations, the entire body of knowledge is built on syntax and semantics. The beauty of reduction therefore is found not only in the external world but also in the internal world of the individual and the societal rules of transaction they have gradually introduced.

Now starting from this basic information given through neurocognitive science, we need to further enquire how our vast knowledge on the one hand and the constricting focus of individual emotions and priorities given through selective neural paths could be turned into the emotions and thoughts of a universal being. Until this new direction of research finds its rightful place in academic circles, our institutions will only churn out emotionally and intellectually impoverished individuals who pursue their little interests at the cost of the societal development at large. The economic and societal conflicts brewing at a sustained and steady rate are bound to take their toll.

V. THE CONTOURS OF THE HIGHEST FORM OF KNOWLEDGE

Hundreds of thousands of individuals in today's society command astounding wealth and power - the extent of which was something unthinkable even for the great emperors of the past. The celebrities of our times have a huge following on the social media. But achievers and commoners alike continue to be victims of the highly constricting sense of self, for the simple reason they have little idea how it came about in the first place. Neuroscience hasn't managed to give us a full picture of the complex functions of mind. All that we have probably established is that just as there are biological selections towards preservation of the species, there are selfish neural memories enabling us to outsmart others in the race towards success.

The breakthrough is hard to come by for the simple reason we haven't been trained to recognize the parallels between the fundamental fields building huge physical constructs and the brilliant combination of neural selection and the self-intelligible sensations building additional mental constructs, our highly adaptable behavior and a relentless forward momentum of creativity.

The moment you realize you are made of bits and pieces and that there's nothing substantial you can call as your own, you are bound to feel one with the entire Nature which is constructed in a similar fashion all the way from Big Bang.

It is this most essential reverse reflection, the current module of neural selections effectively prevent us from engaging in. The prime objective of Higher education, therefore, ought to be one of enabling an individual to discover the essential connections and similarities between the construct of her individual self and the construct of the entire universe. Nature has shaped us after its own image and the more deeply we understand this intricacy, the ego built of tiny little sensations will find it easier to let go of itself and to be duly aligned with the master plan of the entire universe.

The crucial need therefore is something very simple. The spontaneous thought processes with which we manage to further succeed or continue to brood in our day-to-day life must recoil and take stock of itself. We need to retreat time and again to reflect back on the way in which our own conscious skills have evolved on the back of neural arrangements. One could term this as the retreating phase of the individual consciousness.

The deep-most anxiety and strategic planning must repeatedly culminate with the realization of the extreme delicacy of our mental and bodily constitution. Each thought must recoil back into how it originated from flimsy sensations that started way back in the evolutionary history of lower order species. Adding this new awareness with the universally acclaimed knowledge of the flimsy quantum fields that have given rise to the vast wonders of the universe, we would be automatically compelled to turn our attention to an intelligence that alone can bring about repeated sets of mutually collaborating prime fields. This is what we have defined as the reciprocal phase of thought processes, which is yet to become an integral part of each human being.

Sir Charles Sherrington (1937) demonstrated how the forward movement of a muscle is made possible through the reciprocal control of the opposing muscles. While the DNA of chimpanzees are 99.9% the same as that of human beings, it's only the vast network of control mechanisms and genes that elevated us into a higher order social beings.

The reciprocal reflection of the basic constitution of mind and matter that must accompany the natural thought processes we experience at the current stage can be seen as a development in line with the abundant control mechanisms found in the biological arena.

Until we acquire the skills of spontaneously turning our attention towards the mega intelligence which has brought about the entire cosmic evolution, we can never graduate into holistic personalities. Our immediate priorities and professionally-planned busy schedules allow little time to make this inner transformation which is the last mile connectivity required to resolve the ills of today's society. If we are not sufficiently exposed to the brilliant milestones crossed over by Nature and the manner in which the complexities of human society have further evolved, what benefit is of our academic specialization, the hugely attractive monetary reward and the social security it provides just for a brief while?

There's something living in the midst of the physical forces and movements. And we would always remain blind to this primary source, if we do not read between the findings of science. Anything that we call the highest form of knowledge must enable us towards this yoga of meditation.

The simple fact that the entire reductive beauty of the universe finally hinges on the volatile and arbitrary values of the fundamental fields and that the stupendous power of human intelligence rests on nothing other than the non-reductive connections between neural firing and individual sensations clearly points to a greater intelligence at play. If pure reduction had explained everything of the universe, we wouldn't have suspected an intelligent arrangement directed towards a teleological upscaling.

The utter emptiness of our physical and mental make-up finally rests on what superficially appears to be empty, dead and silent for our ordinary perceptions. Now can we not take pride that this huge wisdom discernible right in and through modern science was poetically highlighted through the Indian tradition utilizing nothing more than the pre-scientific tools of knowledge, available in those days?

The yogic art of unification must be taught anew in terms of the grand success as well as the critical failures of reduction. In terms of the vast reach and the severe limitations of our machines and instruments. It's the one single subject that must be made compulsory for the students of arts, science and humanities put together. It's that vital element of connectivity which is still found to be missing in our universities.

VI. CONCLUSION

The civilizations of the past had invariably spelt out the intelligence recognizable through simple events of the universe. The overwhelming knowledge brought through science hasn't necessarily explained everything as series of mathematically reducible cause and effect. Moreover the entire beauty of causal connection crumbles at critical junctures. The countless birth and death of living beings is a convincing demonstration of this ongoing drama between alignments and realignments of fundamental fields and sensations. Higher education must necessarily impart this basic vision of how everything is built of tiny segments and how the more valuable and the more sustainable formation is the central story of progress and achievement witnessed in the last 13.8 billion years. It's high time, our universities made this Highest Form of Knowledge as an indispensable component of all their basic and specialized courses.

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