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Towards an Enlightened and Enriched Humanity: Rays of Hope from Critical Interaction with the Contemporary Science

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Abstract: Science is, no doubt, a powerful force that cannot be just ignored, while considering human and Christian communities. It is indeed a great asset, not only for making our lives comfortable, but quenching the inborn curiosity to know better and to achieve more. However, science, being aware of its own limits and limitations, is cautious in claiming to be absolute; being led by the spirit of interdisciplinary approaches it realizes more and more the need not to be autocratic; and above all, being a social enterprise, which is by humans and for humans, science realizes its moral and ethical responsibilities and this last realization, in turn, emphasizes the serious commitments of humans towards safeguarding nature, as humans are supposed to be the custodians of nature, rather than exploiters of it.

In the first section, the author focuses on one of the important areas of the contemporary science that pose challenge to the human identity and dignity: Artificial Intelligence. After a brief exposition of this enterprise, he argues that though this is quite challenging to the understanding of the human person. Its shortcomings and inabilities seem to suggest that science cannot handle these issues alone, but need to collaborate with other disciplines. Then, in the second section, the young scholar discusses the limits and limitations of science, showing the need and the urgency of the interdisciplinary approaches to fathom reality and to enhance humanity. This learning experience has made science rather realistic in its

claims and approaches. In the Concluding Remarks, after briefly explaining what he means by 'hope', 'enrichment' and 'enlightenment', our scholar shows how the deeper awareness of the intrinsically complex issues of the mind-body relationship and the limits of science make science more realistic in its claims, more cautious in its investigations and, above all, more humble in its self-image. This, according to the author, enables us to see the rays of hope for the betterment of humanity and the Cosmos.

Keywords: Artificial Intelligence, Enriched humanity, Hope, Limits and Limitations of Science.

Many people are really alarmed that the advancement of science and technology is threatening to damage the dignity of humans. The sacredness and the significance of life in general, and human life in particular, are at a serious stake. Endorsing this view strongly, Daniel Dennett shows how the stem cell research, various reproductive technologies, organ transplants and so on do pose a serious threat to human dignity. While arguing for safeguarding the dignity of human person, he points out that we generally treat the corpse of a dead person with great care and respect, affirming the dignity of the person. Though we know that it is just a matter that cannot feel or think anymore, still we do take care to give a decent farewell. Similarly those who are in coma, though we are not fully sure whether their sense are at work, still we like to give the dignity that he or she deserves.[1] Similarly Paul Feyerabend insists that the time has come for us to liberate human society from the clutches of science, as it was once needed to liberate it from the domination of religious forces.[2] The growth of science in the last 300 years has surpassed what has been achieved in the past 3000 years. Similarly, what has been achieved in the past 300 years has been conquered by the developments of the past 30 years. Science has been so far busy with external things, about having more comfortable and sophisticated things. Now in the 21st century it has reached out to the inner realm of humans, touching upon the core issue of the identity of being human and the nature of self. 20th century was said to be a *century of Physics*, while 21st century is said to be a *century of Biology*. All such developments are, unfortunately, not always

towards the enhancement of human dignity or the enrichment of the environment either.

In this paper I wish to show that in spite of challenges to human values, say, due to economic globalization, and threats to the very human existence, perhaps, due to the thoughtless and ruthless damage done to the environment, and a callous attitude towards genetic engineering and manipulations, still there seems to be some rays of hope from the world of contemporary science. More and more researches in various fields of science tell us in strong terms that we cannot be the masters of the destiny of life in the universe. No matter how far we advance in the world of science, mysteries remain; when one is solved, perhaps, many others pop up. More and more intricacies are revealed in the micro and macro worlds. The more we come to know about the world the more we realize that a lot more remains to be known and understood.

In the first section, I wish to focus on one of the important areas of the contemporary science that poses a challenge to the human identity and dignity: Artificial Intelligence. After a brief exposition of this enterprise, I argue that, though this is quite challenging to the understanding of the human person, its shortcomings and inabilities seem to suggest that science alone cannot handle these issues, alone, but need to collaborate with other disciplines. Then I proceed, in the second section, to discuss some of limits and limitations of science, showing the need and the urgency of the interdisciplinary approaches to fathom reality and to enhance humanity. This learning experience has made science rather practical in its claims and approaches. In the Concluding Remarks, after briefly explaining what I mean by 'hope', 'enrichment' and 'enlightenment', I shall try to show how a deeper awareness of the intrinsically complex issues of the mind-body relationship and the limits of science make science more reasonable in its claims, more cautious in its investigations and, above all, more humble in its self-image. This, in turn, I believe, enables us to see the rays of hope for the betterment of humanity and the cosmos.

1. The World of the Artificial Intelligence and a Critical Appraisal

Since 1950s many investigations have been undertaken in the area of Artificial Intelligence (AI), which aim at constructing machines that can think and decide, imitating human ability. Several disciplines, like Computer Science, Cognitive Science, Neurology, and Psychiatry, work together in the area of AI. They undertake the challenge of constructing machines that would perform activities, which we would consider intelligent. Such machines, or highly sophisticated computer programmes, are expected to imitate human thoughts and understand speech, to respond in an 'intelligent' manner and this implies that the machines will study the situations at hand and decide upon the course of action to augment the chances for success. Though the interests in such machines have been fascinating human minds for long time, in the recent decades such interests have grown substantially due to the breakthroughs in the various fields of neurology and biotechnology.

Alan Turing's article, "Computing Machinery and Intelligence" (1950), showed the possibility of making machines that can analyze a set of data to produce predictable output, which was, in a way, the forerunner of modern computers. John McCarthy coined the term, *Artificial Intelligence*, in 1956, at a conference at Dartmouth College, New Hampshire, USA, in which great stalwarts, like Allen Newell, Marvin Minsky and Herbert Simon, participated. All these pioneers of AI continued to contribute to the growth and the development of the field. The contemporary medical world witnesses explosions of knowledge in the fields of neurosciences in the second half of the 20th century. The idea of making a thinking machine, which can outshine even human thinking, has been fulfilled to a large extent in 1996, when an illustrious chess player was greatly challenged by a machine (Garry Kasparov and Deep Blue). Further, researchers in the USA explore the possibility of constructing an artificial brain, known as bionic brain. They are into developing micro-chips to replace brain cells; and these chips, they claim, would understand the language of the brain and in a way, they talk to the neurons in the brain. The fundamental claim of the researches in the realm of Artificial Intelligence is that brain is a super-sophisticated and super-

programmed computer, where brain is seen as the hardware and the mind as the software. For, computer can be made to react to events on the basis of the knowledge available now; computers seem to learn from experience and they can even acquire a new language. Therefore, according to many experts, it is no more *whether* it is possible, but only *when and where* 'the thinking machine' is going to be manufactured.

The West is, by and large, used to treat mind and consciousness in naturalistic terms, to see them as purely physical products. Cognitive science treats human mind as a computer (computational view of mind). Another version sees the mental states as function within neural networks (connectionist model). The assumption that the human intelligence can be fully described in physical terms is not acceptable to everyone in the circles of philosophy. For human intelligence involves a spectrum of human activities, like reasoning, arguing, knowing, planning, learning (even learning how to learn and learning from mistakes), remembering, intentionally hiding something, telling lies, controlling one's emotions and so on. All these contribute to the

very understanding of our human existence. Thus AI does not seem to be purely physical and neurological issue. Some of the philosophical issues and basic challenges involved in the whole approach are discussed below.

A Critical Appraisal

As it is the case with any new breakthroughs, AI also has great admirers who believe that a thinking machine is really possible, if not today, tomorrow. In spite of all such tall claims and dear hopes, one does not see, in computers, the capacity to feel or to express emotions. They don't exhibit any sign of consciousness, much less self-consciousness. Computers operate on the pre-programmed data, while mind operates with the meaning and meaningfulness of the events. Brain is complex to the core. It is more intricate and sophisticated than the whole structure of the stars and galaxies in the universe. Anne Harrington affirms the idea that our studies in neuroscience reveal the very complicated and strange nature of the human brain: "...Our exploratory curiosities, our aesthetic

orientations toward order and pattern, our primal needs to connect to other human beings, our penchant for violence, even cruelty, our imaginative capacity to discover meaning and purpose in the ambiguous realities of our existence".[3] AI assumes that by changing quantitative aspects, it expects to change the qualitative aspects. Science is not able to explain this factor of coordination. Spiritual experiences and mystical dimensions seem to be far beyond what has been explained by science. Belief in the freewill is so important that one cannot visualize a meaningful life, at the personal level, or at the social level, without the dimension of the free will. That is why Paul Davies has shown that it may be a 'fiction worth maintaining'.[4]

Staunch critics like John Searle, Chalmers, McGinn and many others have astutely argued that this kind of approach to mind cannot explain the first-person experience, as the mental states are seen from the third-person point of view. Identifying different areas of the brain for different activities is really helpful for therapeutic purposes. But this cannot explain the unified and coordinated functions of the brain.

Searle's "Chinese Room Argument"

It is claimed that if computer programmes can defeat human chess players and if they can converse in at least some natural languages, then they should be taken to be intelligent. But John Searle strongly denied the possibility of artificial intelligence in any real sense. He devised 'The Chinese Room Argument', to argue against the possibility of true artificial intelligence:

> Imagine a native English speaker who knows no Chinese locked in a room full of boxes of Chinese symbols (a data base) together with a book of instructions for manipulating the symbols (the program). Imagine that people outside the room send in other Chinese symbols which, unknown to the person in the room, are questions in Chinese (the input). And imagine that by following the instructions in the program the man in the room is able to pass out Chinese symbols which are correct answers to the ques-

tions (the output). The program enables the person in the room to pass the Turing Test for understanding Chinese but he does not understand a word of Chinese.[5]

The argument shows that while suitably programmed computers may appear to converse in natural language, they are not capable of understanding language, even in principle. Searle's argument is a direct challenge to the proponents of Artificial Intelligence, and it also has broad implications for functionalist and computational theories of meaning and mind. According to *the Computational Theory of Mind*, minds are just information-processing systems. Further, Searle argues that computers can understand only the syntax (symbols) and not the semantics (the meaning of those symbols). Computers can respond to the strings of the symbols, while human minds have mental contents. Formal symbols cannot have meaning, nor interpretation or semantics by themselves, but they need someone from outside to give meaning to them. Humans respond to signs on the basis of the association of meanings with the words, not because of their mere physical appearance. While computers just decode the signs and produce some output, humans *understand* them; syntax alone is not enough for semantics, nor does it constitute semantics. Searle presents a three-premise argument that because syntax is not sufficient for semantics, computer programs cannot produce minds[6]: a) Programs are purely formal (syntactic); b) Human minds have mental contents (semantics); c) Syntax by itself is neither constitutive of nor sufficient for semantic content; and d) Therefore, programs by themselves are not constitutive of nor sufficient for minds.

Chalmer's "Hard Problem' of Consciousness

According to David Chalmers[7] the highly complicated problem for science is the mental phenomena, and within that, to explain consciousness is the most baffling challenge for the scientists. First of all, there is no unambiguous definition or understanding of the term 'consciousness'. Scientists and philosophers vary widely in their understanding, and it is not uncommon to label it as 'mystery' due to the queer intangibility and ineffability of the subjective experience of consciousness. While dealing with the intricacies of

the issue of consciousness he categorizes two sets of problems: the *easy* problem and the *hard* problem; the former includes certain phenomena of consciousness, which can be explained in terms of computational or neural mechanisms, the standard methods of cognitive science. For instance, the ability to discriminate, categorize and react to environmental stimuli, the integration of information by a cognitive system, the reportability of mental states, the ability of a system to access its own internal states, the focus of attention, the deliberate control of behaviour and the difference between wakefulness and sleep - all these issues may be satisfactorily handled by nuerophysiological approaches.

However, our visual or auditory experiences, various emotions, and bodily sensations of pain or orgasms and so on, are obviously mental states of experience, but cannot be fully explained in physical terms. One may mechanically explain how the sound or light is transmitted and processed by the brain, but it is not easy to explain why and how we *have* that experience, say, of vision or sound. There seems to be no explanation *as to why should physical processing gives rise to a rich inner life in us.* And this is the *hard* problem of consciousness. Of course, there are experts[8] who argue that once we come to know what really consciousness is, then this hard problem will no more be hard. Instead of conscious experience, terms like "phenomenal consciousness" and "qualia" or simply "experience". Even lighter terms like 'awareness' (by Newell[9]) is also used. The Vedantic theory of mind, as explicated by Sri Aurobindo, envisages non-intentional objectless mental content which is pure and self-revealing. In spite of human embodiment, mind and consciousness are seen as independent of the body. This trend can be an alternative to the Western philosophy of mind.

Artificial Intelligence – A Part of the Wider Mind-Body Problem

Artificial Intelligence is seen as a part of the much wider problem of mind-body relationship, which occupies the central stage, not only in the realm of Philosophy of Mind, but also in the realm of cognitive sciences. Today, the functions of the brain are mapped with various advanced technology of neuroimaging, like computed tomography

(CT), positron emission tomography (PET), single photon emission computed tomography (SPCET), Magnetic resonance imaging (MRI), and functional magnetic resonance imaging (fMRI). With all these advancements now science has begun to explore into what mind/consciousness is, which has traditionally been kept out of the bounds of science.

In the world of Philosophy and Cognitive Sciences, at present, there are various approaches and theories regarding the issue of mind-body relationship. In general terms, they can be grouped under three major categories: *Metaphysical Dualism Model, Reductive Materialism Model and Emergentist Model.*

Metaphysical Dualism Model

This view argues for strict compartmentalization between body and mind (soul). Both are ontologically real and existing independently. Empirical sciences have nothing to do with the latter, as these sciences simply lie beyond the scope and purview of materiality. The dualists insist that "soul or mind... is forever in accessible to natural scientific study, even in principle, and that is the basis for and possessor of all mental events: ideas, wishes, emotions, intentions, and the like".[10]

There are several problems with this dualistic approach. One of the most serious ones is that if mind and body are completely separate, having nothing in common, how is it that the material body makes an impact on the mind/soul, which is purely immaterial. Karl Popper, himself a dualist, wonders: "What we want is to understand how such non-physical things as purposes, deliberations, plans, decisions, theories, tensions and values can play a part in bringing about physical changes in the physical world".[11] Similarly if both are totally dichotomized, how on earth can one explain the causal impact of our mental / conscious decisions upon our physical nature, the problem known as, 'mental causation'? Jerry Fodor wonders: "If the mind is non-physical, it has no position in physical space... How can the non-physical give rise to the physical without violating the laws of the conservation of mass, of energy and of momentum?"[12]

Reductive Materialism Model

Only matter is real and there is no other phenomenon called mind /spirit/soul found in us. They try to explain all non-material phenomena, thoughts, memory, consciousness and so on only in terms of materiality of the neurons in the brain. Therefore, "to understand why regions of the brain react in the ways they do would be to understand human thought, human emotions, human religious experience".[13]

There are several problems with this kind of approach. Some of them are: a) There must be some coordinating agent / factor to unify the different experiences that the brain processes, at various regions of the brain, in a very complex manner. The material approach does not leave any room for a centralized agent who will synchronize all the activities, and this is known as 'binding problem', according to Hardcastle.[14]; b) If we are only a 'bundle of neurons', how come the cultural and social ethos play an undeniable role in our lives? Further, in spite of such strong influence, we do experience a sense of freedom. The experience of making a choice is something one cannot deny in one's daily life. As John Searle rightly points out, one experiences the possibility of alternatives in one's daily activities. It is as simple as that I can now choose to type this paper or to watch television or to relax and enjoy a piece of my favourite music. If everything is determined by the neurons how is that I experience this kind of alternatives from where I can choose something?[15]; c) How can one explain awareness and the awareness of this awareness? In other words, as Abrahman Thanniyiel explains, my consciousness of the world outside of me and my consciousness, which is conscious of the world, are beyond any materialistic explanation[16]; d) The mental world and all that is connected with it are, as Willam Stoger, a Jesuit scientist explains, very personal and private to the person who has them. Others have no way of getting into the world directly and they can only infer, from the symptoms or indications of the expressions, what is going on in that private mental world of the person concerned. These subjective or inner experiences, and we as the one who integrates them, cannot be explained satisfactorily in physical terms, though they may be usually considered to be related to the brain.[17]

Emergentist Model

Under the Emergentist model we find two approaches: *Non-reductive Physicalism* and *Emergent Monism.*

Non-reductive physicalism[18] basically claims that there are higher level properties, which cannot be reduced to the lower level properties; the higher level properties are in some manner dependent on the physical properties. Something new arises, but no new being is involved. There is no ontological status to all these mental/spiritual properties. For example, digestion is a function of the digestive tract, but no new non-material entity is present in the tract. Similarly, when the brain reaches a level of complexity, it reveals higher level properties. However, this does not need any metaphysical or nonmaterial or spiritual entity to explain the higher level properties. The non-reductive physicalists use the concept of *'supervenience'* to explain the relation between mind and body, whereby the physical and mental are treated as the properties of one united human person. It is an attempt to show a relationship of dependence without giving into reducibility; a collection of component systems gives rise to two different systems, where the second system relies on the first for its existence. They also use the concept of *Ontological Reductionism*, which sees no need for any intervention of a metaphysical entity to account for the higher level properties.[19] Though there are variations within this view, the main emphasis is that it rejects *Causal Reductionism* (the activities of the parts at the higher level in a system are reducible to lower level entities) and *Reductive Materialism*[20] (the mental and spiritual qualities of the higher level entities are nothing but the sum total of the lower level realities, which only are real). Many scientists and philosophers subscribe to this view of nonreductive materialism.

Emergent Monism is held by authors like Philip Clayton and Ian G. Barbour. They use the concept of emergence, which can be understood as a phenomenon in which new and coherent structures, patterns and properties arise during the process of self-organization in complex systems. These new properties cannot be reduced to the components. In the words of Clayton: "Genuinely new properties emerge which are irreducible to what came before, although they are continuous with it".[21] According to O'Conner, an emergent

property is "a simple, non-structural, natural property that is exemplified by objects or systems that attain the appropriate level and kind of organizational complexity and that exerts a causal influence on the behaviour of the possessor."[22] A number of characteristics are associated with this phenomenon of emergence: Radical novelty, Coherence/correlation, Global/macro level Production, involving a dynamic process, Perception, Unpredictability, and Self-maintenance. Further, one can see a multi-level process of complexification, including organizational complexification taking place. All these yield hierarchy of levels and new and higher properties. Thus the internal interactions form a new high-level reality, known as consciousness. However, one may wonder how is it that mind/consciousness emerges all of a sudden, if it is totally alien and unconnected with matter.

In short, various theories on the mind-body problem escape our full comprehension and understanding. Robert Miller[23] has sufficient reasons to show why it is that the very concept of conscious mind lies beyond the realm of the physical description. He shows it in four steps: a) A physical system cannot observe itself; b) Physics is not possible without making observations (or an observer); c) Any observation essentially requires a conscious mind; and d) Thus, it is not possible to decipher the working of the conscious mind in purely physical terms.

One thing seems to be very clear: the mysterious dimension of the mind-body relations will ever be there; we use our mind to learn about mind, and we can never see it as an objective reality, external to us, as our 'mind' is also involved in seeing the mind, so much so, that the quantum physics instructs us that 'observer creates reality'. No observation is possible without the interaction between the observer and the observed reality. Not only mind/soul/ consciousness is mysterious, even matter is mysterious to the core. Matter does no more seem to be 'material' in the usual sense of the word, as matter is said to be 'energy dancing at the bottom'. Einstein has made a breakthrough in showing how matter (mass) and energy are convertible with the famous $E=mc^2$. Whatever approach one might adopt, one has to encounter the mysterious nature of reality. As Abraham Thanniyiel puts it: "In the reductionistic understanding

nothing is a mystery, in the dualistic understanding *God is a mystery* and in the non-dualistic understanding *the whole reality is a mystery*".[24] One way to bring together science and religion is to look at the human person as psychosomatic unity. The new developments in science don't seem to remove the element of mind/ soul, rather they give a new understanding of it. Many quantum physicists speak about a new sort of wholeness and interconnectedness in the whole of reality. David Bohm[25] sees 'undivided wholeness' in creation, while N. Herbert holds that quantum wholeness "is a fundamentally new kind of togetherness, undiminished by spatial and temporal separation".[26]

2. Limits and Limitations of Science

With all the present feats and thrilling promises for future achievements in science, say, in the field of nanotechnology, one may be easily led to think that science has already crossed, or is at least on the threshold of crossing, all its limits. Science, with its unbelievable success, has made a great impact on the every sphere of human life. But a closer and deeper examination of science reveals the limits of science, and this revelation indicates that science cannot be the *all-in-all* enterprise. The basic argument for the limits of science is grounded on the fact science uses many axioms, which are taken for granted by science. It is further shown that "When you use an axiom, then you start on the wrong foot. You cannot prove axioms, and if you base everything on them, then you guarantee that your whole theory cannot ultimately be proved".[27]

John Barrow[28] has done an extensive exploration into the limits of science, starting from the practical limits to the cosmological ones. While the former includes cost, technology, mathematical computability and the extreme complexity of the universe, the latter involves the restrictions in learning about the origins, end, nature and structure of the universe. Our position in the universe, the evolutionary growth that the human has achieved over millions of years impose their own restrictions. Our brain, obviously, did not evolve having science in mind. There is no way to go outside of the universe to observe and all that we learn about it has to be done from within. There is no *God's-point-of-view* to see the universe as

it is[29]. The most fundamental limit in the cosmos is that the universe became visible only when photons were emitted from it; that happened only 300,000 years after the big bang expansion. Till then the universe was opaque and even light did not come out of it. To study the universe before that we need to study the neutrinos, it is possible if at all. Even then we can go back to the time of one second after the expansion. That time the universe was ten billion times smaller than what we observe now. At the most we can go back, if technology allows it, and see when the universe was 10^{32} times smaller than what it is now.

Further, the very nature of our thinking, the very neural wiring that our brain has developed during the process of evolution places a limitation. The limitations of inductive reasoning, for instance, which gives only probable knowledge, and never absolute knowledge, have to be tolerated by science. Due to this predicament and many other such shortcomings, contemporary philosophers of science prefer to speak of reasonableness in science, rather than the strict and traditional notion of rationality in science. As being just rational is not enough for a happy, healthy and holistic human life, for a comprehensive and realistic picture of science also we need reasonableness.[30]

If one is reasonable one will not impose undue limitations upon science. For instance, as Hempel points out, the inability of science to justify inductive reasoning is *not a limitation* for science. Science being an empirical enterprise always "seeks knowledge that reaches far beyond the supporting evidence... (so) the ideal of empirical knowledge with certainty is logically self-contradictory"[31] and hence the inability to meet such a logically inconsistent requirement of certainty can never be a limitation for science. He also shows that there are certain questions (e.g. the question of the existence of ghosts or God) that lie beyond the purview of science, as no empirical assertion can be made to confirm or deny. Therefore, this incapability too is *not a limitation* to the scope of science, as science is expected to prove or disprove only empirical claims. Some charge science of incomplete explanation, as science never actually explains everything. For instance, it explains that the rainbow is due to the diffraction of the sun light as it penetrates the water drop, but it does

not tell us *why* it happens so: "A scientific explanation is thus always incomplete in the sense that the explanatory facts it adduces are left unexplained and thus ununderstood. It may even seem that, as a consequence, an explanation in science never does more than reduce the problem of explaining one fact to the problem of explaining several others"[32]. An explanation is a set of statements which explain a phenomenon at hand with the help of some supporting facts. But if one expects further explanation for these supporting facts then it will lead to infinite regress. Any type of explanation, scientific, metaphysical or religious, has to stop at some point or the other, so called brute fact which is accepted unexplained. Therefore, the fact of incompleteness of explanation is also *not a limitation* for science.

It is true, as Hempel points out, that all these may not be *limitations of science*[33] as such, but I believe that they teach us another strong lesson: human cognitive powers are limited and therefore we cannot take our destiny into our hands. This situation might lead one either to a total despair, as Sartre and Nietzsche ended up in pessimism, or to look at life filled with surprises, opening up ways to transcend, as Gabriel Marcel did. There are dimensions in life that are not, even cannot be, touched by science, no matter how advanced it gets. Life is interesting and worth living, because there is always more to know and to cherish; at no point of time, we'll know whether we have known everything, because we'll never know how much is yet to be known.

All these go, I hope, to show the need for science to include non-rational, human and social considerations in understanding the real picture of science. This fills humanity with a sense of hope of getting relieved from the clutches of scientisitc attitudes.[34]

3. Concluding Remarks: Rays of Hope for Enlightened and Enriched Humanity

Hope, as an existential experience, cannot be adequately defined. Without an act of hope life becomes impossible. Not only as believers, as philosophers, as theologians, as scientists, but also as human beings we all need hope in our lives, as hope is something that touches the core of our being. Hope in its deeper sense, cannot be taken to be 'wish' or 'desire', because the latter are oriented

towards something external to us, and they have not much impact upon our ontological being. Hope is not an expression of a sort of pride, nor of ignorance of the state of affair. Hope is a strong orientation towards some 'good' for oneself or others. It implies a strong sense of 'possibility" and some element of certainty. Hope is the inner strength that gives clarity and vision even in the midst of despair and meaninglessness.[35] This inner strength cannot be shaken by the scientistic tendencies.

By *enlightenment* I mean the state of being with better realization and wisdom about the deeper realities of lives. Accumulating more and more knowledge must lead us to the level of wisdom, which alone will teach us how to use the knowledge acquired. Today, we have an ocean of information at our finger-tips, but wisdom still seems to be a rare commodity. That is why, T.S. Eliot rightly wonders: "Where is the knowledge that we have lost in information? Where is the wisdom that we have lost in knowledge? And where is the life that we have lost in living?" Precisely because we lack wisdom we have put science to wrong use, whereby it distorts human dignity instead of enhancing it.

By *enrichment* I don't just mean better amenities for life, which are also very important. I include all basic human rights to be respected more dearly and valued more diligently. All sections of humanity may enjoy the freedom of speech and the freedom to follow any religion. Human and humane care and concern for the whole of suffering humanity must be given. Equal opportunities must be given for quality education to all sections of the society. Unfortunately, In India, we have many educational structures like the State Board, the Central Board, the Matriculation Board, the Anglo-Indian Board, the CBSE system. This creates a fundamental difference in the quality of education and the opportunities for higher education and jobs in future. We must not allow such a cruel discrimination, which is systematically designed to suit the vested interests of some sections of the people in our country.

The need and the urgency to be ecologically concerned is very seriously felt today more than ever before. Various biotechnological advancements threaten not only the identity and the dignity of human beings, but also the very balanced-fabrics of ecology. The intrinsic

value of nature seems to be very badly ignored, as the modern researches and technologies seem to be focused only on the economic considerations. For instance, those who are in favour of Genetically Modified Food (GMF) claim that this will eradicate hunger in the world. But we need to realize that the world, on the whole, produces more food-grains than what is necessary for the whole of the population, but still people die of starvation. It is because of other reasons, like the unequal distribution of the resources and the opportunities, exploitation of various sorts and so on, that hunger deaths take place. *In fact as responsible citizens of the world and the members of the human family, we need to be ashamed even if one person happens to die of hunger in any corner of the world.* Genetically modified crops cause irreversible damage to the land and the earth's biosphere. For instance, the toxic materials used in the plants to kill the pests or to eradicate weeds poison the land in course of time. Further, the pest gets used to the toxic materials and they are not deterred by the plants, as it has been recently shown that the worms get immune to the bt-toxin. So the uncertainty of the full consequences and the risks of biotechnology far outweigh the benefits. Humanity needs to be very cautious in all its undertakings in the realm of biotechnology.

Along with the inability to meaningfully solve the mind-body problem, science encounters many other limits and limitations. All these caution us not to rely on science blindly. For instance, I believe that the traditional understanding of rationality seems to have not paid attention to non-cognitive elements of thoughts and feeling. Formal, impersonal ways of expression in social interactions have sidelined women and children down the centuries. Men and women, as recent studies on human psychology and behaviourism seem to show, are certainly complementary to one another, in more than one sense of the term. The rational mind of men and the intuitive mind of women need to be in collaboration with each other for the betterment of humanity. But unfortunately very important decisions and policies are, by and large, finalized and executed by men. Women are systematically ignored in this whole process. If they are also taken into confidence and their views are taken seriously one can certainly expect a better 'human touch' in all those policies. For instance, it is a painful paradox to see in India that while there is a

surplus of food-grain production (about 60 million tons), there are thousands of deaths of starvation every day. Due to lack of efficient way of storage, about 20% of the stuff is eaten away by rats or destroyed by rains. The glaring mistake lies with the callous attitudes of bureaucrats and politicians. The government machinery does not seem to be bothered about the starving people when such an enormous amount of food-grains are in excess. If women are involved more and more in the administration and the decision-making process, I strongly believe, that, with their intuitive and maternal touch, they will not easily allow the wastage of the good grains and the starvation deaths.

Science is, no doubt, a powerful force that cannot be just ignored. It is indeed a great asset, not only for making our lives comfortable, but quenching our inborn curiosity to know better and to achieve more. However, science, being aware of its own limits and limitations, is cautious in claiming to be the absolute; being led by the spirit of interdisciplinary approaches it realizes more and more the need not to be autocratic; and above all, being a social enterprise, which is by humans and for humans, science realizes its moral and ethical responsibilities *and this last realization, in turn, emphasizes on the serious commitments of humans towards safeguarding nature, as humans are supposed to be the custodians of nature, rather than exploiters of it.* All these instances of realization in the field of science, I am sure, can keep the hope for an enriched and enlightened humanity alive, and we are called upon to work towards realizing that goal.

Notes

1. Daniel DENNETT, "How to Protect Human Dignity From Science", in Adam SCHULMAN(ed.), *Human Dignity and Bioethics: Essays Commissioned by the President's Council on Bioethics,* 2008. See: http:// ase.tufts.edu/cogstud/papers/ dignityscience3.pdf. Accessed on 1 Feb, 2011.
2. See: Paul FEYERABEND, "How to defend Society against Science?", in E. D. KLEMEKE, E. D., et al., (eds.), Introductory Readings in the Philosophy of Science (New York: Prometheus Books, 1998), 54-65.
3. Anne HARRINGTON (in the foreword), in James B. ASHBROOK and Carol Rausch ALBRIGHT, *The Humanizing Brain: Where Religion ad Neuroscience Meet* (Cleveland: The Pilgrim Press, 1997), xii.

4. See: Paul DAVIES, "Undermining free will", http://www.foreignpolicy.com/articles/2004/09/01/ undermining_ free_will, 2004 (Visited on 31, Jan, 2011).
5. John SEARLE, 1999, 'The Chinese Room', in R.A. WILSON and F. KEIL (eds.), *The MIT Encyclopedia of the Cognitive Sciences*, Cambridge, MA: MIT Press. (See: http://plato.stanford.edu/entries/ chinese-room/ Accessed on 18 Jan, 2011). John Searle first proposed this argument in "Minds, Brains and Programs" in the journal The Behavioral and Brain Sciences, 1980. In the past two decades, over hundred papers have been written on this topic.
6. "The Chinese Room Argument", http://plato.stanford.edu/entries/chinese-room/ (accessed on 18 Jan, 2011).
7. David J. chalmers, "Facing Up to the Problem of Consciousness", *Journal of Consciousness Studies* 2(3):200-19, 1995. (see: http://consc.net/papers/facing.html).
8. For instance, Daniel, DENNETT, "Commentary on Chalmers: Facing Backwards on the Problem of Consciousness". (See: http://en.wikipedia.org/wiki/Hard_problem_of_consciousness; accessed on 19 Jan, 2010).
9. NEWELL, *Unified Theories of Cognition* (Cambridge, MA: Harvard University Press, 1990).
10. Philip CLAYTON, "Neuroscience, the Person and God: An Emergentist Account," in *Neuroscience and the Person: Scientific Perspectives on Divine Action* (Vatican City State: Vatican Observatory Publications, 1999), 191.
11. Karl POPPER, *Of Clocks and Clouds* (St. Louis: Washington University Press, 1966), 15.
12. Jerry FODOR, "The Mind-Body Problem", in R. WARNER and T. SZUBKA, eds., *The Mind-Body Problem* (Oxford: Blackwell, 1994), 25. Quoted in Tim Crane, The Elements of Mind: An Introduction to the Philosophy of Mind (Oxford: Oxford University Press, 2001), 41.
13. Philip CLAYTON, "Neuroscience, the Person and God: An Emergentist Account," in *Neuroscience and the Person: Scientific Perspectives on Divine Action* (Vatican City State: Vatican Observatory Publications, 1999), 191.
14. Valerie Gray HARDCASTLE, "The Binding Problem", in William BECHTEL and George GRAHAM, eds., *A Companion to Cognitive Science* (Oxford: Blackwell Publishers, 1998), 555.
15. John R. SEARLE, *Minds, Brains and Science: The 1984 Reith Lectures* (London: British Broadcasting Corporation, 1984).

16. Abraham THANNIYIEL, "Neuroscience and the Human Person", in *Omega* IV (2005) 1, 84-105, 90.
17. William R. STOGER, "The Mind-Brain Problem, The Laws of Nature, and Constitutive Relationships," in Robert John RUSSELL et al., eds *Neuroscience and the Person: Scientific Perspectives on Divine Action*,. (Indiana: University of Notre Dame Press, 2000).
18. One of the main proponents of non-reductive materialism thesis is Maurice K. D. SCHOUTEN. See his work, "'Theism, Dualism, and the Scientific Image of Humanity", *Zygon* 36, 4 (December 2001).
19. All the complex nature of mental and conscious properties of humans don't entail any necessity of mind or soul. See: Nancy Murphy, "Nonreductive Physicalism: Philosophical Issues", in Whatever Happened to the Soul?: Scientific and Theological Portraits of Human Nature (Minneapolis: Fortress Press, 1998).
20. Daniel DENNETT holds on to such a view as he argues that all the mental phenomena or properties can be comfortably explained with the help of physical laws and fundamental materials, as Physics is able to account for the phenomena of radioactivity, photosynthesis, reproduction, nutrition, growth etc. Humans are nothing but an compilation of billions and billions of macromolecular machines. See his work, Consciousness Explained (Boston: Little Brown, 1991).
21. Philip CLAYTON, 1999, 211.
22. Timothy O'CONNOR, "Emergent Properties", *American Philosophical Quarterly*, Vol 2, No 34, 1998. See: http://www.jstor.org/pss/20014490 (accessed on 3 Feb, 2011).
23. R. C. MILLER, Space, Time and Quanta (New York: W. H. Freeman and Co., 1994).
24. Abraham THANNIYIEL, 2005, 100.
25. David BOHM, *Wholeness and the Implicate Order* (London: Routledge and Kegan Paul, 1981).
26. Nick HERBERT, *Quantum Reality – Beyond the New Physics* (New York: Anchor Books, 1987), 55-56.
27. See: http://knol.google.com/k/the-limits-of-science#III(2E)_Limitations_of_exact_science.
28. John D. BARROW, *Impossibility – The Limits of Science and the Science of Limits* (London: The Random House Group Ltd, 1999).
29. An analogy may in be in order here: A baby-fish while swimming in the ocean asked the mother fish, "What is the ocean?". The mother-fish replied, "This is the ocean, you are swimming in it", to which the baby fish objected: "Don't tell me a lie. This is only water, where is the ocean?"

Similarly, as long as we are in the universe we will never be able to have the full picture of it.

30. See: Stephen JAYARD, "Reasonableness: The Defining Characteristic of Human Beings", in *Satya Nilayam – Chennai Journal of Intercultural Philosophy*, No. 17, Feb 2010, 123-145; See also: "Rationality", in Johnson J. PUTHENPURACKAL, *ACPI Encyclopedia of Philosophy*, ATC, Bangalore, 2010, 1133-1138; and "Reasonableness in Science", ibid., 1138-1143.
31. HEMPEL, "Valuation and Objectivity in Science," in Fetzer, 2001, 331.
32. HEMPEL, " Science Unlimited?", in Fetzer, 2001, 335.
33. HEMPEL points out a transcendent riddle which cannot be solved by science or any other discipline: namely, 'why is there anything at all, rather than nothing?'. It is not answerable because any answer or explanation would always be in terms of something that already exists. Even to answer in terms of primary cause or uncaused cause presupposes the agency of that cause. Therefore to expect science to answer this question is a logically inconsistent requirement, as "no theory, no conceptual scheme, can explain the existence of anything without assuming the existence of something" (See: Hempel, "Science unlimited?", in Fetzer, 2001, 341).
34. Scientism is the tendency to hold science to be absolute and final in giving answers to all the questions that humanity faces and the world of metaphysics is not under the purview of science and it is not worth the while for science to look into it.
35. For a short exposition of hope, please see: Vincent AIND, "Hope", in Johnson J. PUTHENPURACKAL, 2010, 621-625.

Bibliography

Anne Harrington (in the *foreword*), in James B. Ashbrook and Carol Rausch Albright, 1997.

Ashbrook, James B. and Carol Rausch Albright, *The Humanizing Brain: Where Religion ad Neuroscience Meet* (Cleveland: The Pilgrim Press, 1997).

Barrow, John D., *Impossibility – The Limits of Science and the Science of Limits* (London: The Random House Group Ltd, 1999).

Bohm, David, *Wholeness and the Implicate Order* (London: Routledge and Kegan Paul, 1981).

Clayton, Philip, "Neuroscience, the Person and God: An Emergentist Account," in *Neuroscience and the Person:*

Scientific Perspectives on Divine Action (Vatican City State: Vatican Observatory Publications, 1999).

David J. Chalmers, "Facing Up to the Problem of Consciousness", *Journal of Consciousness Studies* 2(3):200-19, 1995. (see: http://consc.net/papers/facing.html).

Davies, Paul, "Undermining free will". See: http://www.foreignpolicy.com/articles /2004/09/01/undermining_free_will, 2004. (Visited on 31, Jan, 2011).

Dennett, Daniel, *Consciousness Explained* (Boston: Little Brown, 1991).

————, "How to Protect Human Dignity From Science", in Adam Schulman (ed.), *Human Dignity and Bioethics: Essays Commissioned by the President's Council on Bioethics*, 2008. See: http://ase.tufts.edu/cogstud/papers/dignityscience3.pdf. (Visited on 1 Feb, 2011).

————, "Commentary on Chalmers: Facing Backwards on the Problem of Consciousness". (See: http://en.wikipedia.org/wiki/Hard_problem_of_consciousness; accessed on 19 Jan, 2010).

Fetzer, James, H. (ed.), *Science, Explanation and Rationality – The Philosophy of Carl G. Hempel* (Oxford: Oxford University Press, 2001).

Feyerabend, Paul, "How to defend Society against Science?", in E. D. Klemeke, E. D., *et al.*, (eds.), 1998, 54-65.

Fodor, Jerry, "The Mind-Body Problem", in R. Warner and T. Szubka, eds., 2001.

Herbert, Nick, *Quantum Reality – Beyond the New Physics* (New York: Anchor Books, 1987).

Jayard, Stephen, "Reasonableness: The Defining Characteristic of Human Beings", in *Satya Nilayam – Chennai Journal of Intercultural Philosophy*, No. 17, Feb 2010, 123-145.

————, "Rationality", in Johnson J. Puthenpurackal, 2010, 1133-1138.

————, "Reasonableness in Science", in Johnson J. Puthenpurackal, 2010, 1138-1143.

Hardcastle, Valerie Gray, "The Binding Problem", in William Bechtel and George Graham, eds., *A Companion to Cognitive Science* (Oxford: Blackwell Publishers, 1998).

Harrington, Anne (in the *foreword*), in James B. Ashbrook and Carol Rausch Albright, 1997.

Hempel, "Valuation and Objectivity in Science," in James H. Fetzer (ed.), 2001.

————————, " Science Unlimited?", in Fetzer, ed., 2001.

Klemeke, E. D., *et al.*, (eds.), *Introductory Readings in the Philosophy of Science* (New York: Prometheus Books, 1998.

Miller, R. C., *Space, Time and Quanta* (New York: W. H. Freeman and Co., 1994).

Murphy, Nancy, "Nonreductive Physicalism: Philosophical Issues", in *Whatever Happened to the Soul?: Scientific and Theological Portraits of Human Nature* (Minneapolis: Fortress Press, 1998).

Newell, A., *Unified Theories of Cognition* (Cambridge, MA: Harvard University Press, 1990).

O'connor, Timothy, "Emergent Properties", *American Philosophical Quarterly*, Vol 2, No 34, 1998. See: http://www.jstor.org/pss/20014490 (accessed on 3 Feb, 2011).

Online Source: http://knol.google.com/k/the-limits-of-science#III(2E)_Limitations _of_exact_science.

Popper, Karl, *Of Clocks and Clouds* (St. Louis: Washington University Press, 1966).

Puthenpurackal, Johnson, J, Editor in Chief, *Encyclopaedia of Indian Christian Philosophy* (ECIP), by Association of Christian Philosophers of India (ACPI), (Bangalore: Asian Trading Corporation, 2010), 1138-1143.

Russell, Robert John, et al., eds., *Neuroscience and the Person: Scientific Perspectives on Divine Action* (Indiana: University of Notre Dame Press, 2000).

Schouten, Maurice K. D., "Theism, Dualism, and the Scientific Image of Humanity", *Zygon* 36, 4 (December 2001).

Searle, John R., *Minds, Brains and Science: The 1984 Reith Lectures* (London: British Broadcasting Corporation, 1984).

Searle,John 'The Chinese Room', in R.A. Wilson and F. Keil (eds.), *The MIT Encyclopedia of the Cognitive Sciences*, Cambridge, MA: MIT Press. 1999 (See: http:// plato.stanford.edu/entries/ chinese-room/ Accessed on 18 Jan, 2011).

Thanniyiel, Abraham, "Neuroscience and the Human Person", in *Omega* IV(2005), 84-105.

Warner, R. and T. Szubka, eds., *The Mind-Body Problem* (Oxford: Blackwell, 1994), 25. Quoted in Tim Crane, *The Elements of Mind: An Introduction to the Philosophy of Mind* (Oxford: Oxford University Press, 2001).

William R. Stoger, "The Mind-Brain Problem, The Laws of Nature, and Constitutive Relationships," in Robert John Russell, 2000.