Asian Foundational Approaches in Bioethics

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Bioethics cover a wide realm of issues varying from abortion, animal rights, the nature of the body and mind, definitions of death, euthanasia, the environment, eugenics and medical ethics in general (I have selected these topics as representative from the *Encyclopedia of Bioethics* 1995). And if one were to bring some other related issues, it would also cover problems in another new technology, informatics, specially emerging discussions on computer based artificial life and attendant issues of rights of robots. These expansions of technology result in challenges to deeply held cultural assumptions. Recognizing their importance, Western ethicists have called for public debates on these and other issues[1]. As in the coming decades the world –its production, consumption and creative bases – increasingly shift to Asia, there has to be Asian thought on these culture-impregnated issues.

Generally, today's area of bioethics in the West uses an interdisciplinary perspective. It incorporates the views of philosophers, theologians, historians, lawyers, writers and scientists. Some of the questions and answers are also influenced by the Hippocratic Corpus which is the tap root from which all Western ethics in medicine is formally derived. Many medical students take the oath on graduation[2]. (One should note that similar, and at times, more comprehensive medical ethics are found in Asian sources such as Susruta, Charaka etc.)

But the debates that have already occurred have been through the implicit framework of Western religious definitions of life and ethics[3]. Often one sees lurking behind these, implicit assumptions like those of a soul. Some of the issues that have been raised by already existing technology are, for believers in a God only to be seen as "playing God" as the title of a book on the topic so aptly puts it[4].

With Christianity, the church had developed a large and highly detailed set of views on birth, based on its perspectives. But even within Christianity, such views had changed. Saint Augustine, for example, had held that human life began at quickening, the mother's first feeling of the movement of the fetus. This occurs at the fourth or fifth month of pregnancy. Thomas Aquinas, following Aristotle saw the beginning of human life only at the time when the unborn acquires a soul. For males this soul acquisition occurred at forty days after conception, for females after eighty days. Saint Gregory of Nyssa following Plato put the beginning of life at conception. However it was barely hundred years ago, in the late 1800s that after fertilization was understood did the Roman Catholic church settle on conception as the beginning of life, giving up the en-soulment concept.

In non Western countries, there has been little debate on modern bioethics, although it is readily admitted by workers in the field that non Western traditions could well give different answers to these questions[5].

Some of the bioethics related topics discussed today have deep resonances with concerns of the major civilizational strands of Asia, that is before the arrival of simplistic Judaeo-Christian thought with its crude assumptions of a creator etc. These Asian civilizational strands whether they be Taoism, Shinto, Buddhism or Hinduism have much relevant material on some of these topics. For example, contemporary Western discussions on animal rights or issues of the environment do not appear strange to Hindu or Buddhist thought. In fact the modern Western movements in these fields have increasingly borrowed from this thought.

And where a Western frame has not been super imposed, Asian thought has given different answers to the pressing bioethical problems of today. Thus in Japan, which has tended to be relatively independent of Western prescriptions at least in issues relating to human relations, Buddhist ideas and Shinto ideas co-mingle and co-contend. Buddhist ideas tend to propagate an individualistic ethos of the person without any self while Shinto tends to emphasize the interrelatedness of humans (and nature). The outcome has been a slow path to organ transplantations and its partial prerequisite of a brain-death definition of life. Buddhism and medicine it should be noted was closely correlated in Japan – as in other Buddhist countries like Sri Lanka. Up to the 1860s the majority of Japanese doctors were Buddhist monks[6].

So it is necessary that we step out of our Western boxes and think afresh. Western commentators observed this lack of Asian discussion nearly a decade ago[7]. But there are now beginnings of some non-Eurocentric discourse on some of these issues of bioethics. For example this year has seen a foundational Buddhist critique of the Western concepts of human rights in the journal *Philosophy East and West*.[8] Recently there was Keown's book length attempt at Buddhist bioethics, a rather mechanical textual effort, but a beginning just the same on such issues as abortion and time of death[9]. There has been the populist writings of Vandana Shiva which has attempted to bring in some broad brush Hindu ideas into feminist and ecological discourse[10]. And there are the writings of Coward, Loy and Barnhart during the last couple of years on Indian and Buddhist bioethics[11].

Some of these are a beginning. Some of them have not touched some of the very exciting and related issues that have come in certain discourses in human genomics, evolutionary theory and Artificial Intelligence. The present paper, a continuation of some related earlier writings on the topic by the author is an attempt at a foundational dialog on the issue of bioethics brought in by the new technologies[12].

Questions of ethics touch issues in philosophy and belief systems. As most bioethics discourse has hitherto occurred on the Western and partly Judeo-Christian discourse it is useful to delineate the differences between philosophy and belief systems in the Judeo-Christian (and Islamic) and Greek derived Western systems and (South) Asian ones.

"Religion", "Philosophy" and "Science": South Asian and West

In discussions on bioethics, the fields of science, philosophy and religion intermingle. But "religion", "philosophy", and "science" have different connotations from a South Asian - say Buddhist - perspective and a Eurocentric one. These themes need to be explored in a cross-civilizational perspective, as a preamble, to see bioethics in a more universal light.

The English word "religion" has a heavy set of connotations, carried over from Judeo-Christian roots. This same word "religion" is also carried over by many social scientists as well as by popular English language usage to describe South Asian belief systems. But South Asian belief systems differ widely from the Judeo Christian systems. Some like the Charvaks were out and out materialists. Some like Buddhism, could in contemporary parlance be considered to have some characteristics of atheism. As a central feature, all South Asian belief systems possesses a heavy overlay of philosophy. Some, such as those of the Jains found mathematics an important ally, in fact mathematizing some of their belief systems and developing important mathematical findings on the way[13] . The Buddhists, on the other hand, had important psychological observations.

Over the last few decades, several serious studies have emerged that lay bare from an East-West comparative frame, many Eastern philosophical positions that accompany its "religions". University departments have been devoted exclusively to their study and journals such as *Philosophy East and West* are exclusively devoted to the topic. Generally speaking, South Asia in the formulation of Moore, has an "almost infinite variety of philosophical concepts, methods, and attitudes, ... There are many differing approaches to reality ... [and] ... to truth"(quoted in Bishop 1975 p. 3).

But modern philosophy in the West arose as an unraveling of the Middle Ages through the Renaissance, the Scientific Revolution and the Enlightenment. All these events of the last few centuries changed Western thinking. There have been many studies in the tradition of East-West comparative philosophy that indicate that although South Asian – say Buddhist - and modern Western approaches may not necessarily agree on the answers to key questions, they sometimes broadly address similar problems.

Let us take Hume who was a father figure in this Post Scientific Revolution philosophy. He influenced the political and social thought enterprise of the Enlightenment by creating a climate of ideas that challenged the status quo. Several commentators, such as Whitehead, Moorthy and de la Vallee Poussin[14] have pointed to the surprising and detailed similarities between some of the thoughts of David Hume and of the Buddha, especially in relation to the idea of the self. (These similarities will come to the fore in our later discussions on non-Eurocentric bioethics).

Jacobson observed that in both these philosophical viewpoints separated by over 2,000 years, "there is no thinker but the thoughts, no perceiver but the perceptions, no craver but the cravings..... The similarity ..... is striking"[15]. Jacobson has explored

further similarities, and has put them in perspective of the European intellectual climate at Hume's time. Jacobson pointed out that the years from 1600 to 1769 were the period during which: "the Orient contributed most to Western thought" [16]. Jacobson rejects the notion of an independent discovery of these ideas by Hume and holds the view that Hume was influenced by ideas from China pouring into Europe at the time. And as part of that transfer from China were also Buddhist ideas[17].

More recently, studies by comparative philosophers have indicated considerable overlap between key Western philosophers and Buddhism. These include Hegel, Schopenhauer and Nietzsche[18]. In the case of American philosophers, Dale observed that there were South Asian influences including Buddhism on William James, Charles A. Moore, Santayana, Emerson, and Irving Babbitt which influences helped enlarge the debate on philosophy in America, for example in epistemology, psychology and on ideas of the self [19]. William James, had ideas of the self "which could have been written by a Buddhist". Buddhism's process approach likewise has influenced or found parallels in a set of Western philosophers such as Charles Pierce, John Dewey, William James, Alfred North Whitehead and Charles Hartshorne[20]. Price has seen significant parallels between Buddhism and early 20th Century thought[21].

The *Questions of King Milinda* (*Milinda Panna*) is one of the most popular Buddhist texts in Sri Lanka and Price says of this text that it "might almost have been written in Cambridge in the 1920s". Hanna has seen parallels and similarities with Buddhism in the phenomenology of Husserl and Heidegger[22]. Heidegger is quoted as saying, "If I understand [meaning Buddhist ideas] correctly, this is what I have been trying to say in all of my writings"[23].

One of the most seminal philosophical figures in this century because his ideas deeply influenced Einstein and the latter's theory of relativity was Ernst Mach. Mach's philosophy was very sympathetic to Buddhism, because like him, it denied a permanent self. There was thus possible indirect backdoor influences of Buddhist ideas on Einstein through philosophical ideas associated with both Hume (another key influence on Einstein) and Ernst Mach. These were two of the few philosophers which Einstein read between 1902 and 1904 immediately before his Special Relativity paper. Hume's book studied by Einstein was *The Treatise on Human Nature* which had strong echoes with Buddhism[24]. Einstein gave Mach credit for significant influences on his own thinking, in the development of both Special Relativity, as well as General Relativity[25].

Mach himself had an attraction to Indian literature and science, including its mathematics. Some of his friends were Buddhists like Paul Carus and Theodor Beer. Mach also contributed to Paul Carus' journals *The Open Court* and *The Monist* [26]. Mach's first direct appreciation of a Buddhist philosophical orientation, especially with relation to the relativity of the observer (central to Einstein's theories) was revealed when he wrote in his *Analyse der Emfindungen* ("Analysis of Sensations")[27].

> But to ask that the observer should imagine himself as standing upon the sun instead of upon the earth, is a mere trifle in comparison with the demand that he should consider the Ego to be nothing at all, and should resolve it into a transitory connection of changing elements[28].

Buddhism's central thesis denies a permanent Ego and considers both the observing Ego as well as the observed world as transitory. Incidentally, it is significant that Mach's

Analyse der Emfindungen was translated into Sinhalese, soon after it appeared; in fact, Sinhalese being the first language, it was translated from the German original[29].

The other scientific revolution of the 20th century - quantum physics - also resonated with Buddhist epistemology. The best illustration of this is to quote Robert Oppenheimer, the head of the Manhattan Project in the 1940s which gave the world the atomic bomb. Commenting on the peculiar nature of quantum physics, Oppenheimer wrote: "If we ask, for instance, whether the position of the electron remains the same, we must say 'no'; if we ask whether the electron's position changes with time, we must say 'no'; if we ask whether the electron is at rest we must say 'no'; if we ask whether it is in motion, we must say 'no'. The Buddha has given such answers when interrogated as to the conditions of a man's self after his death, but they are not familiar answers for the tradition of seventeenth and eighteenth century science" [30]. (In a recent article in *Nature* I have traced in more detail the philosophical resonances between modern physics and Buddhist philosophy)[31].

To illustrate the continuing uses of Buddhism with philosophy and science, one can give the example of Varela and his co-authors in a well reviewed book, *The Embodied Mind*. They used insights from Buddhist philosophy and mental practices to solve some pressing natural science problems[32]. The concept of mind and body in Buddhist theory and meditative practise Varela *et al* apply to several problems, in cognitive psychology, evolutionary theory, linguistics, neuro-science, Artificial Intelligence and immunology.

The above examples are only an indication of the fact that, as the West unfolded its philosophy in the last few centuries, there are many areas of similarities between South Asian and Western positions, I have gone out of the way in the above descriptions to indicate from Western sources that Buddhism and other South Asian belief systems in their core are nearer to the Western category of philosophy and is at least partially an observational approach than the revelatory religions of the Judeo Christian traditions. I have also shown that these Buddhist philosophical and observational positions at times bear directly on issues of science.

What appears from the above listing of East-West comparative considerations therefore is that a facile East-West comparison between "Science" and "Philosophy" on the one hand, and "religion" has many pitfalls. There are much larger elements of both the philosophic as well as the scientific in South Asian belief systems, some of these elements in fact having deeper resonances with the scientific endeavor in the West, than did Christianity. But, this does not mean that Buddhists, Hindus and Jains were "more scientific", than Europeans. What these contextual factors raise are wider questions concerning the nature of science, the nature of philosophy in East and West and the nature of belief systems such as the revelatory Judeo-Christian religions and the non-revelatory South Asian ones. These contexts are especially important in considering science induced philosophical issues including those of ethics that are brought about by biotechnology.

Generally speaking, Western religions are revealed systems, presumed to be by a higher power, 'God'. Buddhism is, at least partly, experiential and experimental, built on individual perceptions and experiences not necessarily on another's unverified word of his experience. In Buddhism this sense of personal experience and verification is central to its theory. But practice, let me hasten to add, does not always follow theory (or more

accurately, does not follow the popular ideology of what a “correct” and “scientific” theory should be).

The new technologies: biotechnology and information technology

Two new science based technologies biotechnology and information technology are today transforming the world we live in. They do so more profoundly than any human social revolution including the Neolithic revolution –which introduced settled agriculture- and the Industrial Revolution. Biotechnology promises to rewire the history of life on earth transferring genetic material from different living organisms to others. Information technology on the other hand promises to change culture in that it processes human information transforming it. In that sense both technologies impinge on what is to be human in a biological sense and cover a wide tapestry of ethical issues. Both biotechnology and information technology ultimately deal with information, – in the case of biotechnology information stored in genes. So their impact on values are in fact ethical issues arising from the radical transformation of information in nature and culture.

This extensive intrusion of technology into our biological and cultural beings raises many important questions. Many have expressed concerns on the problems created by the admixtures. Through these admixtures we are rewriting our very biological and cultural being. Deep ethical questions have emerged of how to traverse the future brought about by these new technologies. These devolve into a key question: what "grounding" in philosophy, morality, ethics should we use, when we are cutting the biological, and cultural ground under our very being. These are questions much more profound than those that occurred in earlier key turning points in human history such as the paleolithic, the neolithic and the Industrial Revolutions. Almost all of these questions relate to those of identity created by the new interventions.

BIOETHICS OF TRANSPLANTS, REPRODUCTIVE TECHNOLOGY, IMPLANTS AND PROSTHETICS

At the moment, in say genetic engineering's infancy, one sees only the beginnings of such vexed questions. Yet, a precursor to their nature is seen in the non-genetic interventions that have already been made in reproductive technology and tissue transplants.

Such techniques as flushing of embryos, in-vitro fertilization, sex pre-selection, surrogate motherhood, surrogate embryo transfer and cloning have raised a hornet’s nest of issues.

Some of these interventions have seen confusion and dramatic reversal of biological and social kinships. For example, when a woman carries, in an act of surrogate motherhood, her own daughter's child, as has already happened; the grandmother and mother becomes the same person, and the child's identity is multiple - at the same time son, grand son, and stepfather[33]. In a reverse direction the identity of the parent can also be thrown into question. Thus who, for example is the parent of a child brought about by in-vitro fertilization from an egg donated by Mrs. A., combined with a sperm from Mr. B., implanted in Mrs. C's uterus and given for adoption to Mr. D. and Mrs. E.?

These very complicated social and ethical issues will intensify when genetic characteristics themselves can be excised-in or -out of chromosomes in the future. In such cases, possible parents could be spread over a large number of desirable gene donors, or for that matter, a computerized gene bank. In the extreme hypothetical example, there could be a different donor each for a variety of genes standing respectively, for example for a nose, for an eye, for a set of teeth, for a particular type of intelligence, for avoiding a particular disease and so on. If one transfers genes from other organisms (the gene for preventing a disease could even be from another species - a transgenic source - as has happened already in the plant field); "parentage" then is a very complicated affair. In the ultimate - meaning in the next few decades - it becomes within current discourse an unsolvable affair.

There is another intrusion to human identity occurring in the form of prostheses for the brain in the guise of computing. Advanced information technology, especially Artificial Intelligence (AI) related ones, aims at cloning the partial behavior of the mind. Further, the senses and so parts of the "mind" are through electronic means now being extended beyond one's person. By pressing a lever, clicking on an icon or speaking to a device I can effect an event remotely and that effect can also be fed back to me so that I internalize this feed back experience. This, and the extensive cloning of human capacities through a computer tends to spread the human identity widely over artifacts. Instead of carrying all my ideas in my head as I would have done if I lived ten thousand years ago, or part of them and the other parts as written documents if I lived two thousand years ago, I today spread my stores of information in all types of computing artefacts. Further, if I was working in the earlier part of this century, I would have manipulated my information only in my head or in the heads of my fellow humans except for a few arithmetical calculations that I would have relegated to a slide rule or a calculator. But now through wide spread computing artefacts, I quite often process my data remotely in machines. To give a trivial example the form this para or page takes does not require my elaborate intervention to get at the desired spaces, fonts etc; they are processed remote from myself. The general position today is that I can spread parts of my mental processing over several artefacts.

In Virtual Reality (VR), this intensity of human-computer interaction reaches an all encompassing threshold of intimacy. Here, the user immerses oneself in computer-generated visual and other sensory inputs and manipulates these representations through his/her input-output devices. When virtual reality's intimate output interfaces with autonomous intelligent technologies such as genetic algorithms and neural networks, the computer and human interface would increasingly be like that between humans. The resulting exchange of information between the two would be very close and intimate. Here, what goes inside the brain, and outside in the artefact, is so intermingled, that the internal intrusion of prostheses become a very important ethical and philosophical problem. Deep problems of identity rear their heads again.

With advances in biotechnology and information technology therefore, questions of identity, and of associated philosophical, social and ethical modes of navigating the future become central issues. Have this class of philosophical, and ethical problems been met with, and discussed before and would therefore provide us some hints to navigate such a future world. There is one attempt in the field of cultural information to which I shall now turn.

STREAMS OF “INFORMATION" IN BUDDHISM

Culture is information to be stored and processed in the mind. In the minds of humans, culture acts out its role. This acting out takes the form of mental activity, and a stream of thoughts. Evolutionary lineages of information are like such extended streams of thoughts. So, the flow of our thoughts give us subjectively our internal feel of life.

These lineages in the thought realm have been the subject of much intense attention in South Asian psychologies and philosophies, especially Buddhism. Thoughts as they arise internally in our minds and flow have been subject to careful observation and analysis. This observation and analysis, in many ways parallel - albeit perhaps notably only in narrow realms such as this - some of the rigor that one observes in modern science. Buddhism as a belief system places a high value to skepticism, accurate observation and analysis of psychological processes. Its founder, was to declare in the well known Kalama Sutta the supreme need for questioning authority, including his own. In another instance he admonished "come and see" for oneself the truth of observations on the mind.

The validity of some of the Buddhist conclusions on mental processes, including those of the many practitioners who came after the Buddha has been increasingly corroborated within the last twenty years as western psychologists and physicians have taken these observations seriously and attempted to validate them as we have amply documented. This has notably been in the effects of "meditation", which shorn of its Western connotations are techniques precisely for such internal observations[34].

In this Buddhist literature, a class of questions are raised that directly parallel in many ways, some of the questions that occur today in the era of the cyborg and the gene transplanted hybrid. It is instructive to explore this literature.

I have used the word lineage or stream to describe the flow of information that connects the present of an information lineage with its past and on to the future. The stream and flow is the very image often evoked in Buddhist discussions on the flow of mental phenomena as it unravels within the mind, that is, of culture.

In Buddhism, the universe's components are in a state of impermanence, in a state of ceaseless movement. There is nothing durable or of static being[35]. The continuity of life is not through an abiding permanent structure, an 'I'. Buddhism is unique in the philosophies of the world that it denies the existence of a self or a soul. A belief in a permanent abiding 'me' is radically deconstructed in Buddhism.

Buddhism breaks the component physical and mental factors that constitute the psychophysical personality, into what in its terminology it calls the five aggregates. These are then analyzed and deconstructed to be without an unchanging substrate. In the Buddha's own words "there is no materiality whatever ..... no feeling ... no perception .... no formations ... no consciousness [these five constituting the five Buddhist aggregates] whatever that is permanent, everlasting, eternal, not inseparable from the idea of change, ... that will last .."[36] And, at another time, "When neither self nor anything pertaining to self can truly and really be found, this speculative view [of] a permanent, abiding, ever-lasting, unchanging [self] is wholly and completely foolish" [37]. A disciple of the Buddha elaborated further that what one calls 'I AM' is "neither matter, sensation, perception, mental formations nor consciousness" [- the latter, the five Buddhist aggregates][38].

Physical elements change, as do mental phenomena. All are in a state of perpetual becoming. All phenomena are but fleeting strings and chains of events. As the constituents of an individual change, s/he does not remain the same for two constituent moments[39]. In the Buddhist analysis of identity, there is no individual, only a stream[40]. 'Life is a stream (*sota*), an unbroken succession of aggregates. There is no temporal or spatial break or pause in this life continuity[41]. This continuity is not through a soul, but through a stream of becoming[42].

It should be noted that this analysis is partly arrived at from observing the innermost subjectively felt inside of a person. In fact, one of the objectives of Buddhist mental exercises, 'meditation' is to observe, experience and describe for oneself this lack of self and of permanence from within one's own streams of thoughts and mental phenomena. From within our own innermost subjectivity, the problem of identity and of an abiding "I" is shown to be a false one.

If this be the real state of "I' from both an external material point of view, and internally from a subjective point of view, then we are all ever-changing streams. Our identity is not in a snap shot existence of being, but in a process of becoming, an unraveling.

From such a perspective, then the questions raised by the two technologies on identity are seen differently. The existential angst of being a hybrid, of having genes of plants and animals inside one is seen differently. The problem of one's 'self' being spread over several artifacts now loses its potential terror. The threat of being a cyborg, of Frankenstein's creature; the concerns of a Jeremy Rifkin the fundamentalist critic of biotechnology (the latter, perhaps unknown to him one of the truest of Christians, much more fundamentalist on his position than those right wing Christians who protest at abortionist clinics) is seen differently.

Living things, complained Rifkin at one time "are no longer perceived as carrots and peas, foxes and hens, but as bundles of information. All living things are drained of their aliveness and turned into abstract messages. Life becomes a code to be deciphered. There is no longer any question of sacredness or inviolability. How could there be when there are no longer any recognizable boundaries to respect". Further, he continued "as bioengineering technology winds its way through the many passageways of life, stripping one living thing after another of its identity, replacing the original creations with technologically designed replicas, the world gradually becomes a lonelier place" [43]. Buddhism stripped this seeming sacredness and identity over two and a half millennia ago.

A gene does not make a sentient being. Only the stream of a being's existence, of an onwards flowing history constitutes the sentient human or the sentient cyborg. A person does not exist as a unique individual but as a constructed ever changing flow, an onwardly moving lineage. If to this lineage are added new elements, new parts, it is but in the very 'normal' nature of such streams. All such streams are constructed from constituents in an ever moving process. A person's normal existence is of such a constructed being. The artificial introduction of elements say to the internal cultural flow from new genes or artifacts is but another manifestation of the normal construction of such flows. From a realist's perspective, there is no difference.

But such a perspective makes one squeamish. Raises fright, alarm and even disgust. One would not mind, a set of false teeth, even an implanted one, a prosthesis for one's limbs say, a walking stick or for that matter even a motorized electronically controlled one. But messing up one's interiority, ones subjectivity, evokes an entirely different order of emotions. The aliens taking over minds, raises different feelings, of one's own consciousness being invaded. It is after all, putting doubt on one's own subjectively-felt oneness that is at stake.

But in such instances, the Buddha himself had been very firm, rejecting the views of persons who take the thing called the 'mind' or 'consciousness' to be an unchanging substance. In that case it was better he argued, for a person to take the physical body as an unchanging 'self', rather than thought, mind or consciousness, because the body was at least more solid in appearance than the mental, which are ephemeral and continually change and so are hardly candidates for permanency[44]. Interiority and consciousness is demystified into mundane components. In the ponderous and archaic language of 19th Century European translators of an important Buddhist text: "Were a man to say I shall show the coming, the going, the passing away, the arising, the growth, the increase or

development of consciousness apart from body, sensation, perception and volitional formations, he would be speaking about something which does not exist"[45].

This view from within, that is the subjective view, the feeling of consciousness are our structured windows to the environment. These, we have seen are characteristics of every lineage, an outcome of the history that it has traversed. It is what is conventionally called mind. And in the contemporary scientific world general system theorists have advised us that such minds are endemic to all systems. Such systems, when observed externally are physical and material, when viewed from within, they are mind, subjectively experienced. (General system theorists have in recent years drifted into the field of general evolutionary theory, which as we shall see later has much to say on biological and subjective processes, including ethics.)

But experiencing the intrusion of the new technologies that remake us biologically and culturally, in an internal sense is disturbing. It challenges our sense of self. "This idea that I may not be, I may not have, is frightening to the uninstructed" as the Buddha himself put it[46]. And, as the belief in an abiding self is deep rooted in humans, the contrary position is 'against the current' as the Buddhist texts say on one other occasion[47].

If then in the coming future, it is inevitable that we be constructed and reconstructed, from biology, culture and artefact, what should be our epistemological, philosophical, ethical and subjectively felt guiding principle be. If "we" would then be cyborgs and hybrids, what should the interiority of robots, of constructed hybrids be, as they navigate reality, and tunnel through time subjectively.

The person is not a ‘what’, but a process. Being is only a snap shot in the process of becoming, lasting only the length of one thought. "Just as a chariot wheel in rolling, rolls only at one point of the tire, and in resting rests only at one point; in exactly the same way, the [internal] life of a living being lasts only for the period of one thought. As soon as that thought has ceased, the being is said to have ceased"[48].

There is no stable sub stratum to be considered the self. It just symbolizes a stream of physical and psychological phenomena that is perishing. This is the correct view to be internalized in the inevitable day of the cyborg. As the 5th Century Sri Lankan classic of higher Buddhist theory *Vissudhi Magga* put it:

There is no doer but the deed

There is no experiencer but the experience.

Constituent parts roll on.

This is the true and correct view[49].,

One analyses oneself, knows oneself only to realize that there is no self in the first place. This is not an intellectual knowledge but an internally observed, felt knowledge. This elimination of the sense of self sets one free in Buddhism. This is the highest ethical goal

in Buddhism[50]. When the realization dawns that I am not a thing but a process, then the future becomes open ended. Buddhism is self-referential, to know oneself is to make oneself, to guide the self that is not there[51]. In the Buddhist analysis, unsatisfactoriness and anxiety becomes essential to the 'I' because these are the 'I's response to its own groundlessness[52].

This internal experiencing of the non-self does not lead to a loss in integration, awareness or vitality of the mind, that is, of the view from the interiority of the hybrid lineages. On the contrary, perception unclouded by false perceptions leads to perceptual clarity. Perceptions of others are enlarged because there is an empathic openness based on a non-judgmental awareness[53]. The fully mentally healthy person, the *arahat* is expected to have a state of continuous inner delight, attends keenly to all the circumstances of a situation and can respond with skill to every situation.

This is the phenomenology of flow for human thought. We could extrapolate this perspective to the other two lineages. These views from the Buddhist analysis of streams and the self are also a pointer to a moral compass to an inevitable future of mergings of streams from biology of different sorts, of culture and computing artefacts. Such a perspective has given rise to a profound moral code and of altruism and it is not entirely far fetched to think that it could also do so in this case of merged streams in hybrids.

But then, what do we make use of that 'external' baggage that has intruded into us. If it is not 'ours', and if in fact 'we' do not exist, what do I make use of this alien intrusion. How do I internally react to this massive inflow, into my biological and mental interiority, that is in store for me in the next century. Let me recourse to a standard exercise in Buddhism in dealing with that interiority, to 'meditation', Buddhist observational practice.

In the first instance, one trains oneself to observe one's interiority to realize for oneself its constructed nature, its lack of an essential being. Secondly in this process of observing one self, one dispassionately notes also the coming and going away of one's thoughts. One observes them and lets them go.

This is in meditative practice. I suggest that in everyday reality, of the day of the cyborg too, one would indulge in a parallel exercise. One could recognize the constructed nature of our internal and external cyborgs, our own Frankenstein creatures, realize their real ephemeral character and use that as our guiding principle to the external world. But at the same time, one can use our knowledge of the constructions to locate where the constructions come from, from this lineage or that, from this sub lineage or that, or from an intertwined mixture. This after all, are some of the techniques we all use when we do analytical thought, incidentally an important branch of Buddhist philosophy, which in some renderings both classical and modern is called a system of analysis. The analytical faculty is retained and can be used in our new circumstances.

As concluding remarks, I should refer to a few western commentators who have alluded to some of the questions that have been referred to here and have come close to the Buddhist position.

One is Derek Parfit in a book *Reasons and Persons*[54] which aroused considerable interest. The Times Literary Supplement reviewer considered it, "by any standard the most notable contribution to moral philosophy' in the last hundred years[55]. Among the issues raised by the book, is the nature of the person. Parfit reaches here 'reductionist' conclusions on persons and their continuity which as he acknowledges are in considerable agreement with the Buddhist position. This position Parfitt extends to a discussion on the nature of rationality and morality. In this latter discussion, he denies the importance of self-interested reasoning and of prudence. From the time of Aristotle, it had been a central tenet of western philosophy, that assessing prudentially was where one's best interest lay. This was not a crude argument for selfishness and greed. The position is best understood by posing it in another direction namely, what is more irrational than consciously to act in a way that frustrates the interests of both oneself and those one loves. An extension of this argument is that morality coincides with self interest.

Parfitt uses many arguments against this self interest theory, the most important being his description of personal identity and continuity. He argues what would happen in three hypothetical instances of changes in the internal make up of individuals such as firstly in an Enterprise type scan (of the TV film series Star Trek) and recreation of a human at a remote end, and secondly of hypothetical surgical interventions in the brain with implantation of memories, and thirdly of brain transplants. All these raises deep questions regarding personal identity. But what can be believed with reason is only the physical and psychological connectedness from one instant to another of a person. That is all what one can truly assert.

But, in both connectedness and continuity, there are differences personal identity can have. In the extreme, the answer to a question such as 'do I die' does not have a definite answer. Parfitt brings his discourse on morality and ethics through the notion of past and future selves being considered comparable to our present ones. But some of these positions coincide with the Buddhist ones as Parfitt readily admits. Thus the lack of identity of self, where there is only a changing stream of impersonal body and mind elements, where sameness and difference exists within the stream, is only a matter of degree, not an absolute. The Buddhists would say that in the examples of the brain transplants and other examples of changes in identity that Parfitt gives, they are 'neither the same nor different' (*na ca so na ca anno* in Pali).

Parfitt however admits that persons are subjected to experiences and act on the world. But to him, this is largely a conventional use of language. Parfitt says “though persons exist, we could give a complete description of reality without claiming that persons exist”.[56] Recognizing that these views may be difficult to be felt subjectively although can be argued out theoretically he says that "Buddha claimed that, though this is very hard, it is possible. I find Buddha’s claim to be true". [57] One should here note that even for Buddhists, internally grasping the theoretical insight is difficult. In fact one of the important meditation devices in Buddhism are precisely to acquire internally this view of the changing self by observing one self as one changes.

But Parfitt has faced obvious criticism.

" The Judaeo Christian religions which have shaped Western civilization have all taught regard for human personality, and this understanding has been the foundation of our traditional morality. This is not true however, of the doctrines that are now replacing religion. They reduce individuals to mere manifestations of non-human forces or structures, or to illusions or streams as Buddha taught... Parfit has taken his cue from such doctrines and produced a profound attack on Western civilization" [58] said one distracter. And, we should note in parentheses that it is this Judaeo Christian tradition that has informed much of global debates on bioethics.

This 'idea of the individual person as of supreme worth is fundamental to the moral, political and religious ideals of our society' in the words of another is held by many to characterize Western thinking as do Downie and Telfer from whose book *Respect for Persons* [59] the above quote is taken. This view of the reality of the person pervades also all contemporary variants of social thinking in the Western tradition such as socialism[60]. So, a contrary position, how old or how close to the coming realities of the new future technologies are difficult to swallow.

The other study that is evocative of some of the philosophical approaches in charting one future technology is the book *The Embodied Mind* by Varela et al. They proposed a bridging between the mind as discussed in science and the mind in everyday experience, by a dialogue between Buddhist meditative practice and cognitive science. They applied their approach to a variety of subjects such as neuroscience and cognitive psychology, Artificial Intelligence and evolutionary biology[61]. Varela et al evoke the flow patterns that one observes internally through Buddhist meditation, and find here the key to tackling their other realms. They tackle the problems of non-self, of ever flowing streams and describe their dynamics. Their discussions are located in some specific debates they have with the research communities in these three areas. They reject the equivalents of the subject-object dichotomy that arises in different forms in much Western thought.

They consider that the inside and outside of the flowing streams jointly move forth, 'enacted' in their terminology, by the subject and the external object. A process of coevolution results in the environment not being pregiven but being enacted and brought in to being through a process of coupling. The world is not taken as pregiven and the organism as representing or adapting, a form of dualism. Their approach of Buddhism transcends this duality, the outcome being codetermined by both the inside and outside.

Although Varela and his colleagues' objects of concern are not our ones here, their approach overlaps with some of the key positions taken here as does Parfitt's approach. Tackling the problems of the future requires radical reorientations, sometimes returning to uncomfortable, but very old observations. Some of the problems being presented through new discussions on biology and other process systems has seen the entry of evolutionary perspectives and their adjunct of evolutionary ethics. Here again considerable overlap is seen with Buddhist positions.

EVOLUTIONARY PROCESSES

The idea of evolution has today got a fresh impetus, and reached new areas with implications not only in biology, but in cognition, culture and computing artefacts, with implications for deriving naturalistic universal ethics. Thus, there are across the globe, many academic groups and fora that have arisen over the last decade or so to discuss these issues. There have been hundreds of articles on evolution varying from those on anthropology and economics to biology and Artificial Intelligence. There have also been at least a dozen books in the more abstract, specialized genre of "general evolution" (including two by the present author[76]). Today the subject judged from the contents of current conferences and journal material is in ferment. New ideas are emerging saddling many fields, including those of philosophy and ontology with implications for ethics. Practitioners and theorists are foraging across several disciplinary boundaries, including dredging material from past authors in search of fresh insights. It is here that another fruitful field exists for importing ideas from across civilizational boundaries. But before we discuss some of the possibilities here, it is useful to recall briefly the history of the Western ideas of evolution.

Evolutionary ideas had existed among both pre-Socratic Greek and Indian thinkers. But, evolutionary thinking in the Greek tradition was brought to an abrupt end by the ideas of Plato and Aristotle. Plato viewed the real world as consisting of unchanging forms or archetypes caught solely by thought. Aristotle on the other hand viewed the physical world as a hierarchy consisting of kinds of things. For Aristotle the universe did not change and was eternal. Both Plato and Aristotle therefore held ideas with an anti-evolutionist bias[77].

Evolutionary thinking was reborn in the West after the Renaissance after advances in natural sciences. The writing of Descartes (1644), Immanuel Kant (1755) and Laplace (1796) were similar to the later ideas of Lyell (1830) and Wallace and Darwin, after whom begins the modern scientific period of evolutionary theory[78].

In the Indian tradition, the idea of evolution is found in the Chandogya Upanishad where it is stated that originally all the manifold things existed in an unmanifested condition. From this unmanifested Being sprang everything[79]. From the *Sankhya* point of view, there are other evolutionary views [80]. Buddhism too has evolutionary ideas.

An important aspect of evolutionary systems is that they are lineages stretching amidst change from the past to the present into the future. There is change but continuity. The dynamics of these lineages, especially, their 'semiotics' and 'world views' are in some recent formulations coming to the forefront of discussions[81]. This introduces the field of subjectivity and attendant issues such as values and ethics into a hitherto ‘objective’ subject. There are sometimes, direct parallels to these dynamics in some of the philosophical aspects of South Asian religious discourse

The attention on general evolution has principally centred on biology and culture. These two discourses on long duration evolutionary chains in modern science - namely of biology and culture is parallelled by South Asian discussions on the chain of rebirth, *samsara*. One does not have to believe in *samsara* to follow the philosophical discussions, just as one does not have to follow an entity (he/she?) called God to

appreciate some of the Western philosophical discussions around the topic. These philosophical discussions on *samsara* have several interesting parallels with contemporary ones on evolution. It is appropriate to briefly summarise some of these modern discussions before going on to the *samsara* lineages.

The evolutionary characteristics of the biological lineage are well known. As it courses down through time, this lineage bifurcates into new species that fit better into changing environmental niches. Sometimes there is a sudden disjuncture away from the smooth speciating pattern, due to punctuated equilibria. There is also a phylogenetic ascendancy in the set of lineages, the more complex DNA carrying more information occurring later, there having being more time to acquire a larger battery of responses to the environment

The information is also considered to be in a process of self organizing, undergoing 'autopeosis' beginning with the self organization of the earliest molecules from inanimate matter. The encoded information is also a window to the external world and have been seen by some theorists as ecological perspectives or 'theories' that change with the environment. Such a Gestalt encoded in a genome is seen as a means of structuring the world outside, having its own 'subjectivity' on the world, its own 'world view' to the environment outside. As the lineages course through time, these 'subjectivities' and world views change.

Some of these are all common evolutionary characteristics that is shared with culture (and one should add can be shown to share also with an incipient lineage of information associated with computers)[82].

Some of the central arguments in these contemporary discussions on evolution are derived from the book by the physicist Schrodinger *What is Life?* where he related life to physical processes namely, the reduction of entropy. Schrodinger's philosophical outlook was explicitly South Asian, specifically, Vedanta. In the epilogue, "On Determinism and Free Will" of *What is Life?*. Schrodinger states that the individual's free will can be reconciled with the determinism of the world through the Upanishadic equation Atman = Brahman [83]. The influence of Vedantic philosophy on the scientific thought of Schrodinger has been detailed recently by Nair[84].

Some of the most pregnant possibilities for the use of South Asian inputs in evolutionary thought is in the concept of *Samsara,* the flow of life across time. It can be shown that philosophical discussions on *samsara* reveal many common characteristics with evolutionary lineages, including those of biology. For example, all the discourses on *samsara,* deal with a memory trace handed down in a lineage from the past to the present and on to the future. Although discussions of 'lineages' in *samsara* and in culture and biology deal with different problems posed for different purposes, they have many similarities in the core problems that they address and the answers that they provide, as to suggest that at the level of philosophy and of some deeper level dynamics, they are dealing with common issues. It is useful to trace these similarities and then to suggest cross fertilization possibilities.

'The *Samsaric* Lineages'

The centrality of a chain of birth and rebirth is common to all the main South Asian traditions - Hindus, Jains or Buddhists. In all these religious traditions Buddhism, Jainism and varieties of Hinduism, there is a '**beginning less** chain of existences following one another'.[85] This **beginning less chain** is ascribed to even by views that say that souls emerge from the highest deity - Vishnu. The latter is not considered a primary beginning point for souls but only a periodical emergence from God where it had resided[86]. In a similar fashion in Buddhism, *samsara* is **beginning less.** For Buddhists, the series of I's flow like a stream through a chain of cause and effect, without beginning or end [87].

The central dynamic which sustains the lineage of rebirths is *karma*. Many popular readings of *karma* as tight predestination -'fate'- are misleading [88] as Karma in its pure philosophical sense only refers to action[89]. *Karma* is therefore, in this sense, not predestination or determinism. An individual is both a slave of the past and at the same time the master of the future. He is bound by his fate, yet he is also his fate[90]. *Karma* has a fluid, flexible and dynamic character, whose full working out cannot be apprehended in advance[91].

Every *karmic* action results in a residue in a person's memory, which when combined together, form the essential habit patterns that govern a personality, the way a person reacts or perceives the world. *Karmic* action with the environment results in a memory that is 'deposited' for the future guidance of its lineage. These actions fall into dichotomies such as 'good' and 'evil' acts, which one should note has for the *karmic* lineage, similarities to adaptive and maladaptive interactions with the environment of other lineages. Life becomes a continuously accumulation of actions or their results[92]. *Karma* may be operative through the present life, may be held over from 'past lives', and could be stored to be used in 'future lives' [93]. This 'Pool of *Karma*' (*karmasayah*) where storage occurs is never empty; it is constantly fed by good and evil thoughts, keeping it more or less full all the time[94] .

The 'engine', the motive force for the *samsaric* lineage is therefore *karma* - action carried out by the individual in his everyday passage of daily living, what in the case of genetic or cultural systems would be called information of the past. The interactions with the environment, of these other two lineages whose results are eventually deposited as information - memory - is carried forward in their lineage. *Karma* is the totality of thoughts - good and evil - created in a mind, acting as a type of psychic memory that carries the body through the cycle of rebirths[95]. In all traditions *Karma* is latent 'rebirth', yet unmanifest. 'Rebirth' is *karma* that has become active and manifest[96]. It is *karma* that decides the 'rebirth' and the appropriate new environment for the reborn entity[97]. And, what is 'reborn' in most interpretations is a bundle of attributes, a historical outcome of countless lives[98].

For Buddhists, "Beings are owners of *karmas*, heirs of k*armas*, they have *karmas* as their progenitor, *karmas* as their kin, *karmas* as their homing-place"[99]. In Buddhism, the *karmic* transmission process is understood as a subconscious "life stream" (*bhavanga-sota*) in which are collected life's impressions and experiences[100].

Yet, in the South Asian schemes, not all states are due to previous *karma*. Certain experiences (*vedayita*) arise from purely physical factors[101]. There would also be occasional 'accidents' in which a person may get results without there being ascribed to his past actions[102].

The *samsaric* lineage carries forward accumulated information -'merit' in Buddhism - the result of its *karmic* actions. This information effects the direction of the lineage, but in the non-popular formulation, it has also a novelty creating, indeterminateness to it. The present, is a result of the past but the trajectory of the future although restrained by the past, is still open. This openness and creativity has parallels to what has been termed autopoiesis and self organization in the biological and social fields[103].

The vehicle for this memory in most South Asian traditions is a material or non material soul; and in the Buddhist position, it is through a 'no-soul' process. These South Asian descriptions of what is transmitted down the lineage have many parallels to descriptions of the transfer of biological and cultural information. As illustration let us take Dawkin's view (in his evocative book *The Selfish Gene*) of the body simply as a carrier for the gene:

> [Genes] swarm .. safe inside gigantic lumbering robots, manipulating the outside world by remote control.. ... Their preservation is the sole reason for our existence. They skip like chamois, free and untrammelled down the generations, temporarily brought together in throw-away survival machines, immortal coils shuffling off an endless succession of mortal ones as they forge towards their separate eternities.[104]

Clearly the above description has many parallels to the view of the Hindu 'soul' in relation to the body. Thus:

> "As a person casts off worn-out garments and puts on others that are new, so does the incarnate soul cast off worn-out bodies and enter into others that are new"
>
> - *Bhagavadgita* [105]

The Buddhists do not have a genome like structure - like those in the Atman theories - which physically carries the information. Yet here too:

> "Man quits his mortal frame, when joy in life is past
> Even as a snake is wont, its worn out slough to cast"
>
> - *Uraga Jataka* [106]

In Buddhism, life as a vital principle is denied and change and process is considered the essence of life. Life is not a property, qualification or condition but an action and reaction to its environment. Life is a process constantly evolving from a set of conditions and reforming depending on other conditions[107]. The Buddhist continuity across births is not through a soul, a genome like structure but through a stream of becoming (*bhava sota*)[108] In this sense the Buddhist view of the no-soul is nearer to the autopoietic views of recent theorists in biology - of how the future is conditioned by the past but is created through a process of self construction, a process of becoming[109].

In both the biological and cultural spheres, there is an evolutionary process with phylogenesis - a tendency with the passage of time for the build up of more information. The Samsaric journey too has an evolutionary direction with greater memory being accumulated along the way.

The 'I' going through the *samsaric* lineage being the result of past actions carries with it certain attitudes and so particular means of dealing with the environment to which

it is born. This is a 'world view', a subjectivity from the lineage's point of view as it were, parallelling similar subjectivities that have been described in the two other lineages.

If then, the *samsaric* lineage has the characteristics of action with its environment, the creation of information, memory retention, phylogenesis, and associated subjectivity, common with the other lineages; there are differences too. Thus, the lineage does not break up into branches, no speciation occurs as in biology and culture. In the *samsaric* chain, the individual entity does not, with the passage of time, break up into sub-lineages, as in speciation in biology.

Having sketched the above common features what can now be said in conclusion. All the three lineages, the genetic, cultural and the *samsaric* have a historical continuity, coursing through time and conserving elements of their memory when it interacts with its environment. Information accumulated from earlier encounters with the environment is connected with present information[110]. Each information lineage goes through processes similar to what has been termed 'autopoiesis', the process of self organization and creation of novelty[111]. As the lineage moves forward, it creates novel arrangements. There is a phylogenetic ascendancy associated which results with the passage of time in more complex information systems. Associated with the information in the lineage is a 'world view', its own "egocentricity" (to use the word derived from Morin)[112]. Such an egocentricity is normally built up historically in gradual steps within a given lineage.

Now, could there be any areas that have been explored in the *samsaric* lineages which could be used to throw light on the common characteristics of others, like the genetic or the cultural. More specifically, are there any insights, hints and metaphors that arise from South Asian discourses on their lineages that could be transferred to the other domains.

There could well be, given the long philosophical obsession in the South Asian traditions with this class of problems. Modern science has always foraged the past Western philosophical tradition for fresh ideas as in Dalton's return to the Greeks' concepts of atoms or in contemporary theoretical physicists' return to core intellectual questions in the Greek tradition. The Greeks however did not develop a sophisticated tradition of evolutionary thought - both Plato and Aristotle having an anti evolutionist bias.

The various philosophical explorations of the nature of *samsaric* lineages in the South Asian tradition have been made with different assumptions, which then, were driven to their logical conclusions. These provide a seed bed of ideas on the general nature of lineages as well as a set of formalisations on time directional processes. But lineages are process systems and recent theorists of general evolution have turned to process philosophy for guidance.

Process philosophies and evolution

Buddhism as an older process philosophy is intimately tied to concepts of time and temporality. Not only are we born and die, but we live our lives as a series of experiential moments [113]. Alfred North Whitehead resurrected process philosophy in the West this century, in the sense of the Greek Heraclitus' view that all things flow[114]. According to Robert Neville, Buddhism as a process philosophy with the longest unbroken tradition in

the world has much to offer to modern process philosophers. Whitehead's work becomes therefore the first fully developed metaphysical system in which Buddhism finds general sympathy. Whitehead's views of process consists of momentary occasions of experience. Buddhism on its part has concepts that brings together in process philosophy the internal of the flow phenomena and the external environment in which it operates, as well as the interconnectedness of all phenomena, *patichcha samuppada*[115].

The contemporary process philosopher Charles Hartshorne finding many commonalities with Whitehead and Buddhism, as well as with Pierce one of the philosophers influencing the new evolutionary thinking says:

> Ancient Buddhism and Whitehead agree, against Aristotle, and also against Bergson, but in nearer agreement with Plato's Timaeus, that concrete reality consists of momentary actualities that successively become, this succession being what we call change.
>
> If we are looking for concrete definite unitary wholes of reality, we should recognize that the individual now is always a new such whole. The Buddhists, whom Peirce admired, saw this[116].

An area where things flow as a process, has an external and an internal dimension, and where different things are interconnected is in the field of evolution. Recent discussions in general evolution including the semiotics of information have seen interactions with philosophical positions like those of Whitehead. There are discussions exploring a variety of positions in process philosophy in the cutting edge of general evolutionary theory today[117]. Some of the philosophical positions evoked in their evolutionary discussions are those of Whitehead, Peirce, and Mach, figures who have been directly or indirectly compared to or being influenced by Buddhism. It is clear that recourse to direct Buddhist philosophical discussions could help in some of these issues facing evolutionary theory, specially attempts to draw in the subjective and ethics issues into the topic. This is specially germane when in the foreseeable future, direct intervention in the evolutionary process occurs through genetic engineering. A whole host of philosophical, ethical and scientific questions are raised as a result, requiring new solutions, beyond the ken of hitherto Western thought.

Conclusion

In this preliminary essay we have seen that in the coming era of deep technological inroads into our biological being, Asian concepts could provide some guidelines at a foundational level for new ethics. Some of these approaches have resonances with current theoretical debates on general evolution, and from the latter discussions could emerge a naturalistic ethic for all life-like processes.

1.Wheeler, David L. 'Ethicist Urges Public debate on Medical Therapies that Could Cause Genetic Changes in Offspring' *Chronicle of Higher Education* Vol. 37 Iss. 24 February 27, 1991

2.Mable, Margot C.J. *Bioethics and the New Medical Technology* Atheneum 1993 New York

3.Wind, James P. , "What can Religion Offer Bioethics", *Hastings Center Report*, A Special Supplement, July/August, 1990

4.Scully, Thomas and Scully, Celia *Playing God: the New World of Medical Choices* Simon and Schuster New York 1987

5. Kin-ichiro, Kajikawa, "A New Field Emerges", *Hastings Center Report*, Vol. 19, 155, 4 July, 1989

Callahan Daniel "Religion and the Secularization of Bioethics", *Hastings Center Report, A Special Supplement***,** July/August, 1990

Callahan, Daniel, Campbell, Courtney S., "Theology, Religious Traditions, and Bioethics" *Hastings Center Report*, A Special Supplement, July/August, 4, 1990

Campbell, Courtney S., "Religion and Moral Meaning in Bioethics" *Hastings Center Report, A Special Supplement*, July/August, 4, 1990

[6] Becker, Carl "Buddhism, Shinto and Modern Japanese Views of Medicine and Terminal Care" Paper presented at the 8th East-West Philosopher's Conference, University of Hawaii, January 2000

7.Wind, James P. , "What can Religion Offer Bioethics", *Hastings Center Report*, A Special Supplement, July/August, 1990

[8] Hershock, Peter D.," Dramatic Intervention: Human Rights from a Buddhist Perspective " pp 9-33 *Philosophy East and West* vol. 50, no. 1 (January 2000)

[9] Keown, Damien *Buddhism and Bioethics* St. Martins Press, New York 1995
[10] For example *Ecofeminism*
[11] Coward 2000, Loy 2000, and Barnhart 2000 *Philosophy East and West* Special Issue on Science and Technology, forthcoming
[12] Susantha Goonatilake *Merged Evolution: the Long Term Implications of Information Technology and Biotechnology* (Gordon & Breach 1999)

Mining Civilizational Knowledge (Indiana University Press 1999)

Food as a Human Right (The United Nations University, Tokyo 1982 (ed)*;*

"Towards a Meta Ethic through evolutionay Lineages" in Salthe et al 1997
[13] Goonatilake, Susantha 1999 pp. 27, 60
[14] Jacobson 1969 pp. 17-38
[15] Jacobson ibid p 18
[16] Ibid
[17] Ibid. p. 26
[18] Described in detail in Goonatilake, Susantha 1999
[19] Riepe 1967 pp. 124-137
[20] Jacobson1988 p. ix
[21] Price 1955 p. 229
[22] Hanna 1993 pp. 41-57
[23] Smith 1965 p. xii
[24] Miller 1987 p. 39
[25] Graves 1971
[26] Jackson 1968 pp. 74-75)
[27] Blackburn 1972 pp. 286-355
[28] Ibid. p. 287-288
[29] Blackmore 1972 pp. 288-289
[30] Oppenheimer 1954
[31] Goonatilake, Susantha "Many Paths to Enlightenment: Modern physics bears the imprint of Western and Asian Philosophies" *Nature* Vol. 405, 25 May 2000; p 399
[32] Varela, et al 1991
33.Gruson, Lindsey "When 'Mom' and 'Grandma' are One and the Same" *New York Times* Feb 16, 1993

34. Representative of this literature are:

Kabat-Zinn, Jon,; Massion, Ann O.; Kristeller,Jean; Petersen, Linda Gay; Fletcher, Kenneth E.; Pbert,Lori; Lenderking, William R.; Santorelli, Saki F. "Effectiveness of a Meditation-Based Stress Reduction Program in the Treatment of Anxiety Disorders " *American Journal of Psychiatry* 149:7, July 1992 pp 936-943

Walsh, Roger "Two Asian Psychologies and their Implications for Western Psychotherapists" *American Journal of Psychotherapy* Vol. XLII, No. 4, October 1988

Sweet, Michael J.; Johnson, Craig G. "Enhancing empathy: The interpersonal implications of a Buddhist meditation technique. Special Issue: Psychotherapy and religion." *Psychotherapy*; 1990 Spr Vol 27(1) 19-29

De Silva, Padmal "Buddhism and behavior modification" *Behavior Research and Therapy* 1984 Vol 22(6) 661-678

Goleman, Daniel "Buddhist and Western psychology: Some commonalities and differences" *Journal of Transpersonal Psychology* 1981 Vol 13(2) 125-136

Donaldson, Margaret *Human Minds An Exploration* Penguin Books 1992 London p 227

Bograt, Greg "The Use of Meditation in Psychotherapy: A Review of the Literature" *American Journal of Psychotherapy* Vol. XLV, No. 3, July 1991 pp 383 -412

35. "Anatta" *Encyclopedia of Buddhism,* Vol. 1 Published by The Government of Ceylon, 1961 Reprinted Colombo, 1984 p 567

36. "Anicca" *Encyclopedia of Buddhism, Vol. 1* Published by The Government of Ceylon, 1961 Reprinted Colombo, 1984 p 659

37. Rahula, Walpola *What the Buddha Taught* Gordon Fraser 1978 London. p 59

38. Rahula p 65

39. "Anatta" *Encyclopedia of Buddhism*, Vol. 1 Colombo, 1984 p 567

40. "Anicca" *Encyclopedia of Buddhism*, Vol. 1 Colombo, 1984 p 659

41. Kalupahana, D.J. and Tamura, Koyu 'Antarabhava' in Malalasekera, G.P. (ed) *Encyclopedia of Buddhism,* Vol. I No.1, Jan. 1970, Ceylon Journal of Humanities p 441

42.Jayatilleke K.N. *Survival and Karma in Buddhist Perspective* Buddhist Publication Society Kandy 1980

43.ibid. p 29

44. Rahula p 65

45.Feer,L.(ed) *Samyutta Nikaya Vol* 111. P 57 Pali Text Society London, 1884

46. Rahula p 56

47. Rahula, Walpola *What the Buddha Taught* Gordon Fraser 1978 London.

48. Organ, Troy Wilson *Philosophy and the Self: East and West* Selingrove, Susquehanna University Press 1987 p 162.

49.Quoted in Gunaratne V.F. *Buddhist Reflections on Death* Buddhist Publication Society, Kandy 1982 p12

[50] "Ethics" *Encyclopedia of Buddhism* Vol V p 147 Colombo 1990

51. Kolm, Serge-Christopher "The Buddhist theory of 'no-self'" in Elster, Jon (ed) *The Multiple Self* Cambridge University Press Cambridge, 1986 p 233- 265

52. Loy, David "Avoiding the Void: The Lack of Self in Psychotherapy and Buddhism" *The Journal of Transpersonal Psychology*, 1992, Vol.24, No.2 pp 151 - 179

53. Page, Richard C. & Berkow, Daniel N. "Concepts of the Self: Western and Eastern Perspectives" *Journal of Multicultural Counseling and Development* April 1991 Vol. 19 pp 83- 93

54.Parfit, Derek*, Reasons and Persons* Oxford University Press, Oxford 1984

55.Scheffler, Samuel "Ergo: less Ego" *The Times Literary Supplement* 4th May 1984 No.4231

56. Parfitt ibid p 212

57.Parfitt p 280

58.Lewin, Shirley Robin "The Person Vanishes" in *The Spectator*, 19th May 1984 Vol. 252, No.8132

59.Downie, R. and Telfer, V. *Respect for Persons* George Allen and Unwin, London 1969, p 10

60..Collins, Steven "Buddhism in Recent British Philosophy and Theology" in Kalupahana, David J. and Weeraratne, W.G.. (eds) *Essays in Honour of N.A.Jayawickreme*, Jayawickreme Felicitation Volume Committee, Colombo, 1987

61.Varela et al p xviii

76.Goonatilake, Susantha *Evolution of Information: Lineages in Gene, Culture and Artefact* Pinter Publishers, London, 1991

Merged Evolution: Long Term Implications of Biotechnology and Information Technology Gordon & Breach 1998

77.Goudge, A. Thomas, "Evolutionism", *Dictionary of the History of Ideas*, Philip P. Weinir (ed), Vol. 2, pp. 124-188, 1973, Charles Scribner's Sons, New York p 175

78. Goudge, Thomas A., "Evolutionism" in W. Philip P. Weiner (ed), *A Dictionary of the History of Ideas,* Charles Scibner's sons, New York, Vol. 2, pp. 174-189, 1973

79.Dasgupta, Surendranath *Natural Science of the Ancient Hindus* Indian Council of Philosophical Research Motilal Banarsidass, Delhi 1987 p 55

80.B.N. Seal *The Positive Sciences of the Ancient Hindus* London 1915, pp 7-8

81.A representative sample of some of the issues being faced in this discourse is seen for example in several of the papers in “The International Seminar on Evolutionary Systems” Vienna March 1995 organized by among others, the Konrad Lorenz Institute.

82.For a detailed treatment of these lineages see Goonatilake, Susantha *Evolution of Information: Lineages in Gene, Culture and Artefact* Pinter Publishers, London 1991

83.Schrodinger, E. *What is Life?* London, Cambridge University Press 1943 p 93

84.Nair, Ranjit "The Science of Schrodinger and the Vision of the Vedanta." Paper presented at "Erwin Schrodinger Symposium", Sorbonne, Paris 1992, and "Indo-Austrian Workshop", University of Delhi, 1994, and forthcoming as a chapter in D Tiemersma (ed) *Between Science and Culture*, Kluwer 1997.

85. von Glasenapp, Helmuth *Immortality and Salvation in Indian Religions* Translated from the German by E.F.J.Payne Susil Gupta India Private Ltd. Calcutta, 1963, pIV

86.von Glasenapp, p17

87.von Glasenapp, p17

88.Chapple, p3

89.Chapple, p xi

90.Humphreys,p37

91.Harvey, Peter *An Introduction to Buddhism: Teachings, History and Practice* Cambridge University Press 1990 London

92.Chapple, p5

93.Humphreys, p31

94.Ghosh p 218

95. Ghosh, p 209

96.Humphreys p 52

97.Ghosh, p218

98.Humphreys p52

99.'Cula-Kammavibhanga Sutta' in Nanamoli Thera *The Buddha's Words on Kamma* Buddhist Publication Society, Kandy 1975

100.Nyanatilake, Mahathera *Karma Rebirth* Buddhist Publication Society, Kandy 1982. p 5

101.*Sutta Nipata* 4. 230 -231

102. Humphreys p49

103.Varela, Francisco J., Maturana, H. R., and Uribe, R., 'Autopoiesis: The Organization of Living Systems, Its Characterization and a Model', *Bio-Systems*, 1974, 5, No. 4, 187-96.

104.Dawkins, Richard *The Selfish Gene* Oxford University Press, Oxford, 1989, dust jacket, and pp 19 -20

105. *Bhagavadgita* Chapter 11, Vs 13 and 22 quoted in *The Case for Rebirth* Buddhist Publication Society Kandy 1973 p 6

106.Quoted in Gunaratne V.F. *Buddhist Reflections on Death* Buddhist Publication Society, Kandy 1982 p 41

107.*Encyclopedia of Buddhism* Published by The Government of Ceylon, Colombo 1966. Vol:2; p 119

108.Jayatilleke K.N. *Survival and Karma in Buddhist Perspective* Buddhist Publication Society Kandy 1980

109.Varela, Francisco J., Maturana, H. R., and Uribe, R., 'Autopoiesis: The Organization of Living Systems, Its Characterization and a Model', *Bio-Systems*, 1974, 5, No. 4, 187-96.

Varela, Francisco J.; Thompson, Evan and Rosch, Eleanor, *The Embodied Mind: Cognitive Science and Human Experience*, MIT 1991.

110. Ibid., 121-123

111. Varela, Francisco J., Maturana, H. R., and Uribe, R., 'Autopoiesis: The Organization of Living Systems, Its Characterization and a Model', *Bio-Systems*, 1974, 5, No. 4, 187-96.

112. Morin, E. "Self and Autos", *Autopoiesis - A theory of Living Organization*, M. Zeleny (ed) New York, North Holland.
1981, p.133

113.Inada, Kenneth K., "Time and temporality - A Buddhist Approach", *Philosophy East and West,* Vol. XXIV, No. 2 April 1974, pp. 171-179) (ibid p. 171)

114.Whitehead, Alfred North *Process and Reality* New York, McMillan 1929

115. Neville, Robert C. "Buddhism and Process Philosophy" in Inada, Kenneth K.; and Jacobson, Nolan B. (eds) *Buddhism and American Thinkers* State University of New York Press, Albany 1984

116. Quoted in Jacobson, Nolan Pliny 1988 p 23

117. See for example the chapters by Salthe, Kampis and Hoffmeyer in Salthe et al (1997) *Evolutionary Systems* Kluwer