Navigating the New World, not Brave but Changing

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There are ongoing developments in science and technology that are transforming the very basis of our physical and mental being. An intense transformation is occurring where among others: mental activities are being projected onto artefacts; artefacts themselves outperform humans as mental processors, human senses projected outward and extended, the body projected outward and introjected inward. What 3 billion years of evolution has crystallised into the human body and mind, and their environment is being re-made and has to be re-thought. A few indicative examples of the major transformation beginning with the constructed environment:

The trillions of transistors in integrated circuits, the number doubling every two years or so for the last half century ("Moore's Law") is reaching its physical limits of silicon-based technology. New emerging technologies such as quantum, molecular, protein, DNA, and optical computers promise far greater possibilities of shrinking the largest supercomputers today to the size of a sugar cube and probably far more in the future.

Computers connected to each other to form the Internet transmit data around the globe today at around 1.7 megabits per second. Bell labs have already demonstrated transmission speeds, equivalent to 100 billion megabits per second, nearly 60 *billion* times faster than current rates. This would enable interaction in a sea of information. In addition, most Internet access will increasingly be through mobile devices with possibilities of voice input and output. Computer input and output using other senses (vision, touch, even possibly taste and smell) are increasingly coming to the fore.

Through ubiquitous computing, information processing is progressively being more integrated into every day activities and artefacts resulting in the "Internet of things". Here ICT integrates humans into the very "fabric of everyday life" and humans become indistinguishable as communicating nodes from computer systems. In that all pervasive and integrated system, humans will mostly be unaware that they are surrounded by a sea of computing devices. Today's 5 billion interconnected devices are expected in 10 years time to reach 50 billion - a processing sea surrounds us. Far more computers would be communicating with each other than would humans with each other, and humans would be unconsciously interacting more with computing devices than with their fellow humans.

Currently, the younger Western generation is spending around eight hours, which is most of their waking time in front of passive TV screens or interactive computer ones. Increasing use of interactive 3-D virtual environments and virtual worlds means a considerable number of humans will inhabit artificially constructed realities.

Computing devices themselves are connecting to mechanical systems resulting in robots that perform increasingly humanlike functions that contrast to the manufacturing robots of the 1970s. Use of genetic algorithms combined with 3-D printers has already allowed the creation of robots that create themselves, leading to another evolving artificial environment. Mind reading technology is on the verge of creating consumer goods controlled by the mind. In a different direction, new imaging approaches decode individual words of a person's thoughts, and in principle become possible to remotely access the visual content of mental processes. In the coming decade, one would be able to increasingly decode thoughts and accompanying pictures.

The Human Connectome Project hopes to scan a large number of brains to give a picture of the neural structure of the human brain in five years. Opening the door to changes in the very apparatus through which we perceive the world, mice have been implanted with new genes that help them see the world through the

visual spectrum of humans. We could in theory change the windows for our physical perceptions.

Brain cells in Petri dishes have been connected to robotic devices and these "dish-brain-controlled" robots have been made to do some humanlike tasks. Such interconnected networks have "some sense of what is going in themselves", a sense of "self". Combining the processing power of human brains with computer vision, new means of searching through images has been developed. The brain as well as the body is determined to a large extent by our genetic inheritance. "Synthetic biology" is being developed to produce artificial life systems using the same molecular basis of living systems. Synthetic biology would use off-the-shelf chemical ingredients and build living mechanisms like engineers produce computer chips. It would redesign existing genomes and create new life forms.

The examples given above show that genetic information, computer information as well as human cultural information are no longer separated from each other. These three lineages increasingly interact with each other merging directly or indirectly their information streams, merging the information content as well as their modes of interacting with their environments. These result in changes in all three systems namely in the genetic, the computer/artefactual and the cultural.

This exponentially accelerating process of merging of information will redefine what constitutes "social" and what constitutes "community." A community's members communicate with their "significant others" and change their internal information states (and their internal and external behaviors). Under conditions of all pervasive merging of information, information exchanges occur across all the three systems of genetic, computer and cultural. In this sense, the concept of significant other, that is a communicating entity, is now spread from human communities to encompass also the biological/genetic and the artefactual. A seamless merging between the three realms now occurs.

The resulting image of interactions that now arises is of multiple oceans of communities, operating at different levels, the genetic, the cultural and the computer/artefactual. There are exchanges across the different levels, up and down and sideways, as information is translated from one realm to the other. These dynamics result in changes in the characteristics of each lineage, including the internal perceptions from within a lineage, namely in the language of evolutionary epistemology, its "meaning" and "hypotheses" on the world. Thermodynamically speaking, this is an open system with a constant increase of organization within the system, upward and onward, accompanied necessarily by changes in inflows and outflows to and from the system. The study of social phenomena in the new century must necessarily take into account these factors. A future sociology must incorporate dynamics of all three realms.

When we are thus constructed and reconstructed, from new foundational developments transforming our body and mind and our environment, deep questions are raised that challenge existing ethical systems, that is, how to navigate this new world. Dominant Western ethical systems for the new technologies are derived from presumably "secular" roots or from Christianity, Judaism or Islam (the "Abrahamaic" religions). The new developments which have continuous change as the central core challenge some of these ethical assumptions.

A major approach that has change at its very core is Buddhist philosophy. Some core Buddhist approaches have direct relevance to a future where the body, mind and the environment is constructed and reconstructed. The paper describes the central Buddhist position on both the human person, including his body and mind, as well as the environment he operates in, as not given or sacred but constructed and changing. The paper suggests that an orientation from this core Buddhist perspective of continuous change, no permanent self and both human and nature as constructed would fit better as a cultural orientation to examine and live in a future world under continuous change and where man and nature are continuously reinvented and reconstructed. It also suggests that Buddhist ethics derived from such a perspective (which unlike the revealed religions of Judaism, Christianity and Islam is not absolute, but contingent and situational) may better fit as a means of navigating the coming interconnected world of the clone, the robot, the cyborg and the virtual life. The paper describes what such an ethical perspective could be and its implications for a coming transhuman and posthuman society.