James Halloran Memorial Lecture

Conversations with my Robot

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Recent advances in the field of artificial intelligence (AI)make the prospect of living with a new humanoid species more realistic than ever before. Moreover, the AI technology is in the process of converging with other technologies such as nanotechnology, information and communication technology, robotics and biotechnology. This "convergence" technology raises new and perplexing questions for the future of human communication.

Humans have an almost unlimited desire to communicate, even with angels, trees and dolphins. The converging technologies promise to open up further opportunities to expand this communicative compulsion. Enormous benefits could be in store such as the removal of all the obstacles that during most of human history limited the effectiveness of message transfer. Such obstacles were the restrictions of distance, speed, volume, and reliability. An other essential impediment to human communication across borders has always been the existence of different languages. The advent of communications steered by machine intelligence will almost certainly offer the solution of this problem through advanced speech recognition and instant translation. Although one may easily be carried away with such prospects, it needs to be realized that it is unlikely that the availability, accessibility and affordability of these emerging technologies would be globally and equitably shared. Given the reality of unequal socio-economic positions in the world, one can foresee that such divides as the development divide, the information divide and the digital divide, will be succeeded by a convergence-divide. And, as with the other gaps, this divide will be exploited to consolidate positions of power and privilege.

What different modalities of impact on human communication could we possibly expect in the not too distant future? I will briefly discuss human-machine communication, machine to machine communication, communication between living and deceased people, brain-brain communication, and cross-species communication.

Human – Machine Communication

People will increasingly communicate with the assistance of machine intelligence and the machines will have ever more human features.

Developments in the converging technologies will produce machines with an intelligence that far exceeds human intellectual capabilities. In order to co-exist with these machines humans will have to learn to communicate with a being gifted with superior

intelligence. The deepest impact of this development will be the necessity to re-think the whole concept of what it means to be 'human'. As Bill Joy (2000) wonders, "Given the incredible power of these technologies, shouldn't we be asking how we can best coexist with them? And if our extinction is a likely, or even possible, outcome of our technological development, shouldn't we proceed with great caution?"

A crucial question is whether humans are ready for a peaceful co-existence with such beings.

Machine to Machine Communication

Among the new forms of communication that humans will be exposed to is the communication among intelligent nanobots in our biological systems. The introduction of machine intelligence in our biological systems implies the prospect of longevity and even immortality. "Billions of nanobots will travel through the bloodstream of our bodies and brains. In our bodies, they will destroy pathogens, correct DNA errors, eliminate toxins, and perform many tasks to enhance physical well-being. As a result, we will be able to live indefinitely without aging" (Kurzweil 43).

The convergent technologies may well create a future – as Bill Joy argues – that does not need humans anymore. Humans in the world of convergence may still communicate with each other but it may not matter anymore. How to deal with a new Copernican change that positions humans no longer at the center of the universe?

Cyberimmortality

The development of the converging technologies might open up the possibility of communicating across the barrier of human mortality. Artificial intelligence technology is likely to make it possible that people continue their lives after death as archived personalities. "The Convergenists' agenda is aimed at improving human performance without limit, and many of the anticipated technological spin-offs would be useful for recording, preserving, and reanimating human personalities – ultimately creating cyberimmortality" (Brainbridge 2006: 28). With this development a realistic expectation would be that living people can communicate with persons that have died but are electronically 'archived'. This represents a challenging prospect for religious reflection. It is interesting to note that converging technologies have not yet caused a similar concern as human cloning has. It remains to be seen how religious leaders and theological experts will respond to humanoid, intelligent robots with the personality characteristics of people who have died.

Indicative for the nature of this development may be the observation of the strong emotional bonds that elderly lonesome people have with such intelligent artifacts as the Sony dog Aido. Although Aido is clearly a metallic toy, experiments demonstrate that people quickly grow attach to their electronic pet with which they share problems and very private concerns. Imagine how they would relate to the deceased partner with whom communication remains possible and who would not only listen like the digital dog, but who would respond with advice and understanding as he or she did when still alive.

Telepathic Communication

Converging technologies will make communication between human brains possible. As Kurzweil proposes "the age of telepathic communication is upon us" (Kurzweil 2006: 43).

Communication between human brains and machine intelligence and between human brains may significantly alter the way human brains operate through the exponential expansion of our memory and cognitive capacities. An intriguing question is whether effective human communication is not largely influenced by our failing memories. Try to imagine that in human encounters we would have full recollection and cognition of all the interlocutors in the conversations we conduct.

Cross-species Communication

Humans have demonstrated throughout history a tendency to treat non-human animals in very destructive ways. This has always been rationalized and legitimized by referring to the fundamental divides between the different species. This position has been reinforced by the impossibility of trans-human communication. We know that whales communicate with each other over great distances (over hundreds of miles) and with voluminous contents (anywhere between one and ten million 'bits' per 30 minutes). Humans cannot communicate with them which makes killing them and industrially processing them easier. It is interesting to observe that when people can communicate (even in the sense of giving orders that are understood) with their pets, they are less inclined to murder and consume them. This would lead to the conclusion that human treatment of other sentient beings (animals and even plants) would change once communication –or at least hearing the "others" – is possible.

Research in photo-acoustics demonstrates that plants are not as silent as is commonly assumed. Most plants make sounds. If one registers – through advances audio-technology – the sounds of a rose that wakes up, there is a regular succession of chords that reminds the listener of Bach's toccatas. (Berendt 1987: 62). Biological research has also demonstrated that different sounds have a different impact upon the growth and well-being of plants.

It has also been empirically demonstrated that different types of music cause different crystal patterns in frozen water.

It seems a realistic expectation that the further development of converging technologies will allow humans to hear sounds where they assumed only silence existed (like in the deep seas) and to produce sounds that are beneficial to other living beings. Admittedly, a very rudimentary basis for inter-species communication, but a beginning nevertheless!

The Human Dimension

We are already well on our way to loose the human dimension in many of our communication processes. Even the plain old telephone is increasingly going virtual and it is an ever rarer experience to talk to a life human being instead of communicating with a machine. Virtual voices welcome our telephone calls, direct us though a maze of numbers and options, tell us that all human operators are too busy and when we are on the

verge of strangling the virtual respondent, kindly thank us for our business. Is this still human communication? If it can be called communication at all, it certainly falls in the narrow category of the "transfer of messages" model and does not fit in a conception of communication as "interaction";

Can we still communicate in sense of Martin Buber's relational communication. What happens to human communication when all "I-Thou" relations are all technically mediated? We will certainly expand and upgrade our communicative transmission practices, but can we ever listen to the 'otherness' of the other in communication processes mediated by the converging technologies?

Solutions?

If we think this is an undesirable development: should we try to limit technological development? Can we limit "our pursuit of certain kinds of knowledge"? (Joy, 2000). In a modern world that is largely inspired by the Enlightenment ideals of human improvement through science and technology, this is difficult to imagine. The holy mantra of our era seems to be that knowledge in itself is good and that acquiring more knowledge is even better. And, indeed, the search for knowledge satisfies a fundamental human desire to "fly away from ignorance" as William Shakespeare elegantly put it. However, as we acquire more knowledge we should also become aware of the dark sides to an uncritical reverence for scientific and technological development. In the past decades science and technology brought humankind close to the destruction of the planet and the emerging converging technologies make the extinction of humanity a very real possibility.

One may object that humans as individuals have a strong desire to survive. This may be true, but it does not guarantee that the collective of humans as a species will not be guided by an equally strong negligence towards its future. The nuclear arms race of recent history does not provide a very reassuring picture. Humankind has collectively a great capacity for irresponsible and destructive action. Technology has rarely ever been invented, developed and applied under the guidance of normative, moral principles. Engineerability was and remains in combination with military and commercial interest the essential driving force. The question is whether we still afford this in the 21st century?

Should not the development of the converging technologies be tested against the human rights standards of human dignity, security and autonomy? If the human dimension would be chosen as normative yardstick, we would have to seriously consider the observation that the tools people make are rapidly outpacing their mental capacities. For their survival human beings may not be very well equipped, but they are streetwise in designing constructs (such as languages, technologies) that compensate innate inadequacies. Amidst the impressive array of human cultural constructs the question comes up whether these may wander too far away from human nature. Could it be that the distance between construct and nature grows so big that what seemed a solution turns out to be a danger? The development of advanced, sophisticated armaments is a good illustration. Modern arms (such as computer-steered fighter planes) no longer match the human capacity to understand what we are doing and what the consequences may be. The fighter pilot is morally so distant from his victims, that he may as well be playing a computer game rather than destroying human lives. But even if he would try to understand and reason morally about his acts, he could not possibly begin to imagine

what the effects of his actions are. Whereas our minds still travel in the age of horse-drawn carriages and spears, our bodies travel in super-fast cars and Concordes and have the devastating power of nuclear arms at our disposal. Can minds catch up with bodies? The mind boggling developments in science and technology inspired the belief that the rational, conscious and free human mind that the Enlightenment projected was capable of dealing with these developments in a humanitarian way. This illusion was fundamentally challenged by the 20th century horrors of Auschwitz and Hiroshima. To regain the human dimension we have to contemplate how we could bring the different paces of mind and body in harmony. Maybe the aboriginals in Australia can help us by what they do during long journeys: before they reach the destination of their walks they take time for their souls to catch up with their bodies.

Whatever position one may have in relation to convergence technology, there can be little doubt that humankind is in the process of developing new tools that have far-reaching implications for its future. Finding a humane perspective for this future demands that critical choices are made. These choices should result from a society-wide and transparent discursive process that involves all those who will be affected. It is disconcerting that the very beginnings of such a process are not even in sight today!

References

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