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The Borg or Borges?

It is a paradox of the work of Artificial Intelligence that in order to grant consciousness to machines, the engineers first labour to subtract it from humans, as they work to foist upon philosophers a caricature of consciousness in the digital switches of weights and gates in neural nets. As the caricature goes into public circulation with the help of the media, it becomes an acceptable counterfeit currency, and the humanistic philosopher of mind soon finds himself replaced by the robotics scientist. This atmospheric inversion from above to below, one in which a sky turns into the smog of a thickened air, happened once before in the world of knowledge, when Comtian positivism inspired a functionalist approach to the study of the sacred. The social scientists first said that in order to study the sacred, one had to study how it functioned in society; then having contributed to the growth of their own academic domain, they more confidently claimed that what humans worshipped with the sacred was, in fact, their own society. There simply was no such thing as God or the sacred, and so Schools of Divinity began to be eclipsed by the elevation of the new towers of the office buildings of the Social Sciences. Indeed, as I turn now away from my computer screen, I can see outside my window the William James Building of Social Relations competing for dominance of the skyline with the Victorian brick Gothic of Harvard's Memorial Hall.

This clever move to eliminate the phenomenological reality of human consciousness as a prelude to the growth of a new robotics industry is a very successful scam, for it has helped enormously with the task of fund-raising for costly moon shots, such as the Japanese government's 'Fifth Generation Computer Project' which promised to create an autonomously thinking machine in the 1980s. No one seems to talk much anymore about the failure of this project, but the gurus of A.I. continue to prophesy — as Ray Kurzweil now does — that by 2030, humans will be surpassed by machines in cultural evolution.

Both the mechanists and the mystics say that we are now at a great bifurcation in human evolution. The mechanists like Ray Kurzweil, Danny Hillis and Hans Moravec prophesy that we are at the end of the human era, and that 'nanobots' are about to be embedded in our bodies until our antique organs of flesh are entirely surrounded by a new silicon noosphere of networked computers (Kurzweil, 2002;

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1999; Moravec, 1988). Like ancient mitochondria or chloroplasts surrounded by the gigantic eukaryotic cell, we are about to be engulfed in the next evolutionary stage. So the mechanists see noetic technologies surrounding human culture and consciousness and compressing it into an endosymbiont in a larger and swifter and more elegant evolutionary vehicle.

Technologists are closer to paranoids than they are to mystics in the sense that they are literalists given to perceptions of misplaced concreteness; they always see spiritual experiences as the products of technology — as emergent domains that are caused by technological innovations, such as LSD or computer networks. The 'difference that makes a difference' — in the famous phrase of Gregory Bateson — between the mystic and the paranoid is that the mystic is in a state of wild cognitive and creative joy, the *satchitananda* of the yogi, but the paranoid is in a condition of anxiety and a cosmic sense of disorientation to the world of spirit that forces him or her into a fixation on literalism and the control of reality through machines. Rather than saying her spiritual intuition has inspired her to see a pattern of connectedness to a world of higher dimensions, she claims to have been abducted by flying saucers who have implanted microchips into her head and are beaming directly into her brain from the mother ship.

Mystics flip this literalism over to see technology as a system of externalized metaphors that derive from pre-existing ontological modes at play and at large in the universe. For them, technology is like the Catholic Baltimore Catechism's definition of a sacrament: 'an outward sign of an inward state'. For the mystic — be she Cabbalist or Sufi — an angel is a 'Celestial Intelligence', a form of cosmic noetic organization that does not require a detour through animal evolution. So when Kurzweil claims that by 2030 implanted nanobots in the bloodstream will enable humans to turn off to the outside world to attune to a virtual reality, the mystic would recognize a literalist rendering of the process of meditation. Kurzweil's vision of the world in 2030 reminds me of Borges' 'Library of Babel': 'I suspect that the human species — the unique species — is about to be extinguished, but the Library will endure: illuminated, solitary, useless, incorruptible, secret' (Borges, 1962). And here we need to be sensitive to the full force of Borges' use of the word 'Babel'.

The mystics, starting with Teilhard de Chardin and Sri Aurobindo in the first half of the twentieth century, also prophesied that we were at a new stage in evolution, but they saw consciousness surrounding technology, and compressing and miniaturizing it into an antique fossil of intermediate cultural evolution as we passed on into a post-human or 'Supramental' era in which we were welcomed back into the cosmic play.

In the eight intensive dimensions that String Theory claims are infolded into the three dimensions of extension and the single dimension of linear time, we now can see that there is more room for humans to think in than we thought we had during the age of 'the conquest of space'. So what Kurzweil conceives of as only possible through the concretization of a machine may actually be possible through a heightened sensitivity to other noetic dimensions. Kurzweil would like

the computer to be for him what the organ was to Bach: a way of releasing the human mind into the larger Mind of the universe.

For the mechanists, the flesh is slow, sloppy and wet, and, therefore, primitive. For the Christian mystics, the flesh is the body and blood of the living God. Slow and wet is the ontology of birth and the act of making love. Because the neurons are embedded in an aqueous solution, even distant neurons can participate in a neuronal synchrony through vibrating in the musical harmonies of a single thought. Because the forty Hertz of this neuronal synchrony is slow compared to a silicon computer, it can orchestrate unplanned synchronies in acts of surprise, discovery, analogy, imagination and metaphoric play. Fast is fine for the programmed crystalline world of no surprises and no discoveries, but slow is better for the creative world of erotic and intellectual play.

If one speeds up a Beethoven string quartet, one may enhance the baud rate of data-processing, but one will no longer have music. In fact, with the increase in speed one has lost consciousness of the work. A Beethoven string quartet is, indeed, a rather sophisticated exploration of the nature of time and consciousness, and the interaction between the different instruments is an artistic recapitulation of the evolutionary development of the nervous system in which different channels of information had to be held over in time and cross-referenced with one another to form an 'I'. In Beethoven's 16th Quartet, the third movement, with the markings of '*Lento assai, e cantante tranquillo*' is so slow as to hover at the very edge of melody and silence. Instead of looking to digital computers as a source for metaphors of mind, it would be more instructive to look, or listen, to music. In Kurzweil's emphasis on speed as the unique excellence of mind, he has lived up to his German name too literally, and so, paradoxically, become *langweilig*. The field of consciousness has more to do with slowness and a higher dimensionality, even beyond the three of the physical volume of the brain, in which hyperspheres — or some other higher dimensional topology — involve simultaneity in a neuronal synchrony — in a pattern. A mind, in the opening words of Keats's 'Ode on a Grecian Urn', is a 'still unravished bride of quietness', a 'foster-child of silence and slow time'.

Slowness is fundamental to the nature of consciousness, and here I would define consciousness as the phase-space of the perceptual-motor system. I would argue that in the evolution of consciousness, as far back as the spirochete, it was the delay-space between two different channels of sensory registry, say between light and dark, on the one hand, and acid or base — or a glucose gradient — on the other, that enabled the molecularly lingering traces to be cross-referenced with one another in the formation of an interpretative domain, such as 'Danger!' or 'Flee!'[1] One channel of sensory registration can be a digital gate, a matter of plus or minus, but when two or three differing sensory registrations are cross-referenced to one another, an emergent domain is brought forth. We move up to a new meta-level — like lines forming the higher dimensionality of a cube or hypercube. An interpretive domain is a subjective experience of a sentient being that

[1] I argue this point at greater length in my chapter 'The Past Evolution of Consciousness; from Spirochete to Spinal Chord' (Thompson, 1996/1998, pp. 17–44).

can suffer precisely because it has an identity, and is thus, quite literally, identifying with its sensory registrations in an experiential interpretation of its ontological condition, its life. The neuroscientist Francisco Varela liked to use the Buddhist concept of 'grasping' to mark this aspect of a being identifying so totally with its sensory registrations. As multiple channels of sensory registration develop, a network develops that stabilizes the delay-space, and this is its central nervous system. The natural history of an organism's structural coupling with its environment expresses a reinforcing pattern of response, and this stable response is its identity, its fundamental stabilization of time, its egohood, or, at least, its fundamental *Eigenheit*. If these autonomous identities reproduce themselves with heritable variation over time, we call this evolution.

An engineer can be clever and construct a machine that says 'Ouch!' instead of flashing a red light, but this gnostic demiurge is mimicking consciousness to trick humans. The machine is not a sentient being capable of suffering, and, by imaginative extension and recapitulation of suffering, capable of experiencing compassion for the suffering of other sentient beings.

The mechanists are still not free of the mentality of Galilean Dynamics with its linear system of single causal reductionism. This kind of causal narrative is especially characteristic of the school of Eliminativism of Paul and Patricia Churchland. The simple and linear binary gates of 1 and 0 are fine for artificial neuronal nets and weights, but if one wishes to enfold complexity and make it portable for the life of a unique individual, then the sloppy and chaotic folding of proteins in a cell or of neurons in a brain is the way to go. The brain is actually the most complex small structure we know of in the universe. Like the Borg of *Star Trek,* the mechanists have perverted evolution, for it is the wet and the biological that is the truly advanced design, and our clunky and rigid metalo-plastic computers are the primitive idols of our literal-minded American technoculture. So I side with the mystics and think that the mechanists are caught in the boomerism of American hypercapitalism and are simply hawking their wares.

In this unreflective boomerism of American hypercapitalism, one has to hype one's project to attract venture capital. If one begins to discuss the possible side-effects of the invention, the shadow-side of the design, or the complexity that is the deep background to the object that is being foregrounded, then the investors head for the exits, afraid of law suits. Ironically, this process of self-deception and faulty design only increases the likelihood of lawsuits, for all products have unforeseen side-effects. In our American rush to production and marketing, we take a protein out of context, a gene out of context, a cell out of context, a plant out of an ecology, and a brain out of the context of its complete body incarnation, and we seek ways to sell drugs, genes, patented plants, organs, and soon, perhaps, entire beings. Perhaps Monsanto and Microsoft and Disney will soon be able to effect a merger that will enable them to patent cultures, and EPCOT can take it to the next level. Or could it be that this hostile takeover of culture is what is truly frightening the Muslim world?

The simultaneous fascination and repulsion of Islamic culture to American techno-idolatry is not surprising. Whenever there is a new emergent state of being

in the transformations of culture, all of humanity does not immediately shift to the new mentality. If a space voyager wandered around Italy in the fifteenth century, seeking to interview people concerning their excitement at being alive at the time of the Italian Renaissance, most people would not know what the interviewer was talking about. They were still living in the Middle Ages, and would continue to do so until their death.

And so it is now, for most scientists and businessmen are not aware of the implications of complex dynamical systems or of the cultural shift from modernism and the industrial nation-state to planetary culture. So when I am writing about the emergence of a new post-religious spirituality that is in resonance with science — as foreshadowed in such figures as Einstein — I am perfectly aware that I am living in the 'sunset-effect' time of Osama bin Laden and Jerry Fallwell, and that for the billions alive at this moment, their commitment to religion is not about to disappear any time soon. Actually, things need not always disappear in evolutionary extinctions, they can just become surrounded by a new envelopment that is invisible to them. The anaerobic bacteria in my guts are still doing their thing, just as they did billions of years ago before the new atmosphere of oxygen sent them scurrying into the comforts of the dark.

For example, one implication of complex dynamical systems for capitalism is a new version of Adam Smith's 'invisible hand' in which bottom-up causation replaces top-down controls.[2] Both socialism and monolithic corporate capitalism are top-down systems of control that seek to monopolize markets and control governments through lobbying, donations and control of the media. This form of old capitalism is intimately conjoined to modernism, the emergence of the middle class nation-state, and the Galilean Dynamical Mentality. The new capitalism could be a more synergistic system of mutual wealth generation in which groups of inventors bring forth a new cultural ecology. It is a vision of the World Wide Web and the Internet that is more in tune with Linux than Microsoft. Now just as the Inquisition and the Counter Reformation sought to block the Renaissance, so these gigantic corporations like Microsoft or Monsanto are seeking to block the planetary renaissance and this new possibility for capitalism by maintaining the dualistic systems of the domains of the extremely rich and the extremely poor. Microsoft wishes to own the new cultural ecology of the noosphere, and Monsanto, and other companies, are seeking to own the genome of plants, animals and humans. We may slide into a dark age of religious violence with multinational corporations functioning as a tribal amphictyony of competing war lords so that our emergence to an enlightened planetary culture may have to wait a century or two. The Medicis of the Italian Renaissance started out as a merchant class, but they ended up as an aristocracy in the gaudy displays of wealth so characteristic of the baroque economy that was based upon African slavery. The spiritual opening of the Italian Renaissance became blocked by the Inquisition, the Counter Reformation and the Age of Absolutism. Humanity had to wait until the eighteenth century for the Age of Revolution to pick up where the Italian

[2] For an explanation of emergent properties and bottom-up causation in cognitive science, see Thompson & Varela (2001).

Renaissance left off. But if we are lucky, the new form of middle class capitalism that is wed to information technologies and complex dynamical systems may outcompete the recidivist capitalism of the plantations of Monsanto and Microsoft.

At the moment, however, it does not look good, as President Bush *et alia* are wedding imperial capitalism to Christian fundamentalism with its repression of complexity in the arts and sciences in a state of permanent war against terrorists, first foreign, but soon domestic. As Ashcroft has said, carrying on in the tradition of J. Edgar Hoover and Senator McCarthy, those who would restrain him with their misguided liberal notions are 'only giving ammunition to the enemy'.

The boomerism of hypercapitalism that we see expressed in Kurzweil's milenarian vision of the technological replacement of humanity can be easily hitched to Cheney and Rumsfeld's corporate agenda to surround and contain humanity in a perfect system of high- tech defence. Here, it might help to recall that the high philosophic science of Heisenberg and von Weizsäcker joined in with the corporate agenda of I.G. Farben to assist in National Socialism's drive to defeat Bolshevism. And E.O. Wilson's consilient campaign to unify all the sciences also comes at a timely moment to help the Right Wing's desire to eliminate 'secular humanism' (Wilson, 1998). By eliminating philosophical divergence and the distinct cognitive approaches of different disciplines, Wilson's ideological program of elitist unification would serve to remove the humanities and their tradition of liberal humanism in a new scientific version of a Talibanic state of consilient unity. Total explanations soon become totalitarian states. Dissent can be labelled depression and ministered to by the contributions of the pharmaceutical industry. With Ritalin in the schools, Prozac in the universities, Zoloft in the prisons, Ecstasy in the discos, and Viagra in the Senate, America can indeed be at peace with itself to let Kurzweil's machines inherit the Earth.

The cultural evolution of consciousness I had in mind when I coined the phrase 'planetary culture' in more halcyon days was one in which art, science and a post-religious spirituality — like the atmosphere, continents and ocean of a Gaian system — are never unified, but remain free and independent of one another's control, the better to embody complexity and explore the three extensive and the eight intensive dimensions of a universe made out of the music of vibrating strings.

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