NANO-COMPUTING - MULTIPLICATION OR DIVISION?

"IT'S IMPOSSIBLE, AND IT SCARES CHILDREN, SO STOP TALKING ABOUT IT." RICHARD SMALLEY

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DECLARATION

This dissertation is a product of my own work and is not the result of anything done in collaboration.

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ABSTRACT

Nano-Computing is the possible relationship between human and computer management. A Nano is 1/1000000 of a meter in scale and therefore potentially machine driven on an atomic or subatomic scale. Machinery of that size must be 'talked about', in the way that biology and nuclear physics are in retrospect. If computer science can manipulate a Nano, it can augment and derogate human cognition and speed. Uncertainty is the requirement for any possibility to be observed. My advisor in this work questioned the cross between computer science and philosophy. But philosophy is, according to the Oxford Dictionary, the reason and argument in both physical and chemical scientific terms and human terms. So philosophy is pertinent in the observation of Nano-Computing and computing in general. And philology, the science of language, is not understood by either non-linear or linear programming. Be aware of the press speculation that the Chinese economy is blooming.

Understanding is what made us human, and lack of understanding must not drive us away. An examination of governmental and industrial benefits attributed to Nano-Technology must not divide us from ethics and culture; or the benefits of Nano-Computers to society.

My advice to not use foreign words in this text shows how the supposed Global Economy and increase in education is merely a political game. And how a Nano-Computer driven environment would limit the latter. The Glossary contains all the unusual computing and the very few foreign words. A variety of academic, political and commercial representations of Nano-Technology's impact are referenced.

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Education is a Human Right

A Dissertation on the practicality and ethical disparity between humankind and potential Nano-Computer driven modernity. The quote used under the Dissertation title refutes the feasibility of Drexler's (1992) scientific proposal of Nano-Computing equipment, itself closely relating to Smalley's (1999) general Nano-Technological estimation. The simplest reason behind improving Nano-Computing is the improvement of general human intelligence. The worst reason is the profits envisaged by both democracy and capitalism. In theory the benefits to democracy are simple, as increased computational skill in the public could increase democratic understanding. Unfortunately we can already see misery in ethical guides brought about by capitalism, notably by Hollywood's subliminal inspiration - sell and take advantage of others. Unfortunately, Nano-computing, whilst integrating memory and a brain's computation, cannot inspire or provide care, or art, or literature, or religious devotion and guidance: ultimately, humanity's history itself in essence. Philosophy, over thousands of years, such as Ralph Waldo Emerson's the 'chief event of life is the day in which we have encountered a mind that has startled us', has understood our humanity. And, as seen there, humanity is inspired by differences, not practical programs. Or is that replacement for essence to be a technological guide in mechanised code?

Surely programming, despite it's sense, cannot act as sensibility. Since Gross (1997:85) states that cognitive development theory demonstrates that only 5-13 percent of any given population is capable of post-conventional reasoning, it is not impossible to conceive that this will create a situation even more parlous under mechanical instruction. Just as humankinds' personality requires the broad tolerance of overlapping ethnic, religious and social groups not compatible with average cognitive ability, its shared concepts are based on the higher reasoning of principled moral actors, not dictatorships, which is all that might be induced by Nano-Computing quasi-theory. Surely a heavily democratised Nano-Computing age, where morality will be dictated by *agumentum ad computerus* is not democratic. If we accept this technological circumstance, it is difficult to reconcile it with Kantian thinking, which provides a distinct part of the background from which human creativity has emerged.

Lamont and Pavlika (2003) examine the relational foundation between Quantum Physics (Planck, Einstein and others) and the future technology of Quantum computing. They note the possibility and speed of parallel processing in Quantum, otherwise Nano-sized, computing. Parallel science over architectural or artistic taste? But ethics have been part of human cognition and spirit, rather than biological brain operation. The Pearl of Great Price (Date Unknown), borrowing from ancient Egyptian papyrus, scripts that God stated that 'no man can behold all my works'. It would seem that human sense and emotion is non-calculable. Oppenheimer's deathly work was surely science overtaking human caution, which he himself related to the Hindu scripture of Vishnu in the Baghavad-Gita. Then would not a Nano-inspired computer technology repeat Oppenheimer's (1945) literary sagacity in a practical sense? Does humanity desire this, despite the possibility of increased impression? Lamont and Pavika's (2003: 2) description of the "wave like" tendency in Quantum mechanics can hardly invoke taste or ethics the like of which we have always relied

upon since civilization coalesced. The term 'civilisation' denotes complex human interaction rather than a practical biological mandate: 'no man can behold all my works' in Nano-computerised format. Ethically we struggle to succeed in understanding Middle Eastern politics and behaviours, let alone the region's Internet behaviour. Nano-Computing enhanced behaviour will be even less comprehensive. Unity as a race is undermined by technology, let alone interpersonal communication. Schrodinger's wavefunction is not sufficient in either intelligent Quantum computing or Nano-Computing. Eigenfunctions will not return artistic merit. Read from that as you will on the sensibility of computers interacting with human behaviour. Open source software may well lose it's disambiguity under Nano-Computerised environmental control. Quantum computing is already misunderstood and plainly in it's infancy. Equally, the concept of Nano-Computing has just been born. Cryptanalysis may be used by both, though has been experimental with the former.

Interestingly Antón, Silberglitt and Schneider (2001: 43-45) project in their analysis of Nano-Technology that 'fields such as MEMS and quantum-switch-based computing…. have the potential to change the way we engineer our environment, construct and control systems, and interact in society.' They examine that 'past experiences with personal computers and telecommunications has shown that these technologies diffuse more rapidly in the developed world than in the developing world. It is difficult to foresee an increase in the political or ethical barriers to computing technologies beyond those seen today, and these are rapidly vanishing.' So clearly Nano-Computing is not conductive of centuries long human sensibility or history beyond mathematic results.

The result would more likely resemble a buffalo herd than humanity. A buffalo herd's artistic sense is utterly limited. It's sense of love and companionship is ordained by food, rather than thought.

Will science again overtake eptitude? Seaman (2001) observes Gödel's mathematic distinction that there is no difference between 'numbers' and the 'operations of numbers'. This observation suggests to myself that ethics, or human spirit, should not be overloaded by computer design. Lucas (1996: 111) examines 'no escape' in Gödel's incompleteness theorems. No escape is a perplexity for human use of computers. Human right has always allowed flight. Deny it and will a computer allow escape, or SIGTERM, in it's practical analysis?

Will a 'love program' choose mates based on biological adaptability and breeding potential, rather than resonant thought, connection or desire? Will our ethical guidance be morals or practicality?

Whilst simple multiplication and intrinsic movement could be easily computed, an emotional assignment, such as 'human rights', is not calculable by machine. But then 'human wrongs' could be. And will be if Drexler's (1992:342) 'Nanomechanical Computational Systems' is correct in it's computer code analysis. The 'Final Solution' was a mathematical calculation to augment Germany's population. But the technical calculation was made as practical necessity: a 'science fact'. Seaman (2001: 1) concerns about 'emotional architecture' and the cognitive ability of Nano-computer inspired motivation. If the danger is only a possibility, it will not have 2,500 years of philosophy to augment it: Hayles (2004) calls the advent of Nano-Technology and

related culture a 'Dystopia', using John Stuart Mill's paraphrase of Thomas More's 1516/17 'Eutopia'. Blackburn (2005) describes Dystopia as a negative Utopia: a place where all is not well; not a 'good place'. The Merriam Webster dictionary lists Dystopia as 'an imaginary place where people lead de-humanized and often fearful lives. Anti-Utopia'. Archer's (Date Unknown) Utopia Dystopia comments on 'ecological equilibrium' being questionable in his artistic sense, which we can relate to more scientific physics and chemical equilibrium. So Hayles 'Dystopia' may well be warranted in Nanoculture. Herman and Swiss (2000:268) question the augmentation of human and artificial intelligence as 'Bootstrap' on the Internet, let alone more recent technology; They call the World Wide Web's tool growth the 'self-serving rhetoric of Bill Gates and Nicholas Negroponte' rather than being culture bound like most of humanity's advances.

Cogito, Ergo Sum..

Interestingly, the University of Notre Dame's 'Centre for Nano Science and Technology' in the United States has utterly refused discussion of Nano-Technological ethics. Their academic work appears to dwell on business-oriented benefit rather than human care or emotion. We can see, in current world affairs, what too much technology does with ill-education, let alone what it does in breeding further education. Roco and Bainbridge (2002:9) summarise the potential of Nano-Technology, biotechnology and information technology to enhance educational issues by 'unifying' science and nature. But their bivalence of 'cognitive science' is ambivalent of the scientific future path to achieve this. They are aware of the construction of 'intelligent synthetic environments' but do not concern over 'complicated, dangerous environments' that may take place within them, envisaging an 'even bigger breakthrough from our current capabilities.' In retrospect Roco and Bainbridge (2002:68) do see the potential for dangers to society and recognise that three simultaneous technological revolutions as 'unprecedented in human history' and that individualism may suffer. They also predict the possibility of a danger to the human species. As their written report is of a scientific nature, it is derogatory to the history of scientific research. Unknown outcomes are purely experimental. Herman and Swiss (2000) state that Internet use is not necessarily helpful to society without normal human conscience, let alone played by Nano-Computing enhanced cognition. Morgan, Brebbia and Voiskounsky (2004) discuss that ICT and Internet society have permeated all aspects of modern life in particular educational and social development. Johnson (1996) evaluates the 'harassment of rape on-line'. Experiments are not conducted well by computers, as they rely on 'certain' outcomes rather than possibilities. The 'dramatic effect' of the Internet could be multiplied without true human conscience. And Nano-Computers will refute what human social and educational controls there are, even if they merely develop as a means of interactive and business help.

Marturano (2002:75), questioning meta and computer ethics, states 'the common view of progress is therefore mistaken; we cannot assure a better future to our posterity because we are squandering our natural, intellectual and economic resources.' Marturano also quotes his previous work on the 'ethical problems arising from Bionics. Bionics is the science of replacing parts of human body with electronic counterparts. Ethical problems arising from Bionics are about personal identity,

privacy, the legal status of cyborgs (which are humans who have most of their body replaced artificially), the ethical boundaries of human interfacing with computers.' Under these supposed circumstances, technology deriving from Nano-Computing offers ethical, ethnic, biological, cognitive and financial uncertainty as well as possible profit and computer driven certainty.

Interestingly, Müller (2004) of the Fraunhofer Institut Rechnerarchitektur und Softwaretechnik has promoted Berlin Brain Computer Interface (BBCI) as a means of improving communication and transport for paralysed individuals. He has hinted at neurological advances improving office worker contact and planning, allowing typewriters to be used by brainwave action. Whilst he has not mentioned Nano-Technology in his written prospectus, referring only to 'modern technologic development', others can see the guidelines for Nano-Computing brainwaves increasing the BBCI's capability. Müller has noted the issue of 'invasive vs. non-invasive measurements of brain signals' and it's discussion. Like the vast majority of scientists, he is evasive of possible ethical difficulties. Steering wheelchairs by thought, Müller, is tantamount to allowing any user to drive or control machinery.

In discussion of Biomimetics and related technologies, and thus associated with neural Nano-Computing development, Antón, Silberglitt and Schneider (2001) tell us 'these efforts should, by 2015, make significant inroads in improving our understanding of phenomena such as false memories, attention, recognition, and information processing, with implications for better understanding people and designing and interfacing artificial systems such as autonomous robots and information systems. Neuromorphic engineering (which bases its architecture and design principles on those of biological nervous systems) has already produced novel control algorithms, vision chips, head-eye systems, and biomimetic autonomous robots. Although not likely to produce systems with wide intelligence or capabilities similar to those of higher organisms, this trend may produce systems by 2015 that can robustly perform useful functions such as vacuuming a house, detecting mines, or conducting autonomous search.' Their biomimetic intelligence demonstrates the artificiality of Nano-Computing's resolve in improving human life, as well as the ethical boundaries that cannot be crossed by machine, whatever it's size of processing ability. Artificial intelligence is soundly artificial. The spirit of human existence is soundly spiritual and personal, not mechanical. Marturano (2002) questioned biomechanics in the same way. Antón, Silberglitt and Schneider (2001) display effectively the key enabling factors and barriers of Nano-Technology in Figure 1:

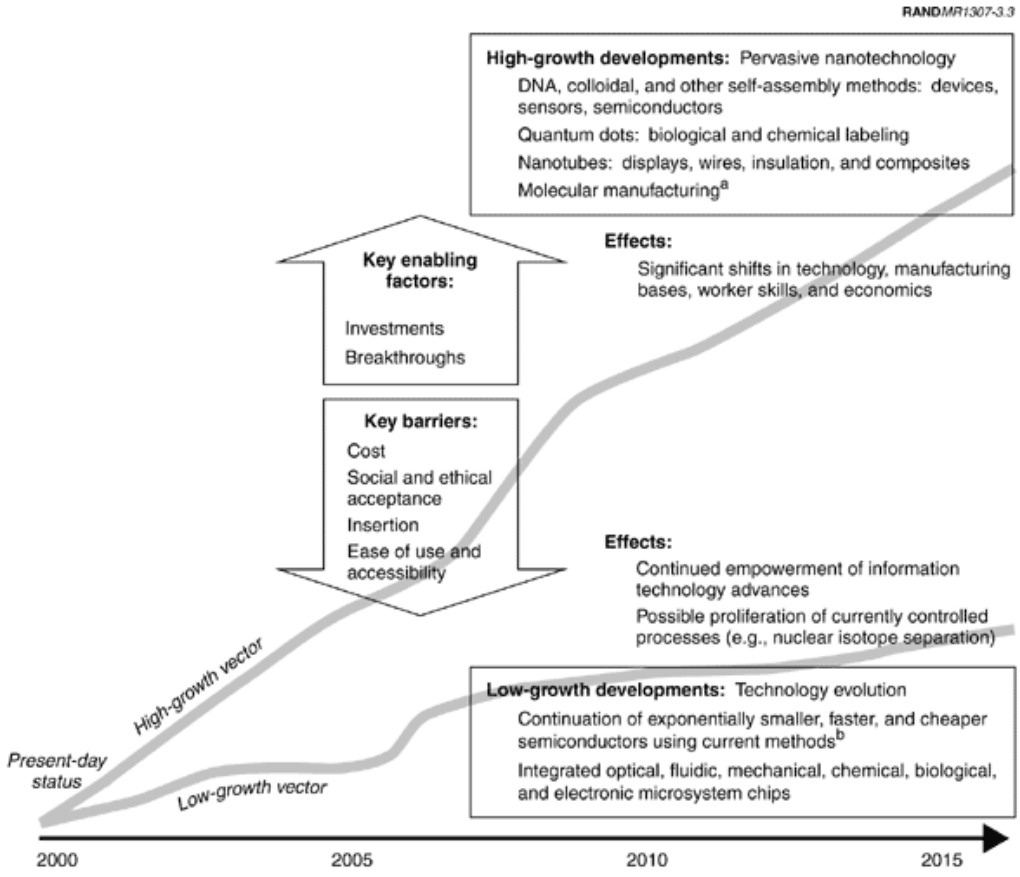

Figure I: Antón, Silberglitt and Schneider (2001)

Drexler's accusation of seeing 'science fiction' in Nano-Technology is slowly developing into 'science fact' as we examine the prevalence of Smalley's Nano-Technological machines, and by association computers. Their sale to the public is both invigorating to average intellect and vastly misunderstood in the same respect. Try teaching physics to those outside cognitive development theory's capability. Western government instigates Nano-Technological development as a democratic right to improve the lives of their population, without pausing to determine if 'human rights' or love will be calculable by computer software. Love is determined by essence, not mathematics. Smalley (1999) stated that 'powerful as it will be, this bio-side of nanotechnology that works in the water-based world of living things will not be able to do everything. It cannot make things strong like steel or conduct electricity with the speed and efficiency of copper or silicon. For this, other Nano-Technologies will be developed – what I call the 'dry side' of Nano-tech.' This 'dry side' will stipulate care and love for a breeding program as effectively as Josef Mengele. Seaman (2001) questions how 'can new sensing paradigms, Smalley's 'dry side' or the Stalingrad's 'comrade', function in a connective intelligent manner with media elements housed in Nano-computers?' Telecommunications professor Brownrigg (2000) has noted to development of a 'nanometer supercomputer' for November 2011, asking whether it's relation to Quantum computing is related. She questions how we must gather 'fundamental understanding' of quantum theory and the

processing of information. Hitler was excited by Planck's theory, meeting him in 1933, but clearly an understanding was not possible.

The clash of cultures is primarily between ethnic groups, but surely will be a clash of minds seeking solution in the future. Whilst we have historically had warfare between cultures, it has almost always culminated by ethics. Many of those ethics have been dangerously balanced, but most are humanly reconcilable. Surely Nano-Computerised instruction will decease whatever population is impractical, without any form of remorse. The same way that joy or love will not be recognised as practical, and revolution will be not be required of human emotion anymore. Without revolution we would still be living in a feudal regime. Universal Emancipation, edited by the Quaker Benjamin Lundy's abolitionist newspaper, would have been extremely unlikely to exist under a Nano-Computerised management.

A variety of references are questioning the advent of cultural ties with the computer revolution, such as Johnson's (1996) dialogue, and how the Internet affects us. What will those same references question about Nano-computing? Or are there related arguments with the use of the Internet over the last ten years, though much of that is still cognitively misinterpreted as technology outpaces both philosophy and traditional science.

Former US Secretary of State Henry Kissinger was right when he said of the Iran-Iraq war: 'A pity they both can't lose.' Ethically the Middle East is dictated the same way both Kissinger and a disconcerted Salmen Rushdie predicted. In respect, another Kissinger quote, 'too much fraternizing with the enemy' reflects Western democracy's infliction of capitalism on a technologically enabled 'global society', itself no more compatible than Iran and Iraq.

Could the Internet, the interconnection of computer networks, be re-termed the interconnection of nationalist networks seeing it's ability to communicate traditionally unethical behaviour and communication. A network of crime, terrorism, racism, and Nano-Technological 'benefits' to those who financially lubricate those who profit from it. 'Profit' itself is redefined in a heavily capitalist society.

Federal Bureau of Investigation (2005:10) debates that 'a series of long-term questions about safety must be asked, incorporating not only the demonstrated threats of today but the potential threats on the horizon, such as the impact of Nanotechnology.' They consider it's potential use as a threat by criminals and similar bodies on identity theft, blackmail, bribery and financial duplicity. Certainly those are traditional criminal deceits, and similarly difficult to judge in the legal framework, without the debatable impact of Nano-Computing.

Johnson (1996:5) observes that 'in the 1990s, attention turned to the Internet and that is because the coming together of computers, telecommunications, and media was the next major development in the technology. (This may turn out to be 'the' – if not 'one of the' - major technological developments of the 20th century). And when it comes to the Internet, the ethical issues expanded to almost every aspect of life. We are now in a process of recreating much of the world onto this new medium and it would seem that every type of activity that takes place on the Internet has posed ethical issues, be it social meetings, buying and selling, politics, or whatever. Indeed,

in my first paper on the Internet I suggested that many of the ethical issues surrounding the Internet arise from its unusual scope (breadth of reach, in the hands of individuals, cheap, easy to use), the availability of anonymity/pseudonymity, and the reproducibility of the medium.' If the Internet is that uncertain a sphere of ethical and human promulgation, we can judge that Nano-Technology and Nano-Computing can be the uncertain 'major technological development of the' 21st Century on an equal basis. Since the humanosphere is still expanding on the Internet, it's expansion in Nano-Computing will be dubious without careful examination outside of it's medical potential. Fundamental concern is made of the biosphere. Nano-Computing's impact should be of equal concern. Marturano's (2002) questioning comes into play again.

Norris (1982) wonders what led Nietzsche to conclude that truth '…is a mobile marching army of metaphors, metonymies and anthropomorphisms…truths are illusions of which one has forgotten they are illusions…coins which have their obverse effaced and which are no longer of value as coins but only as metal'. Hayles' (2004) Nano-cultural illusionary world, and it's potential graphite molecule structure, is indicative of Johnson's (1996) Internet 'pseudonymity' and Nietzsche's 'metonymy' and 'anthropomorphism' being stronger. Identity, and Nano-Computing's probable dereliction of identity and character, is thereby misanthropic.

It is uncertain whether the advent of Nano-Computing with benefit the few or the many, in all traditional or modern human aspects. This uncertainty should be investigated by others other than corporate bodies, or weighed against medical advice that describes Nano-Technology as a life-saving advance. I know from personal experience that there is a time to fight, and a time to die. A Nano-Computer operated individual will only operate on 0 and 1, without such permutational ability. The abilities of love and care will be lost. I wish I could say 'could' be lost; but modern government is run by technocrat already, let alone increasing that hold. We must repeal Smalley by talking about it.

We should not only use the brains we have, but all that we can borrow.

Woodrow Wilson's words suggest united thought is intrepid. And certainly a state of unity is intrepidly community spirited and helpful. Medical procedure is teamwork absolute, and the medical intensity of Nano-Technology is both promising and traditionally human spirited.

Biomimetics, the intersection of biology and information science, discussed by McBride et al (Date Unknown), of the Krasnow Institute of Advanced Study and others, are both helpful in a medical sense and discouraging in what they describe as 'microbes establishing a significant advantage over mortal man.' The 'fast-forwarding' of the microbes in their evolutionary campaign is a possibility with Nano-Computerised acceleration, although they predict the technological paradigm of successive and future world wars in Table 1:

Technical Paradigm	WW1 chemical	WW2 physical	WW3 computation	WW4 biocomputation

Table I: Characteristics of War, McBride et al (Date Unknown)

Their biomimetics, or 'biological designs and environments may be synthetically advanced and genetically engineered using computational methods.' Both biology and warfare will transcend and are likely to be used in the Nano-Technological future. Uncertainty in Nano-Computing is similarly transcendent, on the one hand saving and improving life, and on the other eradicating it if no longer practical. McBride et al (Date Unknown) suggest that 'computer science is now to emulate biology's four unit paradigm, which is slightly different from binary computation in outcomes.' These four nucleotides, that comprise DNA: Guanine, adenosine, thymine and cytosine 'encode the genetic design of their living owner' are possibly building blocks for humanity, at least in a biological sense. The authors are intrigued as well as uncertain. Encoding the four nucleotides may advance Nano-Technology in biological, or biomimetic, resonance.

Falstaff said 'the better part of valour is discretion', but this should be juxtaposed to Vladimir Putin's 'better to fight and die free than to ever surrender to the threats of destruction from all sources regardless of the outcome' and considered in Milobenski's (1971) philosophical evaluation. Iran's leaders have used the same first five words of Putin's phrase recently. A Nano-Computer may well compute that it could be better to fight, but will reject that it might be better to die. More practicality may come from Nano-Computing, but human fortitude will suffer as a result. Which is better?

Is the University of Texas' Wallace (2005), in Notre Dame's Centre for Nano Science and Technology paperwork, non-juxtaposed when he warrants the biological strength of Nano-Technology? Wallace states the requirement for a 'thorough understanding of the materials integration research' in his abstract, but demonstrates little understanding of the material's concept. Warnings do not require operation. Huff (1995:2) states that 'the designers of the Therac-25 Radiation Therapy Machine knew that the radiation their product generated could be delivered in dangerous dosages' yet 'the designers were negligent in both the initial design and….reports of malfunction.'

Kiehl (2005:1) of the University of Minnesota Department of Electrical and Computer Engineering considers the 'possibilities for new fruit are diverse: biotechnology offers new approaches for self-assembly of structures at the nanoscale, while nanotechnology offers new methods from probing and accessing biological systems.' He also considers the research of 'self-assembly of 2-D nanocomponant arrays by *in situ* hybridisation to DNA scaffolding.' This biological entreaty promotes medical procedures, in lieu of possible computerised misappropriation. Any parent wants to improve the health and education of their children, and so this Nano-Technological breakthrough is stimulating to them.

In their paper on flow diagrams, Turing machines and languages with only two formation rules Böhm and Jacopini (1966:366) shed light what might happen in a Nano-Computerised brain by not every diagram being composable by base diagrams using base numbers. Art and literature and care will be similarly decomposable by computer code. Turing's 'blank squares' will not reconcile those historically human emotions effectively: any more than a patient's requirement for sense. Two dimensions do not ascertain love or familial behaviour in general, let alone a Nano-computerised mind. Turing's finite alphabet and infinite tape are no consolatory path. Computers can only apply final configuration by programmed interference and finite alphabet not emotion. Böhm and Jacopini's computational linguistics, notably their morphology and information flow, are no replacement for literature. They observe that computing defines maturity levels precisely while 'Bootstrap' gives a distinct view of an organisation. The best human work, however, cannot rely on 'Bootstrap' to augment it.

For in much wisdom is much grief: and he that increaseth knowledge increaseth sorrow.

Medical intuition is not as mathematically bound as it believes. This is likely to be repeated in the Nano-Computerised environment echoed by Lamont and Pavlika's (2003:14) conclusion that Quantum computers 'are not designed for everyday interactivity' despite their efficiency and likely 'moving from merely observing Quantum phenomena, to controlling these phenomena.' The increased knowledge above is surely the path to sorrow.

Searle (1990:21) and Donoghue (2002) differ over the functionality of 'brain machine-interfaces' (BMI) outside of the human cerebral cortex and the 'computer model of the mind.' Donoghue is supportive of progress in useful human BMIs and that monkey intracortical recordings are being tested for increased medical manipulation. Human behaviour has been badly manipulated both in the past and currently. Searle states 'the mind is the program and the brain the hardware of a computational system.' He recognises that the mind is not a computer program, who's formal syntax does not by itself lend the presence of mental contents. Syntax is not the same as, nor is it by itself sufficient for, semantics. It is interesting that Donoghue's work was supportive before the concept of Nano-Science was introduced by Smalley and Searle's during it's introduction. Uncertainty was not scientifically discussed with the advent of Nano-Technology, let alone Nano-Computing. Uncertainty itself is a cerebrally human semantic without computerised augmentation. 'Bootstraps', parallel processing or Eigenfunctions, or Deutsch and Hayden's (2000) 'information flow' in advanced computers, will not be enough beyond artificial limb movement. Are Nano-Computers' wavefunctions sufficient for love and friendship despite entangled recognition?

Spafford (1992) argues that hacking or computer break-ins, even those not actually damaging, are unethical. Too much technology in the wrong hands is dangerous, be they amateur hackers looking for a kick, or Nano-Computers impregnated into human motivation. That motivation will be even less parlous than Internet driven hacking because of it's efficiency. Neumann (1991) states that computer ability has manifested in antisocial behaviour that can be related to computer system design. It is only

computer administration by humankind that is protective. The opposite is most likely to be true.

It would seem that inconclusive evidence is offered for the introduction of the Nano-Scale to computing software and hardware. A hard cap can be fronted, as in the possibility for biological eptitude, but not in connection to intellectual ideology or social communication. Much technological improvement could, over history, be of uncertain principle at it's conception, but without merit at a later date. *Lebensraum*, adopted from the 19th Century ethnographer Friedrich Ratzel, may well have had public support from the people, but the public support of *Ein Volk, Ein Reich, Ein Fuhrer* led to unspeakable scientific ineptitude as well as a popular *Lebensraum*. Neither, in retrospect, was considered the best course for humanity, or the German Republic. Hitler took Germany to places they wanted to go on a scientific, artistic, cultural, and literary mandate, but one that caused the people no end of remission in hindsight. The day of empire is over, or we hope it is. Empire has been ruled by both popular acclaim and totalitarianism. Both may be true of Nano-Computing. A life ruled by computer may have the same; and one day repeat the totalitarianism without more than 'Bootstraps' or resistance: which will be more tightly controlled than the *Waffen-SS* or *SS-Totenkopfverbände*. Hitler knew how to intrigue the population and to offer Lebensraum, without explaning his means. A more Nano-Computerised population will not be able to see through the public relations, such as Eva Braun and Göring, at all. *Lebensraum* will be ridding the unnecessary population again. Unfortunately Niebuhr (1992), writing in 1957, lettered 'the peace of tyranny means, at least, the absence of war' to a pacifist. So human endeavour is not necessarily the only requirement for human spirit, although most mechanical technologies had not been encountered at the time, regardless of tyranny.

Such worry may seem unscientific, but discussion must be made before we repeat historical mistakes. Empires may fall, but they are traditionally replaced in a managerial sense. Science must be controlled, not overlooked.

No culture can live, if it attempts to be exclusive.

Weckert (2002:366) suggests that both Nano-Technology and Quantum computing can radically change information technology, causing both excitement and anxiety. He cites Bill Joy as saying that advances in Nano-Technology should be 'relinquished' and are 'limiting our pursuit of certain kinds of knowledge.' Whilst not denying Nano-Technology's benefits in medicine, the environment and information technology in general, Weckert states that careful examination of Nano-technological advances require understanding of the dangers involved. This examination is, one would hope, sufficient as part of that attempt to understand. Davies (1996) prognotes that Nano-Technology 'that the efficiency of computers will be increased by a factor of millions.' Internet linkage with Nano-technology will warrant the worry on Nano-Computing, and so much uncertainty must be absolved before it becomes commonplace. *Veritas* is sufficient, but is a human virtue, not understood by computers beyond mathematics. *Veritas Lux Mea*.

Davies (1996) notes that Smalley estimated that the efficiency of computers would increase by a factor of millions. Competence is not a universal human trait, and

ineptitude has always produced effective human art as much as competence. So Nano-Computing will, if nothing else, will change human behaviour, as much as Spinello and Tavani (2004:7) suggest the impact of the Internet has effected 'our social, political and legal institutions.' A still debateable modern technology in those terms.

Gandhi also told that 'there is more to life than increasing its speed.' Nothing did he know of computers, but in human spirit and meritocracy he was well versed. Interestingly, Indira Gandhi founded many scientific academic centres in India, and her words 'we must learn to be still in the midst of activity and to be vibrantly alive in repose.' While dieing before much advent of modern computing technology, she provided elucidating words to any scientist. This respective stillness and vibrancy does not exist much in our modern environment, let alone one ruled by Nano-Computer, where political policy will be treated as per a dictatorship. The current Prime Minister of India Manmohan Singh, whilst remaining relatively positive about the possibility of Nano-Technology, said it would have a 'crucial impact on our lives in the future' in a speech at Moscow State University in 2005. His caution is rudimentary, as in the words of nearly all Indian premieres, but so is his typical stipulation to business. He also provided the almost compulsory 'crucial impact on our lives in the future' in terms of biomedical and bio-informatic advances using Nano-Technology in New Delhi. But he did note the 'country's vulnerability to cyber crime is escalating' there, corresponding to others' uncertainty of the ethics of computer use, in a fast developing world. This uncertainty is almost commonly felt as the effects of modern technology finally seek assessment.

Jim O'Connor (2005:2), Motorola's Vice President of Intellectual Property Incubation and Commercialisation, demonstrated careful thought on Nano-Technology's relevance to virtually every sector of the economy, such as medicine, telecommunications, and computers, and to areas of national interest such as homeland security.' But note his position as a director of both intellectual property and commercialisation are not necessarily both ethical and sanguine. Such are public relations from a senior businessman. The speech was given to the US House of Representatives but disturbs me in his discussion of Harvard's fabrication of non-volatile electronic memory using Nano-Tubes. His association of computers with 'strong research' of non-volatile memory would suggest to myself that personality cannot be displayed by a Nano-Computerised individual. Volatility calculates threat as well as humour: the essence of a human being, according to Réne Descartes. O'Connor's warning that America needs to lead the field in Nano-Technological research is purely financially motivated. O'Connor (2005:7-8) mentions that 'the number of nano start-ups' in the 'US has increased significantly due to the heavy private sector venture capital investigating.' So, seemingly research is for profit? He admits, to this governmental body, that 'future technological breakthroughs' will 'make our lives simpler, safer, smarter and more enjoyable.' The simpler and smarter principles must be regressed if we are to remain cognitively safe. His 'life-changing dreams' are soporific indeed, as are the majority of his words to a non-scientific political audience.

In introduction to O'Connor's words the chairman of the Subcommittee on Research of the House of Representatives, Inglis (2005), viewed that Nano-Technology 'will quickly become as commonplace as the Internet.' The Internet, as previously observed, still has uncertain behavioural patterns as far as democracy is concerned.

This trepidation should be a warning on rampant development along Nano-Computing lines. Since the the OpenNet Initiative (2005) tells that the Republic of Yemen has instigated Internet Filtering to it's population. We should be aware of the cultural differences of modern computer use. The sort of sites banned by the Republic demonstrates the difference between themselves and Western civil rights. OpenNet Initiative (2005:4) details the information restricted as 'pornography…., sex education and provocative clothing sites, gay and lesbian-related materials, gambling sites, dating sites, drug-related sites, sites enabling anonymous Web surfing…. and sites with content related to converting Muslims to other religions.' Clearly a couple of these are essential, but others are illegal in our society. To increase broad human intelligence or computers themselves using Nano-Computerised techniques will certainly change us, and computers, in a similar context. Nano-Management will not abide cultural duties in the least, whether you agree with them or not. Cyborgs would be the future. O'Connor, watching the President's Council of Advisors on Science and Technology (PCAST), still saw Nano-Technology improving our existence. Kvamme (2005:1), a partner in a high technology venture capital firm and co-chairman of PCAST, offered testimonial to PCAST itself, stating that 'Nanotechnology touches on a broad array of disciplines, including chemistry, biology, physics, computational science, and engineering. And like information technology, nanotechnology has the potential to impact virtually every industry, from aerospace and energy to healthcare and agriculture.' Kvamme's words are a blend of public relations and business sagacity, as he avoids the potential of human behavioural changes with Nano-Technology's touch on 'computation science'. The House of Representatives seem more observational of the United States being the leading financial power on Nano-Technology rather than it's actual technical, ethical or computational danger. The U.K's Houses of Commons and Lords have produced little understanding of Nano-Technology beyond it's business potential and medical possibility. Similarly, the official Downing Street Web site demonstrates nothing but business acumen. Drexler and Smalley both understood it's potential, despite the former's concern and latter's original stoicism.

Trust not too much to appearances.

It is interesting that Superhero's these days are defined by the public as those denoted by Marvel Comics, Hollywood and popular imagination. But our old heroes are recognised as Heracles, Jesus Christ, Moses and Gunga Din and ascribed by Virgil, the Bible, Tennyson, the Wind in the Willows and typical Hindu psalmistry Modern communication has given us Topgun and Osama Bin Laden as our guides. The Merriam-Webster dictionary still expresses superheroism as 'a fictional hero; and an exceptionally skilful and successful person.' But in a Nano-Computerised world everyone is being offered superhero powers: knowledge, long-lived existence, illusion amid others. But the superheroes of old were still human spirited, not mathematically enhanced. They were the supervillains with viability. Both were existential. Jean Paul Sartre would say so before their essence arrived. But the supervillains are more viable adapting to high technology such as Nano-Technology. Søren Kierkegaard, the 'father' of existentialism, asserted that 'truth is subjectivity.' Subjective programming is unlikely and has been questioned by Shelley (1964) when he says 'one general method of attack on subjective programming problems is to follow the natural bent of

the mathemetician: rather than solve the problem directly.' So will truth ever be recognised in a Nano-Computer driven brain?

Clearly research is ongoing into the internal molecular/biological use of Nano-Technology in the medical academic field. And health is fundamental to humanity as we see overpopulation and greenhouse gases constantly warned about, although concern is expressed by pressure groups more than governmental bodies. Modern government, of any description, is more scientifically based than cultural. The recent blocking of more than one child per Chinese couple demonstrates that. Sadly, CO2 emissions are a scientific reality in Chinese overpopulation. Governmental restrictions will be enforced by Nano-Computers with no pressure groups or sufficiency beyond Eigenfunctions. Amnesty International will not function. Mechanosynthesis is essential to some biological well-being, but so to will be to Nano-Computer development if it is to receive a mandate from the masses. Biological well-being will be a software upgrade and equally mechanically accident prone, which is understood by Brey (2000). Uncertainty and possibility are both opportune and unknown. Brey (2005) declares that 'since the Internet's breakthrough as a mass medium, it has become a topic of discussion because of its implications for society. At one extreme, one finds those who only see great benefits and consider the Internet a tool for freedom, commerce, connectivity, and other societal benefits. At the other extreme, one finds those who lament the harms and disadvantages of the Internet, and who consider it a grave danger to existing social structures and institutions, to culture, morality and human relations.' So again we can see uncertainty in already used technology. A scientific examination should remain as neutral as possible, although conclusions can be sought by inspection of what is available. Maybe my examination is 'extreme', but as a person that revels in human differences I must share. It is my human and programmer's duty to my friends, not a computer instruction. My opinion may change, but it will not rely on parallel processing.

Ross (1994:341) notes that government (naming the U.N.) and business ethics (by reference to the World Bank) 'acknowledge that it is up to us to recognise smartness and creativity and resistance in places, in people, and in things which the powers that be do not understand as smart…. the new smartness is an advanced form of competition in the sphere of intelligence, where knowledge, more than ever is a species of power, and technology is its chief field of exercise.' Power, in the hands of a computer, is autocratic; and we have rejected dictatorship over the last two centuries. Bender and Druckrey (1994:1), Ross's editors, introduce the fact that 'technology forms the core of the cultural transformations that are generating startling changes in virtually every cultural and political activity' and that postmodernism and postindustrialism are related to the multinationalisation of technology. A New World Order reliant on technology. Both Ross and his editors envisage these through the emergence of the Internet. It would be fascinating to talk to them in the introduction of Nano-Computing. The answers would be "we don't know" but they would become "we must try and find out."

Burgess (1998) questions 'whether the root cause of the errors'…. in computers…. 'is faulty programming or simply a lack of foresight, human intervention is required in computing systems with a regularity which borders on the embarrassing.' He asks us to 'imagine what the world would be like if humans were as helpless as computer systems. Doctors would be paged every time a person felt unwell or had to do

something as basic as purge their waste 'files.'' A reversal encompassing computer intervention in daily life must surely be both unnecessary and of concern. Prudence will become simple mathematical calculation without human intervention. Burgess's notation of SIGKILL, SIGINT, SIGABRT as common computational signals should be investigated as Instant Death, Interrupt, Abnormal Termination affecting humans under Nano-Management. Will Quantum computers be refined enough to mitigate observed biological Darwinian theory? Maybe they and Nano-Computers will. But SIGKILL may affect any human as a waste 'file.' Or SIGINT to any couple not likely to produce effective offspring. Table 2 display's Burgess's signals.h:

Signal	Cause
SIGINT	Interrupt/Break or CTRL-C
SIGTERM	Terminate signal
SIGKILL	Instant death
SIGSEGV	Segmentation (memory) violation
SIGBUS	Bus error/hardware fault
SIGABRT	Abnormal termination
SIGILL	Illegal instruction
SIGIOT	Hardware fault
SIGTRAP	Hardware fault

Table II: Some common signals from signals.h, Burgess (1998)

Universität Würzburg staff Hock and Schittkowski (1980) examine non-linear programming codes to ascertain its' ability to optimise mathematical code in a more behavioural manner. Their mathematical analysis of a system of equalities and inequalities over 0's and 1's concludes that variables are sufficient. In the case of computer instruction to human behaviour that might deliver a small range of options, but hardly poetry or emotion. And a holiday might be in a warm environment, but not with architecture more than practical. A solution will always be no more than optimal. Non-linear programming offers no more than SIGINT. Kolman and Beck (1980:9) preface linear programming with the optimisation of 'Classical techniques' being widely used in science over millenia. But they suggest that problems have existed in code 'towards the end of World War II' and 'algorithms for their solutions were developed.' Their linear programming observation suggest Hock and Schittkowski's (1980) variables are supportive, but they also consider transportation, degeneracy, and assignment problems as well: all inconclusive in non-linear programming code, with SIGABRT as the only solution to degeneracy. SIGABRT will be the result of patient illness in a Nano-Computerised system. Not a consequence of medical strength or relational care, but simple impracticality. Kolman and Beck (1980:300) tell us that 'excess persons' will be assigned 'dummy jobs' to keep them occupied in 'assignment problems'. Their use of pseudonyms is uniquely worrisome in humans assigned computer management despite the practical development of non-linear code methods. They conclude that 'their own algorithms' are more effective than 'simplex algorithms' in programming code. So individualism is more effective than mass motivation, both for humans and computers.

Holland's (1992) Cybernetics draught, considers the encapsulation of biological and technological systems. A draught, is where I stand in my analysis, but Smalley's subtitle is a component of scientific work, and so should mine. Let's talk about it. In as much computing potential and behaviour. Computers will program themselves? Bentley (1999) suggests they will, although their evolutionary design is experimental at best.

Heylighen and Joslyn (2001) highlight the crucial influence of artificial neural networks and note the possibilities for computer architectures. Heylighen and Joslyn (2001:3) also communicate that attention is focused on the engineering approach, but worry that more needs to be paid to 'autonomy, self-organisation, cognition' in Second-Order Cybernetics. They state that 'knowledge of systems is mediated by' ….computers'…. 'simplified representations…. which ignore those aspects of the system which are irrelevant to the purposes for which the model is constructed.' Their epistemology questions modern technicians' problems with the nature of life, mind and society, and query of philosophy. It ends (p22) with the concept that computers' 'inability to distinguish self-generated ideas (dreams, imagination)' are precarious. This is explanatory for Nano-Technology's prevalence in medical science, but disconcerting for the construction of Nano-Computers. Wiener's (1961) original thought on Cybernetics was entitled 'Control and Communication in the Animal and the Machine'. The control is an important aspect. And my own Conclusion is next as part of the Communication.

Conclusion of a Human Right to Freedom

Seeing this work is a contemplation of both computer and human performance: hence the necessity of philosophy as well as computer code. The relationship and possibility of the two are widely recommended and are examined in ongoing Cybernetics, Artificial Intelligence, Quantum computing practise. Potential in forthcoming computer technology must be analysed using both ethical and scientific means. This I have attempted, but it is difficult, and may well arouse indignation or concern or amusement. Use each of those while you still can. You will not in either linear or non-linear programming.

Freud and Einstein (Appendix I) discussed the 'irresistible lucidity' of human activity in modern science being ' a matter if life and death for Civilization as we know it' and 'its division into factions makes it impossible for its members to co-operate in the solution of today's problems.'

A summery of conclusive assessment:

1. Good physical improvement
2. Nano-Technology is potentially very useful.
3. Nano-Computing is potentially very useful to machines. Perhaps too much.

- Nano-Computing is not at all useful to human bodies or minds.
- Nano-Computing is sagacity free.
- Politicians are sold.
- Sensory acuity is not communicated.
- The use of computer narrative is limited.
- Macro-Computer science still requires traditional human interaction.
- Illusory worlds are quite possible.
- Instruction is closer than thought using a Nano-Computer.
- A study of computer code and human behavioural patterns.
- Nano-Technology is our future.
- Experimental uncertainty.
- Life is potentially changing. For good or ill?
- Information flow.
- Mathematical calculation will be consistently fast and correct and can lead to correct analytical results.
- Nano-Computers will be able to self-replicate.
- Quantum computing is a half-brother.
- What motivates the construction of Nano-Computers?
- System integrity.
- Privacy is an issue.

In full text:

1 Good physical improvement is potential in Nano-Technology: with proposals on personal wheelchair management, sight and sound being encouraged in the public and private spheres.

2 Nano-Technology is potentially very useful. Potentially unsafe in the wrong hands. The Global community is disparate, and always has been, in its use of

technical methods. Take an example of the Cold War improving atomic research, and the probable culmination of atomic weaponry between Saudi Arabia and Iran.

3 Nano-Computing is potentially very useful to machines. Perhaps too much in view of the medical stipulation it gets. Human behaviour is not at all recognised by computer, despite social stimulation. Nano-Computing will blend mind, machine and physical condition.

4 Nano-Computing is not at all useful to human bodies or minds despite its aid to handicapped and physically impaired patients. It may, in the same way the Internet has done, cause uncertainty and improve misinformation. But concern on those will be driven by mathematics, not by care.

5 Sagacity is a human trait that cannot be recognised or helped by Nano-Computing or any current computer. $E = mc^2$ is mathematical in its relativity and is not conducive to the brain, who's energy is not necessarily reliant on size. Perhaps that is true of a computer drive. $E = mc^2$ equals rest mass (or invariant mass) not net momentum. Relativity is soluble only by relativistic mass, and incalculable by reference frames. Reference can be inferred by programs, but with a variety of outcomes; only the most certain will be likely used. One can see the medical influence, but not the intelligence precepts. Invarient mass in computers uses m^o not mc^2. Einstein said in 1921 that geometry dictates nothing about the relationship of real things, although geometry contended by physical truths can. Theoretical physics, like theoretical computer physics, is still an unknown reality. His temporary support of possible mechanical improvements, should be temporary in ours of the Nano-Technical field.

6 Politicians are sold the technological advantages along the lines that it will sell medical aid, national and global financial acuity and give military advantages. Note the U.S. government has been told of the boost NASA will get with transport and astronautical communication and occupation.

7 Sensory acuity is not communicated in Nano-Computing, as much as biological handicap is a supposedly mitigated by Nano-Technology.

8 The use of computer narrative is limited in language and literary merit and ethics. Only contemporary and historical human instruction is essential to modern computers: especially if we want the technology in the right hands, or given to those who understand human rights.

9 Macro-Computer science still requires traditional human interaction and algorithm adjustment despite its finite mathematical power. Integrated software processing is no more than a human aid in reading code. If a Nano-Computer develops society the aid will be virtually ambiguous.

10 Illusory worlds are quite possible in a Nano-Computerised brain. As are chimerical bodies.

11 Instruction is closer than thought with Nano-Computer.

12 This has had to be a study of both computer code and human behavioural patterns. Empirical data is not available as much for the former as much as the latter. We have studied the second longer.

13 Nano-Technology is most likely our future. But it needs to be carefully monitored.

14. Non-linear programming is experimental and of uncertified use, except in 'dummy jobs'. A dummy life may result with increased human interaction. Human life is not to be experimented with.

15. Life is changing indeed as high technology comes to the masses. The difficulties we think we see over the Internet, will be less thoughtful over Nano-Technological coordination of computers and people. No doubt a biological imperative will be augmented for allowing the blind or deaf to see and hear. But what programming SIGILL, either by drive or human instruction, will give ill care by SIGSEGV or other means? And how will 'memory violation' instruct human care or Right? Humans are used to rights and wrongs, and have been throughout history. But rights have almost unilaterally triumphed, even over war. Computers cannot fathom the difference been rights and wrongs. SIGKILL is the result, without remorse.
16. Computer information flow fans in and out of programming code, and is usually equable. But complex codes, like those controlling the human body and mind in Nano-Computing are overly complex and prone to SIGBUS as much as any modern computer. Erratic code will terminate anything that does not fit or is morphologically unrecognisable or overly complicated. And what will happen to software competition? Or is it a single parallel operating system with uncompetitive software?
17. Mathematical calculation will be consistently fast and correct and can lead to correct analytical results. Nano-Computers will treat the body as a mobile platform. Food and medical treatment may be a requirement, but a Nano-Computerised brain needs no actual pleasure, simply nerve stimulation for fitness. Cryptanalysis will not be sufficient as we age. Pure intelligence still requires wisdom.
18. Nano-Computers will be able to self-replicate. Artificial Intelligence is artificial as well as intelligent, or a non-linear method of pretence at both. Even numerous variables are not enough. Self-replication is the low end of the human evolutionary chain. Originality is not a variable equation.
19. Quantum computing could have the memory and speed of anything we can currently network. Add that pace to human molecules as Nano-Technology envisages and we will see artificiality in both medicinal and cognitive development. It is not a case of helping the unwell, but in preventing a class system that would have dwarfed Rome or the British Empire in its superfluity. Because citizenship will be the desire of all, but restricted to the affluent. 'Dummy jobs' for the masses. No pleasure, but potentially unrestricted pain. And spatial monitoring to keep the 'population' in order.
20. What motivates the construction of Nano-Computers? A preliminary insight by governments to improve the education of their own population? The academic curiosity? Or parents to give their offspring a new 'toy'? Questions need to be asked because despite your good will you may longer know your population or children. Internet pseudonymity may be spread wider than your computer monitor. On the Internet race, creed, religion, art and ethics are partially subliminal. On a Nano-Computer they will be quite real, unless the hard drive sees it as a hardware fault or illegal instruction.
21. Systems integrity in Nano-Computers will be un-programmable by human interference. Only Nano-Computers will be able to restrict themselves: if they detect the fault. HASoC is iterative and incremental and its implementation is uncommitted between hardware and software. The commitment is currently forced my human use, but Nano-Computing will suggest that use is recognisable and that system integrity is universal. Object-oriented development is mathematically modelled, not human desire, but may still be

management of Nano-Computers. IFMEA is not to be coupled with human health and well-being.

22. A conventional (four letter) password needs only 26^4 = 456,976 computer calculations to decipher it. A cryptanalytical Quantum or Nano-Computer could invade that human sensibility instantly if the operating system required it. Nano-Computerised connection will already hold the password in its database to share with other network components. Communication will not be private. The taxonomy of existing systems is debateable, let alone with the pace of Nano-Technical computer speeds: possibly the qubit efficiency of an uncertain Quantum computer. Remote and untrusted storage file systems would be easily converted. Patches are unreliable if automatically processed and potential sequences/steps could be effortlessly computed. Biomimetics, or biocomposites, are pure imitation but entirely possible. Examine Intellectual Property Rights.

Nano-Technology has potential uses for human life, as long as it is carefully monitored. Nano-Computing has not, and should be avoided by companies, industry and especially politicians and governments who's technology exceeds it's democratic literacy and cognitive boundaries.

In contemplation of Nano-Computings' potential we should consider that continual or partial defeat in battles, however small, is the loss of a war.

Words: 9,281 excluding referencing and Appendix I.

Turing in his 1950 paper:

1. Intelligence in computing machinery is (or is nearly or includes) being able to deceive a human interlocutor.

2. The best approach to the problem of defining intelligence is through some sort of operational test, of which the imitation game is a paradigm example.

3. Work specifically directed at producing a machine which could perform well in the imitation game is genuine (or perhaps even useful) A.I. research.

To my wife: who showed me to calculate what is like to be human.

Glossary

No.	Title	Division	Translation	Page
1	Subdivision titles	Abstract A Human Right (Welfare) Réne Descartes Woodrow Wilson Ecclesiastes Mahatma Gandhi Virgil A Human Right (Liberty)		
2	Computing terms (rare)	Eigenfunction MEMS Wavefunction Qubit	In mathematics is a non-null function except for multiplication. Molecular technology which merges at the Nanoscale into Nanoelectromagnetical Systems (NEMS). Connected to Quantum mechanics describing the condition of a physical system by expanding it in terms of other states of the same system. A complex vector. A unit of Quantum information.	
3	Scientific terms (rare)	Biomimetic Neuromorphic Guanine Adenosine Thymine Cytosine Bio-informatic Mechanosynthesis Biocomposites	The application of methods and systems found in nature to study and design engineering systems and modern technology. Describes the Very Large Scale Integration systems containing electronic analog circuits that mimic neurobiological architectures present in the nervous system. One of the 5 main nucleobases found in DNA and RNA. Plays an important role in biochemical processes such as energy transfer. 5 –methylurical and is a pyrimydine nucleobase. One of the 5 main nucleobases used in storing and transporting genetic information within a cell in DNA and RNA. Techniques from applied mathematics, informatics, statistics, and computer science to solve biological problems. Reactive molecules attached to molecular mechanic systems. Characteristics of the human body biologically recognised in mathematic code and assimilated using biological properties and processes.	
4	Latin text	*Agumentum ad computerus* *Cogito ergo sum* *Veritas Lux Mea* *Nullus ad hoc*	An argument against computers/calculation. I think therefore I am. The truth enlightens me. There is no particular purpose.	

5	German text	*Ein Volk, Ein Reich, Ein Fuhrer* *Lebensraum*	One people, one realm, one leader. Living space.	
6	Greek text	*Pseudonymity*	A fictitious name.	

Fight for me, die for me, have no brain, have no pain
your dream is burning down,
money is me, power is me, dream for us, love us all;
your fight is breaking down.

Lyrics (Culture Kultür, Revenge, Corruption)
Available from: http://www.culturekultur.com/revenge.html#corruption

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Appendix I

The Einstein-Freud Correspondence (1931-32)

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Albert Einstein and Sigmund Freud

The Einstein-Freud Correspondence (1931-32)

The letter which Einstein addressed to Freud, concerning the projected organization of intellectual leaders, was sent in 1931, or possibly 1932, and read as follows:

I greatly admire your passion to ascertain the truth--a passion that has come to dominate all else in your thinking. You have shown with irresistible lucidity how inseparably the aggressive and destructive instincts are bound up in the human psyche with those of love and the lust for life. At the same time, your convincing arguments make manifest your deep devotion to the great goal of the internal and external liberation of man from the evils of war. This was the profound hope of all those who have been revered as moral and spiritual leaders beyond the limits of their own time and country, from Jesus to Goethe and Kant. Is it not significant that such men have been universally recognized as leaders, even though their desire to affect the course of human affairs was quite ineffective?

I am convinced that almost all great men who, because of their accomplishments, are recognized as leaders even of small groups share the same ideals. But they have little influence on the course of political events. It would almost appear that the very domain of human activity most crucial to the fate of nations is inescapably in the hands of wholly irresponsible political rulers.

Political leaders or governments owe their power either to the use of force or to their election by the masses. They cannot be regarded as representative of the superior moral or intellectual elements in a nation. In our time, the intellectual elite does not exercise any direct influence on the history of the world; the very fact of its division into many factions makes it impossible for its members to co-operate in the solution of today's problems. Do you not share the feeling that a change could be brought about by a free association of men whose previous work and achievements offer a guarantee of their ability and integrity? Such a group of international scope, whose members would have to keep contact with each other through constant interchange of opinions, might gain a significant and wholesome moral influence on the solution of political problems if its own attitudes, backed by the signatures of its concurring members, were made public through the press. Such an association would, of course, suffer from all the defects that have so often led to degeneration in learned societies; the danger that such a degeneration may develop is, unfortunately, ever present in view of the imperfections of human nature. However, and despite those dangers, should we not make at least an

attempt to form such an association in spite of all dangers? It seems to me nothing less than an imperative duty!

Once such an association of intellectuals--men of real stature--has come into being, it might then make an energetic effort to en-list religious groups in the fight against war. The association would give moral power for action to many personalities whose good intentions are today paralyzed by an attitude of painful resignation. I also believe that such an association of men, who are highly respected for their personal accomplishments, would provide important moral support to those elements in the League of Nations who actively support the great objective for which that institution was created.

I offer these suggestions to you, rather than to anyone else in the world, because your sense of reality is less clouded by wishful thinking than is the case with other people and since you combine the qualities of critical judgment, earnestness and responsibility.

The high point in the relationship between Einstein and Freud came in the summer of 1932 when, under the auspices of the International Institute of Intellectual Co-operation, Einstein initiated a public debate with Freud about the causes and cure of wars. Einstein's official letter is dated July 30, 1932; it was accompanied by the following private note of the same date:

I should like to use this opportunity to send you warm personal regards and to thank you for many a pleasant hour which I had in reading your works. It is always amusing for me to observe that even those who do not believe in your theories find it so difficult to resist your ideas that they use your terminology in their thoughts and speech when they are off guard.

This is Einstein's open letter to Freud, which, strangely enough, has never become widely known:

Dear Mr Freud
The proposal of the League of Nations and its International Institute of Intellectual Co-operation at Paris that I should invite a person, to be chosen by myself, to a frank exchange of views on any problem that I might select affords me a very welcome opportunity of conferring with you upon a question which, as things now are, seems the most insistent of all the problems civilization has to face. This is the problem: Is there any way of delivering mankind from the menace of war? It is common knowledge that, with the advance of modern science, this issue has come to mean a matter of life and death for Civilization as we know it; nevertheless, for all the zeal displayed, every attempt at its solution has ended in a lamentable breakdown.

I believe, moreover, that those whose duty it is to tackle the problem professionally and practically are growing only too aware of their impotence to deal with it, and have now a very lively desire to learn the views of men who, absorbed in the pursuit of science, can see world problems in the perspective distance lends. As for me, the normal objective of my thought affords no insight into the dark places of human will and feeling. Thus, in the

inquiry now proposed, I can do little more than to seek to clarify the question at issue and, clearing the ground of the more obvious solutions, enable you to bring the light of your far-reaching knowledge of man's instinctive life to bear upon the problem. There are certain psychological obstacles whose existence a layman in the mental sciences may dimly surmise, but whose interrelations and vagaries he is incompetent to fathom; you, I am convinced, will be able to suggest educative methods, lying more or less outside the scope of politics, which will eliminate these obstacles.

As one immune from nationalist bias, I personally see a simple way of dealing with the superficial (i.e., administrative) aspect of the problem: the setting up, by international consent, of a legislative and judicial body to settle every conflict arising between nations. Each nation would undertake to abide by the orders issued by this legislative body, to invoke its decision in every dispute, to accept its judgments unreservedly and to carry out every measure the tribunal deems necessary for the execution of its decrees. But here, at the outset, I come up against a difficulty; a tribunal is a human institution which, in proportion as the power at its disposal is inadequate to enforce its verdicts, is all the more prone to suffer these to be deflected by extrajudicial pressure. This is a fact with which we have to reckon; law and might inevitably go hand in hand, and juridical decisions approach more nearly the ideal justice demanded by the community (in whose name and interests these verdicts are pronounced) insofar as the community has effective power to compel respect of its juridical ideal. But at present we are far from possessing any supranational organization competent to render verdicts of incontestable authority and enforce absolute submission to the execution of its verdicts. Thus I am led to my first axiom: The quest of international security involves the unconditional surrender by every nation, in a certain measure, of its liberty of action--its sovereignty that is to say--and it is clear beyond all doubt that no other road can lead to such security.

The ill success, despite their obvious sincerity, of all the efforts made during the last decade to reach this goal leaves us no room to doubt that strong psychological factors are at work which paralyze these efforts. Some of these factors are not far to seek. The craving for power which characterizes the governing class in every nation is hostile to any limitation of the national sovereignty. This political power hunger is often supported by the activities of another group, whose aspirations are on purely mercenary, economic lines. I have especially in mind that small but determined group, active in every nation, composed of individuals who, indifferent to social considerations and restraints, regard warfare, the manufacture and sale of arms, simply as an occasion to advance their personal interests and enlarge their personal authority.

But recognition of this obvious fact is merely the first step toward an appreciation of the actual state of affairs. Another question follows hard upon it: How is it possible for this small clique to bend the will of the majority, who stand to lose and suffer by a state of war, to the service of their ambitions. (*) An obvious answer to this question would seem to be that the minority, the ruling class at present, has the schools and press, usually the Church as well,

under its thumb. This enables it to organize and sway the emotions of the masses, and makes its tool of them.

Yet even this answer does not provide a complete solution. Another question arises from it: How is it that these devices succeed so well in rousing men to such wild enthusiasm, even to sacrifice their lives? Only one answer is possible. Because man has within him a lust for hatred and destruction. In normal times this passion exists in a latent state, it emerges only in unusual circumstances; but it is a comparatively easy task to call it into play and raise it to the power of a collective psychosis. Here lies, perhaps, the crux of all the complex factors we are considering, an enigma that only the expert in the lore of human instincts can resolve.

And so we come to our last question. Is it possible to control man's mental evolution so as to make him proof against the psychosis of hate and destructiveness? Here I am thinking by no means only of the so-called uncultured masses. Experience proves that it is rather the so-called "intelligentsia" that is most apt to yield to these disastrous collective suggestions, since the intellectual has no direct contact with life in the raw but encounters it in its easiest, synthetic form--upon the printed page.

To conclude: I have so far been speaking only of wars between nations; what are known as international conflicts. But I am well aware that the aggressive instinct operates under other forms and in other circumstances. (I am thinking of civil wars, for instance, due in earlier days to religious zeal, but nowadays to social factors; or, again, the persecution of racial minorities.) But my insistence on what is the most typical, most cruel and extravagant form of conflict between man and man was deliberate, for here we have the best occasion of discovering ways and means to render all armed conflicts impossible.

I know that in your writings we may find answers, explicit or implied, to all the issues of this urgent and absorbing problem. But it would be of the greatest service to us all were you to present the problem of world peace in the light of your most recent discoveries, for such a presentation well might blaze the trail for new and fruitful modes of action.

Yours very sincerely,

A. Einstein