IS THE BRAIN A 'WET COMPUTER': ARE HUMANS 'LUMBERING ROBOTS'?
– THE CLOSING OF THE SCIENTIFIC MIND –

Unless we learn how to prepare for, and avoid, the potential risks, AI [artificial intelligence]could be the worst event in the history of our civilisation.

Stephen Hawking[1]

Having reached generally the midpoint of this book it should be apparent that although the brain does display some of the mechanical functions and characteristics of a digital computer, then to declare as the majority of mainstream neuroscientists do, that the brain is nothing but a 'wet' computer[2] is, arguably, a gross over simplification (somewhat like saying that because a concert pianist displays some characteristics of an office typist – the use of fingers on a keyboard – that a pianist and a typist, are one and the same thing, or a piano and a typewriter are the same instrument because they both have a keyboard.) For a start, it is minds that created and produced computers, not the other way round. The product stands hierarchically on a lower plane than the producer of the product. Brains therefore must stand hierarchically at a higher level of sophistication and subtlety than the computers created by them. The fallacy of equating the brain with just a computer has been pointed out in no uncertain terms by some of the world's greatest philosophers, psychologists, as well as scientists like the American David Gelernter (1955-), professor of computer science at Yale University. In his article, appropriately titled *The Closing of the Scientific Mind* (used for the subtitle of this chapter), he demolishes what he aptly calls the 'master analogy' unquestionably accepted by the vast majority of mainstream scientists: that minds are to brains as software is to computers; to put it another way, the mind is the software of the brain.[3]

This is the foremost view about the mind amongst mainstream scientists – never mind (excuse the pun) that science (by its own admission) has to date barely understood the subtleties of human consciousness. However, this idea is now so engrained that it would be instructive first to review in some depth the arguments behind it, also known as computationalism or cognitivism, before exposing the fatal weaknesses in the analogy. Accordingly, this chapter is written in two major sections: first, an elucidation and substantial development of the core theme of Gelernter's article about the dangers of unquestioning and exclusive acceptance by science and society of computationalism and artificial intelligence as the sole basis of reality; and then a suggested way out of the bleak prospects for humanity that such acceptance would imply.

The Master Analogy – The Brain is Just a Computer

The Russian chess grandmaster and former World Chess Champion Garry Kasparov (1963-) was beaten by the IBM supercomputer Deep Blue in 1977.[4] So the obvious conclusion would be that artificial intelligence (computers) are smarter than even the finest of human brains. Or is it so obvious?

What is a computer? It may be rather surprising to ask what appears to be an obvious question. But the word 'computer' is now so commonly used that the meaning of the term has become lost in the mass of popular connotations attaching to it. Here is a comprehensive list of definitions of a computer from authentic literary and scientific sources:

- 'A usually electronic device for storing and processing data, (usually in binary form[5]), according to instructions given to it in a variable program' – *Concise Oxford English Dictionary, ninth edition.*
- 'An electronic computer in which the input is discrete rather than continuous, consisting of combinations of numbers, letters, and other characters written in an appropriate programming language and represented internally in binary notation' – *British Dictionary* for definition of a digital computer.
- 'A machine that stores programs and information in electronic form and can be used for a variety of processes …' – *MacMillan Dictionary*: New (second) edition.
- 'A device, usually electronic, that processes data according to a set of instructions' – *Collins English Dictionary*: Complete & unabridged, sixth edition 2003.
- 'A programmable usually electronic device that can store, retrieve, and process data – *Merriam-Webster*: https://wwwmerriam-webster.com/dictionary/computer' – Updated: 25 Jun 2018.
- 'A machine capable of following instructions to alter data in a desirable way and to perform at least some of these operations without human intervention' – *Que's Computer User's Dictionary*: Second edition.

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[1] Address to Web Summit, one of the biggest tech events in the world reported in *Express*, November 7, <https://www.express.co.uk/news/science/876550/stephen-hawking-end-of-the-world-artificial-intelligence-ai-university-of-cambridge>

[2] 'Wet' because the hardware is biological rather than constituted of silicon and other physical chemicals.

[3] David Gelernter, 'The Closing of the Scientific Mind: Reflections on the Zombie-Scientist Problem', *Commentary*, January 2014 <, http://www.commentarymagazine.com/article/the-closing-of-the-scientific-mind/>

[4] Garry Kasparov, *Deep Thinking: Where Machine Intelligence Ends and Human Creativity Begins*, PublicAffairs, 2017.

[5] The binary code in a computer is a coding system using the binary digits 0 and 1 to represent a digit, letter, or other character.

All of these definitions have one sense in common: words and phrases like 'programmable', 'according to instructions given to it', 'written in an appropriate programming language', 'that stores programs and information', 'storing and processing data', 'that processes data according to a set of instructions', 'capable of following instructions' all make it patently obvious that a human programmer is involved. The computer cannot program itself; neither can it store programs and information by itself; nor can it alter data 'in a desirable way' unless such 'desires' are input by a human programmer. Computers (and machines in general) do only and precisely what humans program them to do. This was clearly foreseen as early as 1936 by 'the English mathematician Alan Turing showed that a single machine (the future computer) could process any problem given rules for the solution'.[6] Did the supercomputer that beat Gary Kasparov program itself, or did human programmers input the necessary rules of the game—'rules for the solution' in Turing's terms—which the computer then followed, mechanically? More recently, IBM's Project Debater, a 6ft-tall black panel robot with an animated blue 'mouth', participated with human prize-winning debaters in two debates, one on the merits of subsidised space travel and the other on telemedicine[7] – and performed so well that the audience voted the contest a draw. The robot's delivery was deemed not as effective as the humans', but it had more substance to its arguments. Why were the robot's arguments more effective? Simply because, as stated by Arvind Krishna of IBM, it had access to a vast data bank containing 'hundreds of millions' of research papers and articles. These were drawn upon to build an argument, and a narrative to support it using speech recognition to analyse its opponents' arguments and respond to specific points raised.[8]

But despite what may seem to be obvious, one of the arch-champions of the idea that the brain is no different in principle – in fact, is a computer – is the American philosopher Daniel Dennett (1942-). In his highly influential book *Consciousness Explained* (a better title would be *Consciousness Explained Away*) he asks us to 'think of the brain as a computer'.[9] For Dennett, 'human consciousness can best be understood as the operation of a "von Neumannesque" virtual machine'; which means that human consciousness is a software program or application designed to run on any ordinary 'computer' such as the brain – hence the reference to John von Neumann (1903-1957), accredited with inventing the digital computer, and an insulting reference at that to the great Hungarian mathematician who never maintained that minds are to brains as software is to computers – given his religious beliefs (see footnote below[10]). In a limited sense the analogy is, of course, fitting. The reason being that software comprises coded instructions given to hardware. We can dismantle and dissect the hardware with a scalpel and view it under a microscope if we feel like it, but we cannot dissect software to find out the mathematical code or the program, or the software programmer. The structure of software and hardware are wholly different, albeit the former is embodied by the latter (without hardware, software would have no significance, and vice versa – the one depends upon the other).

So far so good, but this idea of embodiment of an entirely different structure is extrapolated to the notion of mind embodied by brain and is a good example of errors of category. It is argued (reasonably upon first appearance) that the brain has its own structure and so does the mind, which exhibits reason, memory, imagination, emotions, and happens to be 'conscious', whatever the latter term may mean to materialists. The content of the mind cannot be dissected with scalpels or seen through a microscope or revealed by MRI scans, but the structure of the brain can indeed be so dissected and seen because the brain is a dense mass of physical matter comprising neurons and other cells. Yet the mind cannot exist apart from the brain which wholly embodies it. Therefore minds are to brains as software is to computers; and minds cannot exist without brains just as software cannot exist without hardware. Put another way, without the associated hardware in each case, minds and software are mere abstractions.

Some computationalists take this notion to extremes. For example, the American computer scientist, inventor, and futurist Ray Kurzweil (1948-), who works, unsurprisingly, for Google, predicts that by 2029 computers will outsmart us and that the behaviour of computers will be indistinguishable from that of humans. (In fact computers do outsmart us even today – in speed of number crunching, if nothing else – but that is because human beings have designed and programmed them to do so.) And after the year 2045, Kurzweil maintains, machine intelligence will dominate human intelligence to such an extent that men will no longer be capable of understanding machines. By then humans will have begun a process of machinization, or what he terms 'transhumanism': the merging of men and machines by cramming their bodies and saturating their brains with semiconductor chip implants, along with the fine tuning of their genetic material (this theme revisited in the Epilogue to this book in Part III). In passing, the Editor-in-chief of *The Week* sums up the whole thing very neatly. He points out that such predictions are a geek's pipe dream. Being like a human is not to be human. Sophisticated machine codes and algorithms may provide the former, but never the latter.[11] But to continue in the computationalist's line of argument, the American computer scientist and authority on artificial intelligence Drew

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[6] *The Oxford Reference Dictionary*, Flexicover edition, 1989, p.178.

[7] The remote diagnosis and treatment of patients by means of telecommunications technology.

[8] *The Week*, Issue 1182, 30th June 2018, p. 19.

[9] Dennett, Daniel, *Consciousness Explained*, Penguin UK, 1993.

[10] 'There probably is a God. Many things are easier to explain if there is than if there isn't.' As quoted in *John Von Neumann : The Scientific Genius Who Pioneered the Modern Computer , Game Theory, Nuclear Deterrence and Much More* (1992) by Norman Macrae, p. 379.

[11] *The Week*, 1st March 2014.

McDermott (1949-) at Yale University believes that biological computers (meaning the human brain) differ only superficially from modern digital computers. He goes on to assert that according to science, humans are just a strange animal that arrived pretty late on the evolutionary scene, that 'computers can have minds' and that his avowed purpose is 'to increase the plausibility of the hypothesis that we are machines and to elaborate some of its consequences'.[12] (A strict syllogism would also mean that animal brains also equals computers.)

And Kurzweil and McDermott are by no means alone. But it is reassuring to learn that a galaxy of super-scientists and entrepreneurs on the world stage have taken the step of pointing out their grave concerns about the threat posed by artificial intelligence and the ethical dilemma of bestowing moral responsibilities on robots. For example, Niklas Boström (1973-), the Swedish philosopher, Oxford University don, and Director of the Strategic Artificial Intelligence Research Centre, warns that supercomputers will outsmart us. Refer to his paper outlining the case for believing that we will have *super*-human artificial intelligence within the first third of the next century, and how fast we can expect superintelligence to be developed, once there is human-level artificial intelligence.[13] Then, according to the American entrepreneur, investor, engineer, and inventor, Elon Musk FRS (1971-), artificial intelligence poses a greater threat to humanity than nuclear war. In his address to students at the Massachusetts Institute of Technology he stated, 'if I had to guess at what our biggest existential threat is, it's probably that'.[14]

Stephen Hawking joined Elon Musk and hundreds of others in issuing a letter unveiled at an International Joint Conference in Buenos Aires, Argentina. The letter warns (as does Musk) that artificial intelligence can potentially be more dangerous than nuclear weapons. Refer also to Hawking's further warning in the epigraph. Microsoft co-founder Bill Gates has also expressed concerns about artificial intelligence. During a question and answer session on Reddit[15] in January 2015, he said, 'I am in the camp that is concerned about super intelligence. First the machines will do a lot of jobs for us and not be super intelligent. That should be positive if we manage it well. A few decades after that though the intelligence is strong enough to be a concern'.[16]

On the basis of the warning notes sounded by the likes of Hawking and Gates, can all this hype from the aficionados of artificial intelligence and computationalism then be dismissed as the phantasies of nerds? We cannot do so because the latter have gained such prominence; moreover, their ideas are highly pertinent to the whole question of the nature of consciousness and mind. We need to uncover and recover our humanness at all costs and the war against man-equals-computer, and then, computer-surpasses-man has to be fought in earnest. (Hopefully this will be a bloodless war, at least regarding the computers, as they do not, as yet, have a blood supply.) Therefore, we need to unearth the fallacies in the computationalists' predictions. But first, out of fairness to the proponents of artificial intelligence, we need to understand exactly what they are contending, and their reasons for doing so.

The Computationalist's Argumentation

Regarding the human being, the basic strategy is to eliminate, or reduce all subjectivity to the merely physically observable and measurable; that means, consciousness and feelings included. Precisely because feelings and subjectivity are incompatible with the machine paradigm of man-equals-computer, once subjectivity is eliminated the case for the computer-mind is strengthened. And once the mind is reduced to a computer, all sense of personal responsibility, our pangs of conscience, our feelings for divinity and higher aspiration – all to do with being truly human – are eradicated or explained away at one stroke. The adopted strategy for doing so can be enumerated in three stages.

Stage 1: Argue the case that man is just a computer and nothing more, by ignoring everything that distinguishes man from a computer.

Stage 2: Eliminate feelings and subjective states, in which case man is no different from a computer. Can a computer feel anything? Obviously not. If fact, Daniel Dennett has written a lengthy scholarly paper of why computers can't feel pain.[17] Surely, being such a distinguished and award-winning scholar, cognitive scientist, philosopher of science, and philosopher of biology, particularly in those fields that relate to evolutionary biology and cognitive science, he of all people must know.

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[12] http://www.commentarymagazine.com/article/the-closing-of-the-scientific-mind/.

[13] Nick Bostrom, *How Long Before Superintelligence?*, 1997 copyright; revised October 1998, and a postscript added; second postscript added August 2000; third postscript added October 2005; fourth postscript added March 2008. Originally published in *Int. Jour. of Future Studies*, 1998, vol. 2; reprinted in *Linguistic and Philosophical Investigations*, 2006, Vol. 5, No. 1, pp. 11-30.

[14] *The Guardian*, 27 October, 2014.

[15] https://www.reddit.com/r/AMA/

[16] *Observer* [USA], 19 August 2015.

[17] Daniel C. Dennett, 'Why You Can't Make a Computer That Feels Pain', *JSTOR*, Springer, Vol. 38, No. 3, July 1978 < https://www.jstor.org/stable/20115302>

Stage 3: If it can't be measured, it obviously doesn't exist, because Science only recognizes accuracy which can be repeatably quantified over so-called truth which is a matter of subjective opinion, precision over meaning, quantity over quality, theory over experience, and respectability over validity and evidence.

This strategy is implemented by way of the three-pronged attack against subjectivity by way of the interrelated arguments of:

1. roboticism, or zombieism;
2. functionalism; and
3. brain states.

We now describe each of the above three arguments in turn, and then expose the overall weaknesses in their line of reasoning taken as a whole.

Roboticism, or Zombieism

The term 'roboticism' is apt, since Richard Dawkins of world renowned fame in biological science and evolutionary theory has described human beings as 'lumbering robots' – which necessarily also includes himself in the epithet. He goes on to assert what he finds a truth, which still fills him with astonishment: 'We are survival machines – robot vehicles blindly programmed to preserve the selfish molecules known as genes'.[18] Such a 'truth' may fill us with sheer incredulity, even more so for being informed that 'we animals are the most complicated things in the known universe'.[19] But we may not take issue it. Why?

Because in essence, the arguments go like this. With the current increase in technology, it is not difficult to imagine a time when a robot could be constructed with all the needed software to display all the characteristics of someone we know, say our best friend. One may ask him/her (it?) about his/her feelings, or whether (s)he has consciousness or indeed whether (s)he is human, and (s)he would answer 'yes' to all of these. But the answer is merely due to the clever software programming that has been built into the robot. There is no way of telling that the robot is actually feeling or experiencing anything at all. (S)he is, in short, indistinguishable from the human one takes oneself to be. But why assume that one is human? Why isn't one just like our lumbering robotic friend? After all, what is the point of consciousness? Has not Darwinian theory fully explained that nature selects the fittest creatures based on entirely practical grounds like survivability in 'survival machines – robot vehicles'? If we and our robotic friend behave in the same way, what survivability purpose does consciousness serve?

Functionalism

The important point to note here is that subjectivity has been reduced to the physical, therefore the observable and measurable. An example: let us take something that has made generations of music lovers tearful, such as Schubert's song *Ave Maria*. What does being tearful mean according to functionalism? It means that a certain set of physical events (like a compact disc playing, sound waves in the air from the speakers, the action of the salty glands in the eyes), but not actually crying, are the cause the state of mind known as tearful. This state of mind (along with others) makes one want to do certain things, like shedding tears. So 'I want to cry' means that the mental state (i.e. being tearful) has not been eliminated but reduced to just certain physical circumstances, to what one has been doing and what actions one plans to do, like putting on a CD of the *Ave Maria* in anticipation of becoming tearful. (Schrödinger would have trouble with this line of reasoning – see later).

It is no good arguing that one can be reduced to tears without any physical events like a live performance or a CD recording – simply by imagining the song. After all, magnetic resonance imaging scans can show localised changes in brain states when we experience so-called feelings even without external stimulus. It is simply a matter of biochemical activity like neurons and neurotransmitters that make us tearful. To reiterate, the thorny problem of the relationship (and crossing over) between physical brain states and subjective experience is neatly solved (that is, conveniently explained away) not by eliminating the latter, but by reducing it to the physically observable and measurable. Once subjective states are so dispensed with, one can indeed ask the question, what then is the difference between a man's brain and a computer? Can computers have feelings? One sees a colour (say, red) on one's computer screen, but how foolish it would be to think that our computer actually *experiences* red! Colour on the screen of our computer liquid crystal display is produced by careful control and variation of the voltage applied over the subpixels. It takes an enormous number of semiconductor transistors to produce the whole palette of colours on our computer. Analogously, colour in one's head involves an enormous number of neurons firing under precise electro-chemical conditions. So what's the difference, in principle? None at all, it would appear, as the translation of physical brain states to mental states and subjective experience is neatly solved – by eliminating consciousness and feeling or regarding them as being superfluous or illusory

[18] Richard Dawkins, *The Selfish Gene*, Oxford University Press, 1976, 2006, Preface, p. xx.
[19] Richard Dawkins, *The Blind Watchmaker*, Oxford University Press, 1986, p. 1.

(epiphenomenon being the technical term which conveys the mask of scientific respectability but in point of fact camouflages the *underlying sterility* of the ideology shortly to be exposed).

Brain States

This argument is really a variant of functionalism. It posits that changes in our emotions and feelings are caused solely by changes in brain states. Our minds are simply the product of our genes and brain, so to destroy or damage a part of the brain is to affect the personality trait corresponding to the damaged region. This contention is based on the grounds of considerable data and research showing how persons who have suffered brain damage through injury or stroke display marked changes in emotional behaviour and personality after their injury. Indeed there are numerous learned books and peer reviewed scholarly articles in international journals in support of this contention.[20] An arbitrary review of journals like *Neuropsychological Rehabilitation, Journal of Consulting and Clinical Psychology* and *Annals of Neurology* reveal some common features. The most frequently quoted example is that injury, or damage through stroke to the brain, especially the part that controls emotion and behaviour – the frontal lobe and limbic system – can alter the way the victim expresses or feels emotion and can confer a variety of emotional problems or motivational disturbances. The victim can have difficulty in controlling his/her emotions or 'mood swings'. Whereas some may experience emotions (such as anger) intensely and quickly but with minimal lasting effect, others display what is known as emotional lability, i.e., being on an 'emotional rollercoaster', whereby they can be sad, happy, and angry in quick succession. There can also be sudden episodes of crying or laughing sometimes without any apparent connection between the emotional expression and the situation in question (such as crying without feeling sad, laughing without feeling happy, or laughing at a sad story).

We may not take disagree with all this by arguing about appears to be an unwarranted inference that there is no subjective state and that changes in brain states (i.e., physical mechanisms and processes in the brain) are the sole determining factor affecting our emotions and feelings. Using a simplistic analogy, a motor car manoeuvres solely according to the steering mechanism and wheels. Damage the steering mechanism or the wheels, and the car would turn corners awkwardly; analogously, damage the brain, and emotions are affected because specific personality traits and emotions are governed by specific centres in the brain. So, it is argued, there can be no subjective individual to experience the emotion any more than there is an inner 'car soul' to 'feel' any change in its steering mechanism. You are quite simply the way you behave corresponding to how your brain states respond to external physical stimuli just as your car behaves on the road according to the way its mechanisms respond to the driver (who in any case, is just another kind of machine).

Applying this logic, then, any deprivation or non-functioning of the human sensory apparatus would not register any feelings or emotion associated with the corresponding sensory input. So a blind person could not see and a deaf person could not hear. Hence, they could not possibly feel any emotion that a normally sighted and hearing person would experience from, say, the view of a city from a tall building or a sublime piece of music. Or could they?

The Computationalist's Master Analogy – Its Fatal Flaws

Taking our cue directly from the above paragraph, we first cite a famous example that challenges the computationalist's argument that it would be impossible to feel or experience anything if the physical sensory organs of a person were non-inoperative or atrophied. This then forms the basis for drawing out the neurological and philosophical issues that expose the flaws in the master analogy. Thereafter the main arguments that repudiate the master analogy are summarized and followed by a list of numerous of phenomena in life that it cannot explain.

Hearing and Seeing Without Ears and Eyes

Helen Keller (1880-1968), the great American author, political activist, and lecturer was rendered blind and deaf from the age of nineteen months through contracting scarlet fever or meningitis. According to the concepts of functionalism and brain states described above, she could not possibly experience any *emotion* associated with a complete lack of eyesight and hearing. However, in 1932 she wrote an evocative letter describing the view from the top of the Empire State Building seeing 'New York spread out like a marvellous tapestry beneath us. There was the Hudson – more like the flash of a sword-blade than a noble river. The little island of Manhattan, set like a jewel in its nest of rainbow waters, stared up into my face, and the solar system circled about my head!'[21] Note her depiction of specific colours, shapes, and forms that are not merely the products of her imagination.

Even more moving than this was her letter, eight years previously, to the New York Symphony Orchestra after 'hearing' the radio broadcast of their performance of Beethoven's Choral Symphony at Carnegie Hall in New York, conducted by Walter Damrosch on 1st February 1924. Here she described 'the joy of being able to tell you that, though deaf and blind, I spent a glorious hour last night listening over the radio to Beethoven's "Ninth Symphony". I put my hand on the receiver

[20] This site for example is especially noteworthy - http://scholar.google.co.uk/scholar?q=impact+of+brain+injury+on+emotion&hl=en&as_sdt=0&as_vis=1&oi=scholart&sa=X&ei=XbsBVPKnKayw7Abip4GACQ&ved=0CC0QgQMwAA

[21] http://www.lettersofnote.com/2012/03/empire-state-building.html.

[to] see if I could get any of the vibrations. What was my amazement to discover that I could feel, not only the vibrations, but also the impassioned rhythm, the throb and the urge of the music! The intertwined and intermingling vibrations from different instruments enchanted me. I could actually distinguish the cornets, the roll of the drums, deep-toned violas and violins singing in exquisite unison. When the human voice leaped up trilling from the surge of harmony, I recognized them instantly as voices. I felt the chorus grow more exultant, more ecstatic, upcurving swift and flame-like, until my heart almost stood still. As I listened, with darkness and melody, shadow and sound filling all the room, I could not help remembering that the great composer who poured forth such a flood of sweetness into the world was deaf like myself. I marvelled at the power of his quenchless spirit by which out of his pain he wrought such joy for others'.[22] Notice in this instance how she is able to discern pitch, different instruments, the human voice, melody, and rhythm—and convey her emotions. A full version of this letter is found in The Auricle, Vol. II, No. 6, March 1924. American Foundation for the Blind, Helen Keller Archives. To peruse it is a deeply humbling and illuminating experience.[23]

Figure II-1 Helen Keller 'Listening' to Beethoven's Choral Symphony on the Radio
Photo Credit:https://uk.pinterest.com/pin/508484614150721887/

Helen Keller was able, apparently, to 'hear' by touch. The photograph shown in Figure II-1 shows her right hand touching the loudspeaker of the radio. Human beings have a subtle, non-physical counterpart to their senses: for hearing it is known in popular terms as listening with the inner ear. But robot-man is not allowed subtle bodies or senses as (s)he is supposed to be just physical, so presumably (s)he could not compose when deafened – assuming that (s)he could compose anything at all beforehand – mindless electronic muzak, preferably termed 'aural pornography' by the writer, not deemed music. Would a robot be moved to his/her physical tears by such cacophony? Perhaps (s)he would if (s)he were programmed to do so. Programmed to do so? Enter the human programmer!

And in passing, speaking of the great Beethoven, the fact of his stone-deafness is legendary, but how many people bother to enquire how this can be, or whether there is a subtle sense associated with a subtle body that makes inner hearing possible? Chapters 7 and 8 in Part III supply a possible clue.

Deeper Philosophical Issues at Stake

At this juncture one is entitled to ask two deeper questions. Firstly, human beings vary enormously in the subtlety of their emotional responses and in their capacity for such responses. Some people may be largely unaffected by music, but would be reduced to tears by great poetry; others by lofty literature, or by witnessing acts of great compassion, or, as in the case of Helen Keller, by a majestic scene and great music. Even within a particular art form, emotional responses vary widely; for example, some musicians are highly moved by Bach, but less so by Chopin; with others it is very much the converse. So how would the tear-and emotion-producing software in robot-man be programmed so as to cater for the infinite variety of robotic-responses to various art forms; furthermore, to the equally infinite shades of response within a single art form itself as in the human examples just cited? In other words, how would the software decide, for a particular robot-man amongst millions of other robot-men, whether to produce tears upon hearing say, Schubert's music, but not William Blake's poetry for this specific robot-man in question; and even for this particular robot-man, whether Schubert's songs would be more moving than say, his Death and Maiden String Quartet?

Secondly, one presumes that the 'hearing' of robot-man is produced by the appropriate acoustic software linked to his/her robot-brain. If this specific piece of software were removed, would our robot-man – now rendered completely 'deaf' – be able to compose music like the great Beethoven who composed the titanic *Hammerklavier Sonata* and the *Choral Symphony* when completely deaf?

[22] The Auricle, Vol. II, No. 6, March 1924. American Foundation for the Blind, Helen Keller Archives.
[23] http://www.afb.org/blog/afb-blog/helen-keller-letter-on-beethoven%E2%80%99s-ninth-symphony-goes-viral/12

The answers to such questions lie above and beyond mainstream physical theory. *My Stroke of Insight*[24] by Jill Bolte Taylor, is an excellent, and all too rare example of a neuroscientist capable not only to see the limitations of mainstream theory but also to explore the wonderful unknown. The book describes, for instance, the way in which stroke survivors might develop new skills and sensory subtleties, and most importantly, the role of awakening the right hemisphere, which Bolte calls the 'divine brain'. (See Chapter 6 of Part I for more details about her experience.) The divine brain is the other half of the divided brain and there is, arguably, no finer explanation of the scientific, physiological, psychological, and philosophical problems resulting from the domination of the latter over the former as now summarized.

The Divided Brain

Iain McGilchrist rose to prominence after the publication of his seminal book *The Master and His Emissary*, subtitled *The Divided Brain and the Making of the Western World*.[25] Thrice elected a Fellow of All Souls College, Oxford, McGilchrist is a literary scholar and taught English literature whilst pursuing interests in philosophy and psychology. He then trained in medicine, to become a Consultant Psychiatrist of the Bethlem Royal and Maudsley Hospital in London, where he was Clinical Director of their southern sector Acute Mental Health Services. He is a Fellow of the Royal College of Psychiatrists and is specially approved by the Secretary of State under Section 12(2) of the Mental Health Act, 1983. He also worked as a Research Fellow in neuroimaging at the Johns Hopkins Hospital in Baltimore, USA. His wide ranging clinical experience includes epilepsy, eating disorders, depression, psychosis, personality disorders (especially borderline cases), anxiety disorders, chronic low self-esteem, phobias, alcohol and drug abuse, as well as neuropsychiatry.

With his eminent qualifications in the literary, philosophical, medical, and psychiatric fields, he is uniquely qualified to inform about the wider, cultural issues about mind and brain, as well as provide detailed information about mental functions and brain processes. His work has attracted international acclaim (often in hyperboles); a list of over seventy-five tributes to his work is given in http://www.iainmcgilchrist.com/comments.asp#content. They come from world authorities in clinical psychology, brain and cognition, medicine, psychiatry, cognitive science, neurology, neuroscience, neuropsychiatry, sociology, and philosophy. They include professors at Cambridge, Oxford, Harvard, and California, a Fellow of the Royal Society, and editors of leading newspapers and academic journals. Why such world-wide acclaim?

His book argues that the division of the brain into two hemispheres, whilst being essential to human existence, gives possibly incompatible versions of the world, with quite different priorities and values. There are significant differences between the structure and function of the two hemispheres. However, to apportion specific brain functions exclusively to one hemisphere or another is an erroneous concept, as we now know that every type of function – including reason, emotion, language, and imagery – is subserved not by one hemisphere alone, but by both. In other words, the brain acts as a whole and not in a compartmentalised fashion. Notwithstanding this, the differences in hemisphere function lie not, as has been supposed, in the 'what', but in the 'how', i.e., not which skills each hemisphere possesses, but the way in which each uses them, and to what end. The book examines the relation between the two brain hemispheres, not just in terms of neurology and structure, which has already been done in several erudite medical books, but most importantly, in light of the complexity of the connection between the two hemispheres leading to the divided nature of thought that has been a decisive factor in moulding our culture. This horizontal division of the brain into two hemispheres leading to the divided nature of thought arguably corresponds, on the physical plane, to the 'vertically divided' double nature of the mind principle (the Higher Mind and the Lower Mind 'below' it) as we explained previously in Chapters 2 and 3.

Reverting to the brain, McGilchrist shows that the relationship between the hemispheres is not symmetrical (the reason for this is suggested below). In simple terms, it is as if the left hemisphere, though unaware of its dependence, could be thought of as an 'emissary' of the right hemisphere, valuable for taking on a role that the right hemisphere – the 'Master' – cannot itself afford to undertake. However, it turns out that the emissary has its own will, as it were, and secretly believes itself to be superior to its Master. And it has the means to betray him. *What the emissary does not realize is that in doing so, it will also betray itself.* Crucially important, *it shows the hemispheres as being more than mere machines with functions like computers; instead they are shown as underwriting whole, self-consistent, versions of the world*. Through an examination of Western philosophy, art, and literature, the book reveals the uneasy relationship of the hemispheres being played out in the history of ideas, from ancient times until the present. Here we again find a close parallel with the occult teaching on the dual nature of manas, the mind principle; moreover, when kama usurps manas, resulting in kama-manas (though it is not in any way suggested that kama and manas can literally be correlated with, or correspond to the left and right hemisphere, respectively.

McGilchrist's suggestion is that the encouragement of precise, categorical thinking at the expense of background vision and experience – an encouragement which, since Plato, has flourished to such impressive effect in European thought – has now reached a point where it is seriously distorting both our lives and our thoughts. As noted by Dr Mary Midgley in her excellent review,[26] the drive towards precision (which, incidentally, is often confused with rigour and accuracy)

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[24] Jill Bolte Taylor, *My Stroke of Insight*, Hodder Paperbacks, 2009.
[25] Iain McGilchrist, *The Master and His Emissary*: *The Divided Brain and the Making of the Western World*, Yale University Press, 2009.
[26] http://www.theguardian.com/books/2010/jan/02/1.

encourages a continuous narrowing of perspective towards the microcosm of details at the expense of looking outwards to appreciate the wider picture, the macrocosm, or not even to bother about its presence or relevance. So a weakness of specialization is not knowing when to consult the generalist possessing a higher viewpoint. However, we do have some control over this shift between detailed and general thinking, a tendency that can be helped or hindered by the ethic that prevails in the culture around it.

Our whole idea of what counts as scientific or professional has shifted towards literal precision – towards elevating quantity over quality, theory over experience, accuracy over truth – in a way that would have astonished even the seventeenth century founders of modern science, although they were already far advanced on that path. And the ideal of objectivity has developed in a way that would have surprised those early founders still more. In this wise, as Midgley recounts, a shocked nurse lately told her that it is proposed that all nurses must have university degrees. 'Who', she asked, 'will actually do the nursing?'.

Aptly, and with unerring insight, McGilchrist's conclusion is entitled 'The Master Betrayed'. He suggests 'that we may be about to witness the final triumph of the left hemisphere – at the expense of us all'. The current left-brain-driven frenzy to convince us that we, thinking-feeling human beings are just computing machines and nothing more ('lumbering robots', to use Richard Dawkins's egregious epithet about humanity) is fitting proof of McGilchrist's prediction. No surprise, then, as Mary Midgley points out, that some reviewers of this remarkable work see no more in it than just another glorification of feeling at the expense of thought. Such a work, the writer emphasizes, cannot be apprehended by a reviewer using just his/her left hemisphere! Unlike the computationalists who regard mind and brain in terms of just software and hardware, McGilchrist shows that the mind and brain can be understood only by seeing them in the broadest possible context of our whole existence, and of the wider human culture in which they arise – the cyclical process of the culture which helps to mould, and in turn is moulded by, our minds and brains. Note carefully that the whole of our existence includes our spiritual and naturally our physical existence; however, the former cannot be explained away by reduction to a mere subset of the latter, although the latter be subsumed in the former.

The Computalionalist Argument – Its Philosophical Background

The philosophical origin of this situation is the dualist notion of a complete separation between spirit and matter, or soul and body. It is a tragedy both for science and for humanity that the science of polymaths such as Leonardo da Vinci has not managed to influence the ideas of later generations of thinkers or to stem the tide of the mechanistic science that emerged some two hundred years later. *Learning from Leonardo* is a recent book by Fritjof Capra (1939-), the Austrian-born American physicist, systems theorist and deep ecologist, whose first book the *Tao of Physics*[27] was a classic. From Leonardo we learn that nature was always vital and alive, so his science was one of living forms.[28] (This was of course Goethe's teaching and that of other great sages and philosophers of the East and the West.) Naturally, the mechanisms of nature could be scrutinized and studied empirically as Leonardo did in his drawings of the anatomy of the human body or the structure of the wings of birds, but he never reduced nature to just a mechanism or a machine. Do we understand flight by observing the living bird in flight, or by viewing its lifeless wings under a microscope? Both aspects are necessary for a complete understanding, the first to perceive the living form, the second to study the physical mechanisms it uses for flight.

Capra shows that, besides inventing the empirical scientific method over a century before Galileo and Francis Bacon, Leonardo was what we would call nowadays a systemic thinker, believing that a true understanding of the world lay in perceiving the connections between phenomena and the larger patterns formed by those correcting relationships. And in the tradition of the great sages he worked on the principle of the Hermetic philosophy, so whenever exploring the forms of nature in the macrocosm he looked for similar principles, patterns, and processes in the human body – the microcosm. But then came the radically different mechanistic science of the followers of Descartes, Galileo and also Newton (however see below). As a necessary diversion, we insist in saying 'followers of' because such great thinkers as Descartes and Galileo were absolutely right in pioneering the age of rationalism to counter the superstitions and dogmas rife in institutionalised religion. But their followers have taken their ideas to extremes, formed their own cult of rationalism and arbitrarily excised the spiritual components, however imperfectly these may been have expressed in their times.

A case in point is Newton, to whom the idea of the clockwork universe is attributed. But this just shows the crass ignorance and blind prejudice of those scientists and scholars who have, until recently, chosen to ignore Newton's colossal writings on alchemy and theology (far more than his works on mathematics and physics). With unmistakable clarity and force Newton proclaims that nature is a living being and his writings glow with a love and reverence for deity, nature, and man considered as an organic unity. Newton's is one of the finest translations of the Hermetic philosophy (see

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[27] Fritjof Capra, *The Tao of Physics: An Exploration of the Parallels Between Modern Physics and Eastern Mysticism*, Flamingo, 1992.
[28] One of the best books is by Fritjof Capra, *Learning from Leonardo – Decoding the Notebooks of a Genius*, Berrett-Koehler Publishers, Inc., San Francisco, 2013.

Chapter 8, Part I), where again, in the tradition of the sages and occultists, he saw the law of analogy operating on all planes of nature: that which operates in the microcosm is a reflection of higher principles in the macrocosm.[29]

Reverting to Descartes, in his *Passions of the Soul* and *The Description of the Human Body* he suggested that the body works like a machine, that it has material properties. But the mind (or soul), on the other hand, was described as non-material and not following the (mechanical) laws of nature, which alludes to an occult truth. This idea of matter being dead or inert and the body, a machine, has persisted even to this day, especially in the context of the ever increasing supremacy of science in the world of matter, whereas the spirit and soul aspects (which Descartes also considered at length) have either been conveniently ignored, or explained away in terms of matter. So the root cause of the current malaise in thinking epitomised by the computationalist cult is this notion, which now involves seeing everything natural as an object – inert, senseless, and detached from us. Whereas quantum physics has repeatedly shown with such impressive theory backed by sophisticated experimental evidence about the interconnectedness of things in the world, the non-materiality of so-called physical matter and the role of consciousness in any consideration of quantum behaviour, yet the collective *psyche* of the vast majority of mainstream scientists, especially biologists, has not progressed from the outworn paradigm of the billiard ball notion of dead matter behaving mechanically, and consequentially, life is reduced to the mechanical laws of classical (meaning, pre-quantum) physics without any higher informing principle, by whatever name. Indeed, it is the avowed aim of mainstream biology (especially molecular biology) to reduce all things to physics and chemistry, which amounts to attempting to explain everything and all life as the action and product of inert matter in motion.

> **The magnificent discoveries of physics (especially quantum physics) have not penetrated into the thinking and outlook of other than a handful of scientists. The machine paradigm still prevails amongst most of them.**

The Computationalist's Master Analogy – Why it Breaks Down

This final section of the first part of this chapter draws together the preceding insights into the deficiencies in the arguments of computationalists. As ever, the flaw is one of philosophy, not methodology—a rigorous methodology can be built upon philosophical quicksand. Accordingly, we deal first with the philosophical weakness in the master analogy, move on to list numerous facts of life and experience that cannot be explained by it and then round off with the overriding and overwhelming reason for the obstruction of progress in science and philosophy of mind: what Gelernter aptly refers to as the closing of the scientific mind.

The Philosophical Weaknesses in the Computationalist's Argument

The whole essence of the problem is the failure to perceive the distinction between the machine and the mechanic, between the instrument and the performer: or whatever similar such metaphor we may ascribe to the confusion caused by a blurring of categories.

No one could have expressed the barrenness of materialistic theories about mind and consciousness better than the great British neurologist Sir Francis Walshe FRS (1885-1973). Exposing the naiveté of identifying the mechanism with its informing principle he writes:

> **From sheer psychological and philosophical necessity ... [there is the] existence in man of an essential immaterial element…psyche, entelechy, anima or soul…setting him above the merely animal. It has also to be recognized that for the soul's functioning as an essential element in the hylomorphic human person,[30] it needs some data, of which the brain is the collecting, integrating and distributing mechanism. Yet it would be quite childish to identify the instrument with its user, even though the user be dependent upon the instrument for operating**. [31]

Then in the same article he identifies the root cause of the problem, stating that:

> **We shall have to accept the ancient concept of the soul again: as an immaterial, incorporeal part of the human person, and yet an integral part of his nature, not just some concomitant aspect of man, but something without which he is not a human person …There is a sense in which the present is an age of which characteristic is its failure to understand the status of its own abstractions, and this, perhaps, is the inevitable fruit of the divorce of natural science from metaphysics** [and from religion and mysticism we might add] **to have achieved which was the empty triumph of the nineteenth century.**

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[29] Refer to Edi Bilimoria, Chapter 2, 'The Alchemy of Religion: From Inner Illumination to Love and Service in Action', section entitled 'Newton: "The Last Wonder-Child to Whom the Magi Could do Sincere and Appropriate Homage" ' in Ana-Maria Pascal (Editor), *Multiculturalism and the Convergence of Faith and Practical Wisdom in Modern Society*, IGI Global, 2017, pp. 39-47. See also **Paradigm Explorer two articles**

[30] The philosophical theory developed by Aristotle, which conceives being as a compound of matter and form.

[31] Sir Francis Walshe, 'Thoughts Upon the Equation of Mind with Brain', *Brain: A Journal of Neurology*, Vol. 76, Issue 1, March 1953, pp. 1-18.

Walshe then comments on the immaturity of reducing the human being to a machine and the mind to a virtual machine, saying:

> **For me, the chill physico-mathematical concept of the human mind is a muddy vesture of decay in which I am not willing to be enfolded. It is unworthy of the dignity of Man.**

Not for Francis Walshe, then, is the mind merely a von Neumannesque machine as it is for Dennett. Indeed, Walshe eventually demolishes the charge that such an attitude in unscientific by stating:

> **And if any say that this is not a scientific attitude I am unmoved by the irrelevance, for, outside its proper field of discourse, the word 'science' does not intimidate me. Man was not made for science, but science by man, who remains more and greater than his creations.**

Like Francis Walshe, wise Schrödinger saw deeper. These quotations taken from his major works and other sources are highly apposite and worthy of deep reflection:[32]

> **I am very astonished that the scientific picture of the real world around me is very deficient. It gives us a lot of factual information, puts all of our experience in a magnificently consistent order, but it is ghastly silent about all and sundry that is really near to our heart that really matters to us. It cannot tell us a word about red and blue, bitter and sweet, physical pain and physical delight; it knows nothing of beautiful and ugly, good or bad, God and eternity. Science sometimes pretends to answer questions in these domains but the answers are very often so silly that we are not inclined to take them seriously.**
>
> **Science cannot tell us a word about why music delights us, of why and how an old song can move us to tears? Science can, in principle, describe in full detail all that happens in our sensorium and motorium from the moment the waves of compression and dilation reach our ear to the moment when certain glands secrete a salty fluid that emerges from our eyes. But the feelings of delight and sorrow that accompany the process science is completely ignorant—and therefore reticent. And science is reticent too when it is a question of the great Unity the most popular name for which is God. [However] we know, whenever God is experienced, it is an experience exactly as real as a direct sense perception, as real as one's own personality.**
>
> **For the purpose of constructing the picture of the external world, we have used the greatly simplifying device of cutting our own personality out, removing it; hence, it is gone, it has evaporated, it is ostensibly not needed. ... In particular, and most importantly, this is the reason that the scientific world-view contains of itself no ethical values, no aesthetical values, not a word about our own ultimate scope or destination, and no God, if you please. [Therefore] we do not belong to this material word that science constructs for us. Consciousness cannot be accounted for in physical terms. For consciousness is absolutely fundamental. It cannot be accounted for in terms of anything else. The observing mind is not a physical system, it cannot interact with any physical system. And it might be better to reserve the term "subject" for the observing mind. … For the subject, if anything, is the thing that senses and thinks. Sensations and thoughts do not belong to the "world of energy".**
>
> **Science is, very usually, branded as atheistic. After what we said, this is not astonishing. If its world picture does not even contain blue, yellow, bitter, sweet – beauty, delight and sorrow –, if personality is cut out of it by agreement, how should it contain the most sublime idea that presents itself to the human mind? . . . Whence come I and whither go I? That is the great unfathomable question, the same for every one of us. Science cannot tell us a word about this.**

In fact the true test of a scientist is his ability and humility to see the limits and limitations of his/her theories and to work within them, rather than try to force-fit them into areas where they are patently incapable of accounting for the phenomena in question, as in the numerous examples cited in Part I and in this chapter. How many scientists these days are able to say, 'I don't know, but I'll try and find out'? Unfortunately, significant numbers of scientists seem unwilling to recognize (or to acknowledge) the limits of science and their own limitations and are extremely fearful of not being able to explain away literally everything from divinity to cosmos in materialistic terms.

A Summary of What the Computationalist's Master Analogy Cannot Explain

In summary, here is a comprehensive but by no means exhaustive list of the fatal flaws in the master analogy theory, which states that brain and mind are analogous to a (wet) computer and software, respectively:

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[32] The above sections have been extracted from the following sources:
Erwin Schrödinger, *My View of the World*, Cambridge University Press, 1964;
- — *Mind and Matter*, Cambridge University Press, 1958;
- — *Nature and the Greeks*, Cambridge University Press, 1954;
- — *Science and Humanism*, Cambridge University Press, 1951;
- — *What if Life?* Cambridge University Press, 1947;
- — *The Observer*, 11 January 1931.

1. Minds cannot be totally erased, as computer software can.
2. Minds cannot be made to operate precisely as we choose (to 'program' them), the way computers can.
3. Minds are ordinarily impenetrable (but see below), but software is transparent in that the entire state of the programme can be read at any time.
4. Telepathy between minds (as between humans and animals) has been proven; computers cannot read each other's software unless programmed to do so.
5. Only one 'program' operates or can ever operate on any one human brain, whereas any number of different programs can be run on a computer at will.
6. Mind cannot be transferred from one brain to another (even if brain transplants were ever feasible), whereas software programs can easily be transferred from one computer to another.
7. Near death experiences have shown that consciousness seems to operate apart from the physical brain, and also when the brain is clinically declared to be 'brain-dead'; a software program can never run with the accompanying computer hardware removed or totally inoperative.
8. The latest developments in brain research involving stroke victims have shown what is known as brain plasticity in that the brain displays a holistic or plastic function, such that if one part of the brain is damaged, other parts of the brain take over the function of the damaged portion (this is in contrast to the previously held compartmentalised notion that specific portions of the brain perform specific tasks). Moreover, damage to one part of the brain can lead to increased activity (and skill) in another. However, the same cannot be said about different parts of a computer. So if part of the computer hardware is damaged, or the software corrupted, there is no way that other parts of the computer hardware or software can, automatically, of their own accord, compensate for the damaged components or corrupted sectors. (The software system tool in DOS, OS/2, and Windows known as CHKDSK (short for 'check disk') can check the surface and repair damaged or corrupted sectors of a computer hard drive; at best the functioning of the disc will be restored, but this will not automatically result in increased speed or performance of the hard disc as a whole. But in any case, CHKDSK was written by human programmers for specific functions.)
9. Human minds want to know all about such things as consciousness, and to understand the mindset of computationalists who seem frantic to try and convince the world that humans are merely computers; however real computers are never concerned about knowing about themselves or convincing other computers about what they are.
10. The human brain has evolved intrinsically over aeons caused by both the stimulus from the external environment and the innate propensities of the organism (nature and nurture); computers only evolve, or develop extrinsically, as a result of human intervention.
11. The human brain grows in size and capacity over a lifetime. Computers do not grow automatically of themselves unless another component is added to it by a human.
12. The human mind matures and increases in power and capacity over a lifetime. Software does not improve itself without human programmer intervention.
13. The common term 'body language' indicates that both brain *and body* are intimately involved in expressing our state of mind and inner, subjective feelings and experience. Mind is embodied by both brain and body, not just brain. By contrast, computers do not, of their own accord, change their physical appearance to reflect their performance speed or efficiency.
14. Computers are in essence data processing machines transferring one batch of data into another (see the various definitions of a computer at the beginning of this chapter). That data becomes information when something meaningful is ascribed to it by a human. But the mind is neither a data processor nor an information processor. States of mind or feelings are states of being, not information – for example, there is no data or informational content in feeling delighted. The whole subjective realm of experience, feelings, and consciousness is incompatible with the ideology that humans are just machines. Experience is a state of being, not of doing, such as information processing. Humans can do both—computers only the latter, according to the coded instructions by human programmers.
15. Thinking is necessarily metaphorical – what few people seem to recognize. This is argued in a seminal paper by George Lakoff (1941-), the American cognitive linguist, philosopher, and professor of cognitive science and linguistics at UC Berkeley.[33] Lakoff shows how metaphorical ideas affect how we act; and how metaphorical thought and the metaphorical understanding of situations arises independently of language. The paper presents the basics of metaphorical thought and language from the perspective of neurocognition (the integrated interdisciplinary study of how conceptual thought and language work in the brain). Crucially, it outlines a theory of metaphor circuitry and discusses how everyday reason makes use of embodied metaphor circuitry. Computers, however, are driven by electrical circuitry, not by metaphor circuitry.

[33] George Lakoff, 'Mapping the brain's metaphor circuitry: metaphorical thought in everyday reason', *Frontiers in Neuroscience*, 2014; 8: 958.

One might therefore ask: given the turbulent world we live in, would computers – unless human-programmed to do so – inform their robotic bodies to fight over territory and slaughter one another (whatever slaughter might mean to a computer-informed robot)? It is no good arguing that in point of fact robots regularly kill humans; for example, in Japan which has the highest proportion of robots used in industry for repetitive tasks, assembly line robots are known to turn on their human operators. But that is solely because of malfunctioning of the software, sensing mechanisms or hardware that was human designed and installed in them, or indeed because of error on the part of the human operator who programmed them.[34]

What then, does death mean to a computer? Obviously, a loss of power to its components or the natural degrading and ultimate failure of the latter over time, as indeed may be said to be the case with humans. But as humans approach death, they often mature and become wiser. At this stage of life, great artists are known to produce their finest works or achieve an understanding of life not known to them in earlier years. Would a computer know when its death is nigh? Quite easily done: by checking the condition of its components, hence predicting its (machine) life ahead—by way of algorithms input by human programmers for such condition monitoring function. Moreover, would a computer's performance mature with age as with so many of us human beings when the shadow of death becomes our tutor? Would a computer of its own volition write, say, sublime music like Schubert did in the last months and weeks of his short life, or a deeply spiritual work like the monumental B minor Mass that Bach wrote a year before his death when he was virtually blind, or would that also have to be human programmed into it? *It could not be pre-programmed because the final works of genius are a summation of their entire, rich, inner life experience, a commentary on humanity and divinity, and intimations of immortality of the Soul.* The South African educator, humanitarian, philosopher, explorer, and conservationist Sir Laurens Van der Post (1906-1996) put his finger on the scientism pulse when he observed that:

> **Human beings are perhaps never more frightening [and themselves frightened] than when they are convinced beyond doubt that they are right.[35]**

The Closing of the Scientific Mind – The Inviolability of Materialistic Theories

In this final section of the first part of this chapter, we sweep up all of the above line with the above remarks, *Mind in Cosmos* is a recent book by Thomas Nagel[36] (whom we first mentioned in Part I). The subtitle to the book, *Why the Materialist Neo-Darwinian Conception of Nature Is Almost Certainly False* would be guaranteed to produce howls of protest, which is precisely what happened. It is irrelevant that Nagel is a distinguished professor of philosophy at New York University, or that he presents his case meticulously, without any reference to religion or for that matter, attacking religion, or indeed that he suggests some of his own ideas on consciousness tentatively in the tradition of good science. As his subtitle suggests, Darwinian evolution is insufficient to explain the emergence of consciousness; and that there are significant inadequacies in the mainstream dictum rooted in the Darwinian paradigm on the workings of the mind. But even to question Darwin politely is seen by the cognoscente of science as an attack upon the omniscient God of evolutionary theory. To risk doing so provokes the same hysterical outburst as to attack the God of religious fundamentalists – the very God that these materialists heartily decry. Here we have to draw a clear distinction between Darwin's ideas that he presented by way of scientific propositions and those sane ideas that the Neo-Darwinians have elevated to 'biblical' status. For the latter, to question molecular mechanisms or Darwin is tantamount to questioning their God and His creation, and the resulting excommunication by the scientific fraternity (church of scientism) is swift and severe. Sober scientists are not physically burnt at the stake, but the personal abuse and the backlash against their careers is no different in principle.

Revolutionary ideas in science or medicine will always be met with resistance from the establishment. And this opposition prevails even in the teeth of evidence, as for example, when the Victorian medical profession rose in condemnation of the methods used by the British surgeon and President of the Royal Society, Sir Joseph Lister (1827-1912), the first doctor to use antiseptics in surgery, despite his breakthrough evidence that the washing of hands, surgical instruments and the site of an operation with carbolic acid mixed with linseed oil dramatically cut post-operative death rates from infection at his hospital, the Glasgow Royal Infirmary.[37]

Another fine example of the inviolability of the materialistic paradigm especially concerning molecular science is the editorial that appeared on the front page of *Nature* under the title 'A book for burning?'. The book in question, unsurprisingly, was the first edition of *A New Science of Life* by Rupert Sheldrake, which the editor Sir John Maddox denounced in a savage attack saying that 'even bad books should not be burned; works such as [Hitler's] *Mein Kampf* have become historical documents…His [i.e., Sheldrake's] book[38] is the best candidate for burning there has been for

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[34] Shimon Y., ed., *Handbook of Industrial Robotics*, Technology & Engineering, 1999.

[35] Laurens Van der Post *The Lost World of the Kalahari*, Vintage Classics, 2002.

[36] Thomas Nagel, *Mind in Cosmos*, Oxford University Press, 2012.

[37] Lindsey Fitzharris, *The Butchering Arts: Joseph Lister's Quest to Transform the Grisly World of Victorian Medicine*, Penguin UK, 2017.

[38] Proposing the hypothesis of morphic resonance to explain the characteristic form and organization of nature.

many years'.[39] Moreover, in a BBC interview, Maddox said, 'Sheldrake is putting forward magic instead of science, and that can be condemned in exactly the language that the Pope used to condemn Galileo, and for the same reason. It is heresy'.[40] It is worth pausing at this juncture and fully taking in the import of all this. A powerful and prestigious man of science upon whom a knighthood was conferred, also a Fellow of the Royal Society and editor of one of the leading international science journals is recommending, and in all seriousness, that a book by the Nazi dictator should be retained owing to its historical value 'for those concerned with the pathology of politics', as he puts it, but that Sheldrake's book, written by an eminent Cambridge Fellow, should be eradicated.[41] However much Maddox chose to revile its content, why should not Sheldrake's book also be of value for those concerned with the evolution of biological science?

Enough has been said to demonstrate the power of prejudice; and that those deemed as heretics whether in religion *or in medicine and science* are dealt with by the established 'church of science' in essentially the same way as the religious heretics in Galileo's day. Burning and ostracising the religious heretic now takes the form of condemning the work and crushing the career of the heretic scientist concerned. But a few legendary scientists have found the courage to sound a warning note, such as the Nobel physicist Brian Josephson, who wrote a riposte in *Nature* stating that the editor 'show[ed] a concern not for scientific validity but for respectability'. Josephson further censured that:

> **The rapid advances in molecular biology to which you [i.e., the editor] refer do not mean very much. If one is on a journey, rapid progress on the way implies neither that one is close to one's destination, nor that the destination will be reached at all by continuing to follow the same road… The fundamental weakness is a failure to admit even the possibility that genuine physical facts may exist which lie outside the scope of current scientific descriptions. Indeed a new kind of understanding of nature is now emerging, with concepts like implicate order and subject-dependent reality (and now, perhaps formative causation). These developments have not yet penetrated to the leading journals. One can only hope that the editors will soon cease to obstruct this avenue of progress.** [42]

Alas, even Josephson has been belittled wholesale by the science community at large for his interest and exploration of topics, such as meditation, mysticism, and the whole field of parapsychology, including phenomena like telepathy, deemed to lie outside mainstream physics. A good case in point is the facetious headline *Royal Mail's Nobel guru in telepathy row* that appeared in a leading UK national newspaper.[43] This is in connection with an issue of six special stamps to honour the hundredth anniversary of the Nobel prize. However, a bitter row emerged because scientists were furious that a booklet, published as part of the stamps' presentation package, contained claims that modern physics would one day lead to an understanding of telepathy and the paranormal. This statement, deeply offensive to mainstream scientists, had been written by Josephson, who subsequently commented to *The Observer*, 'Yes, I think telepathy exists, and I think quantum physics will help us understand its basic properties'. The point Josephson was making was simply that there is a good case that quantum theories may lead to an explanation of processes still not understood within conventional science, telepathy being one example. However, the emotionally charged and insulting retorts such as 'utter rubbish', 'complete nonsense' by fellow scientists,[44] reveal that their violent opposition to the idea was based not on the grounds of scientific evidence, of which there is plenty (see Part I), but prejudice. This clearly makes the point that nothing is more effective at exposing the weakness of fundamentalists of the Neo-Darwinian camp, or for that matter the materialist camp (including, sadly, Fellows of the Royal Society and Nobel laureates like Steven Weinberg and Philip Anderson) than when they themselves resort to mass attacks and expletives[45] using terms like 'witchcraft or 'snake-oil', or resort to cheap language as in the example cited above, against someone who proposes sensible, scientific counter arguments, or anomalous findings that shatter their ideological stronghold, and dent their egos, along with their reputations and associated massive research grants.

Summary???????

Unsurprisingly, the most vociferous attacks either upon religion or upon scientific theories with even a whiff of a hypothesis beyond pure materialism come from the materialist camp – those who maintain that scientific materialism is the sole arbiter of truth. The pre-eminence of the scientist under attack is of no consequence as in the examples cited above. The need to attack rather than resort to reasoned arguments and dignified language demonstrates two facts. Firstly, it shows the weakness of the attacker's position: otherwise why attack someone unless what he says is a threat to your own preconceived conceptions, and the power, position, and fame that go along with such a stance. But it also shows that

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[39] J. Maddox, 'A Book for Burning?', *Nature* 293 (1981): pp. 245-46.

[40] BBC 2 TV, *Heretics*, 19 July 1994.

[41] Sheldrake was a Scholar of Clare College, Cambridge and was awarded the University Botany Prize. He then studied philosophy and history of science at Harvard University, where he was a Frank Knox Fellow, before returning to Cambridge, and becoming a Fellow of Clare College where he was Director of Studies in biochemistry and cell biology. As the Rosenheim Research Fellow of the Royal Society he carried out research on the development of plants and the ageing of cells at Cambridge.

[42] Brian Josephson, 'Incendiary Subjects', *Nature* 294 (1981): p. 594.

[43] *The Guardian*, 30 September 2001 <https://www.theguardian.com/uk/2001/sep/30/robinmckie.theobserver>

[44] Ibid.

[45] An obvious example of such behaviours being Richard Dawkins. Unable to understand the symbolism and inner meaning of religious doctrine his only resort is to revile it in sentences such as 'I have described atonement, the central doctrine of Christianity, as vicious, sadomasochistic, and repellent. We should also dismiss it as barking mad'. See Richard Dawkins, *The God Delusion* , Transworld Publishers, 2006, p. 287.

the head and the heart are at loggerheads, so to speak in the attacker's psyche; that something deeper inside the person, something that transcends his left brain is saying that all is not well, hence the need to attack in order to fortify and police the paradigm. The instances of Nagel, Sheldrake, and Josephson (amongst several others) are fine examples of this. Their detractors, being of the materialistic camp, have resorted to emotionally-laden tirades. But Sheldrake and Josephson, to mention but two, have themselves always responded with calm dignity. They can well afford to do so as they are responding from a position of strength where they know and acknowledge the value of materialism and reductionism in their proper context, but are also fully aware of, and have extensively researched phenomena (such as telepathy) that cannot be explained away by indiscriminating disparagers.

Similar calumny and insult, but far more virulent, was heaped upon Blavatsky who also showed with painstaking detail that materialistic theories and Darwinian evolution were not wrong, as such, but wholly incomplete and therefore inadequate to account for consciousness, life, and evolution without invoking the grand occult doctrines that she transmitted through her magnificent works.

A Suggested Way Forwards

What then is the remedy? Longing to find beauty in what was for him an ugly and terrible world, the legendary English Romantic poet John Keats (1795-1821) talks about what he calls negative capability – the capacity to sit with the unknown, but with an inner conviction that something truly precious will come out of the unknown. In other words, to trust the process and have faith that there is a greater consciousness that we can tune into, as explained in this letter to his brother: 'At once it struck me, what quality went to form a Man of Achievement, especially in literature, and which Shakespeare possessed so enormously – I mean Negative Capability, that is when man is capable of being in uncertainties. Mysteries, doubts, without any irritable reaching after fact and reason'.[46] But living with uncertainties and being with the unknown is something that the predominantly left-brain-orientated scientific community finds very frightening. It underscores the deterministic drive of the left brain to strive for precision, certainty, and objectivization, eschewing uncertainty, the unknown and the unknowable (by science). But the right brain, preferring to deal with wholes rather than parts, has no problem with subjective experience or waiting patiently in silence attuning to a higher power. So this is the kind of holistic approach used by luminaries of science such as Leonardo and Newton – one that would help us greatly in facing the complex problems we face today. It is highly significant that Leonardo was as much a genius of science as of art. Moreover, Newton's alchemical writings and drawings reveal great sensitivity and poetry.

Perhaps the deepest insights into the inner, human state come from sublime art, literature, poetry, and music. The likes of Shakespeare (Francis Bacon?), Keats, Mozart, Beethoven, and Liszt knew – and expressed through their art – infinitely more about our minds and what it means to be truly human, than establishment scientists and neurobiologists can ever hope to do – see the close of Chapter 5.

Meanwhile, we round off this chapter with the words of three luminaries – a scientist, an occultist, and a philosopher – which, taken as a whole, elucidate the problems we face, and the way out of the impasse. We would be well advised to heed their counsel.

Firstly, the problems for society of the divided brain and especially the excessive emphasis upon left hemisphere thought so comprehensively expounded by McGilchrist (see earlier) were, in fact, foretold well over half a century ago in this quote attributed to Einstein:

> **The intuitive mind is a sacred gift and the rational mind is a faithful servant. We have created a society that honours the servant and has forgotten the gift.[47]**

Perhaps it was a profound understanding of the difference between rationalisation and intuition, plus an acute awareness of the dangers for science of excessive quantification that lay behind this message, again attributed to Einstein, written on a blackboard hanging in his office at Princeton University:

> **Not everything that counts can be counted, and not everything that can be counted counts.[48]**

Next, we turn to the question of why, despite the massive amount of money and energy expended on research, the corpus of mainstream scientists, neuroscientists, and neurobiologists have barely approached – by their own admission – a true understanding of the origin and nature of consciousness (with the exception, of course, of the likes of the all-knowing Dennett, who maintains that consciousness is an illusion or an unessential epiphenomenon). This is because, as diagnosed

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[46] John Keats, 'Selection from Keats's Letters (1817)', Poetry Foundation <https://www.poetryfoundation.org/resources/learning/essays/detail/69384>

[47] Bill Crawford, Quotes and Wisdom <http://www.billcphd.com/quotes.php?quote_id=121>

[48] Quote Investigator < http://quoteinvestigator.com/2010/05/26/everything-counts-einstein/>

by Sir Francis Walshe (see above), they are looking at purely physical means to discover that which is beyond the physical as the next quote from the great seer and occultist, Blavatsky makes very clear:

> **The minority [of scientists] strive very sensibly to enlarge the domain of physical science by trespassing on the forbidden grounds of metaphysics, so distasteful to some materialists. These scientists are wise in their generation. For all their wonderful discoveries would go for nothing, and remain for ever headless bodies, unless they lift the veil of matter and strain their eyes to see beyond. Now that they have studied nature in the length, breadth, and thickness of her physical frame, it is time to remove the skeleton to the second plane and search within the unknown depths for the living and real entity, for its SUB-stance – the noumenon of evanescent matter.**[49]

Allied to the above we can say that physical science on its own, embedded in the materialistic paradigm will never understand the nature of consciousness, because as Blavatsky says:

> **Mystery is the fatality of science. Official science is surrounded on every side and hedged in by unapproachable, forever impenetrable mysteries. And why? Simply because physical science is self-doomed to a squirrel-like progress around a wheel of matter limited by our five senses.**[50]

And applying this reasoning to the enquiry into the nature of mind, Blavatsky says

> **Scalpels and microscopes may solve the mystery of the material parts of *the shell of man* [his physical body and brain]: they can never cut a window into his soul to open the smallest vista on any of the wider horizons of being.**[51]

The inability by science to supply a satisfactory answer to the nature of mind, after several decades of painstaking research and experimentation vindicates Blavatsky's assertion of well over one hundred years ago.

Following on from the above, we highlight the essential difference, yet intimate relationship between the inner subjective state of humans and its outward, physical expression through brain and body. As Blavatsky states, whereas the former represents the quintessential nature of the human being, the latter is no less important for physical existence.

> **That which makes one mortal a great man and another a vulgar, silly person is the quality and makeup of the physical shell or casing, and the adequacy or inadequacy of brain and body to transmit and give expression to the light of the real, Inner man; and this aptness or inaptness is, in its turn, the result of Karma. Or, to use another simile, physical man is the musical instrument, and the Ego, the performing artist. The potentiality of perfect melody of sound, is in the former – the instrument – and no skill of the latter can awaken a faultless harmony out of a broken or badly made instrument. This harmony depends on the fidelity of transmission, by word or act, to the objective plane, of the unspoken divine thought in the very depths of man's subjective or inner nature. Physical man may – to follow our simile – be a priceless Stradivarius, or a cheap and cracked fiddle, or again a mediocrity between the two, in the hands of the Paganini who ensouls him.**[52]

Concerning our essential nature – Mind – the following three quotes in the words of that illimitable sage and philosopher Paul Brunton[53] elucidate the common error of identifying the instrument (brain) with its user (mind or thought producer), even though the user be dependent upon the instrument for its operation.

> **It is a mistake to believe that the body, via the brain, makes its own thoughts. To correct it, reverse the assumption and perceive that thoughts are projections from Thought, that Consciousness comes first.**

> **The materialist who regards thought as solely an activity in the brain, and consequently as a physiological product in its entirety, has overlooked the thinker of the thought.**

The third Brunton quote above is charmingly illustrated by the story of a fan of the violinist Jascha Heiftez (1901-1987) exclaiming to the legendary virtuoso, 'Mr Heifetz, your violin produces such beautiful sounds'. Whereupon Heifetz tapped the wooden belly of his priceless instrument remarking, 'does it really?'.[54]

> **If the blood, bone, and flesh of the human brain secrete thought then the wood and string of a violin secrete music.**

The next quote is in line with the 'filter model' in neuroscience. It is the latest theory about the role of the brain, acting as a sort of filter and transducer of consciousness, but not a generator or originator of the latter.

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[49] Blavatsky: SD1,I,3, XV, Gods, Monads and Atoms.
[50] Blavatsky: Collected Writings, Volume X11, Kosmic Mind, p. 135.
[51] Blavatsky: Collected Writings, Volume X11, The Science of Life, p. 241.
[52] Blavatsky: Collected Writings, Volume X11, Genius, p. 15.
[53] The Notebooks of Paul Brunton. Paul Brunton Philosophic Foundation.
[54] This story is attributed to the taxi driver who fetched Heifetz upon his arrival at Tel Aviv airport to embark on a concert tour. The details may be inaccurate, but the message is clear.

The materialist asserts that consciousness has no existence apart from the body, is indeed a product of the brain. A blow on the head may deprive a man of consciousness; an operation on the brain may change its mode of functioning. The mentalist says that these only provide the conditions which normally limit consciousness, thus making it seem as if the brain created it. But under abnormal states (like anaesthesia, hypnotism, drugs, or deep meditation) consciousness shows its own separate being.

Great sages have come to this understanding aeons ago. So did William James as we saw in Chapter 6 of Part I. Nonetheless, even though the filter model of the brain is upheld obviously by only a minority of metaphysically inclined scientists,[55] yet it is heartening to note the slow harmonising of science with occult science as predicted well over one hundred years ago in the famous maxim 'modern science is our best ally'[56].

The next quote, also from Brunton shows the reason for the common error of identifying the instrument closely coupled with its user.

The notion that consciousness is a sort of 'gas' generated in the fleshy brain [epiphenomenon] is the modern Western error, although an easy one into which to fall. There is, of course, a very close interrelation between body and mind, but it is one wherein the latter is expressed through the former, although narrowed and confined by the brain's limitations.

The final Brunton quote is an extended one that virtually summarizes the principal arguments of this chapter.

The materialist argument is essentially that mental function varies with bodily condition, that alcohol can convert the coward for a time into a brave man, that the increase in size and weight of the brain as man passes from infancy to maturity runs parallel with the increase of mental capacity, and that therefore mind is nothing else than a product of body. Mentalism says these facts are mostly but not always true but that even granting their truth, the materialistic conclusion does not necessarily follow. It is just as logical to say that mind uses brain as a writer uses a pen, that the body is merely instrumental and the limitations or changes in the instrument naturally modify or alter the mentality expressed. The thoughts and feelings, the ideas and memories, the fancies and reasonings which constitute most of our mental stock can be detected nowhere in the brain, can be seen by nothing physical, and can only be observed by the mind itself as acts of consciousness.

Are Human Beings 'Lumbering Robots' After All?

So are we really entirely lumbering, robotic machines, or are we beings of flesh and blood, mind and consciousness? If the latter, then humans will have to wage a war against computers. The film *Space Odyssey* presaged just this by installing HAL 9000, a sentient computer (i.e., with 'emotional software') that is every bit humankind's equal, and has full control over the spacecraft. When things go wrong and HAL endangers the crew's lives for the sake of the mission, the astronauts have first to overpower the computer by dismantling its memory banks. One can envisage a similar situation arising in the not too distant future when humans and computers will be in mortal combat, not by way of robotic soldiers or drones destroying what is left of humans, but human beings themselves fighting against the dehumanization and depersonalization of life produced by excessive reliance and takeover of their lives by computers. It will be a struggle but the victor is too obvious to mention. Enough is enough, and it is high time we reclaim our spirituality and our humanity right now.

But lingering doubts may still prevail. Certainly, the computationalists would side with the Hungarian-American psychologist Mihaly Csikszentmihalyi (1934-) that it is easier for us to imagine ourselves living among better appliances than any better human beings.

Postlude – Will Robots Then Overtake Humanity?

In view of all that we have said above, is it remotely possible that given the current exponential advances in technology, robots and androids would eventually outpace humanity? It is not an unreasonable qualm. After all, Ray Kurzweil, the world renowned pundit of artificial intelligence has confidently predicted that this would happen by 2029 – see earlier. At first glance it seems that this might happen. The South Korean firm Samsung are due to open an artificial intelligence research laboratory in Cambridge to teach computers to recognize human emotions and improve the way they interact with us. Would teaching computers to recognize human emotions be a step along the path to building a sentient computer like HAL 9000 as in the *Space Odyssey* film? What is more, in April 2018, the UK government announced investment of nearly £1bn in AI. The companies involved says the American multinational business magazine *Fortune*, 'include Microsoft, Hewlett Packard Enterprise, IBM, McKinsey and Pfizer'.[57] Certainly, it would appear that the human-machine boundaries are becoming increasingly blurred.

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[55] Richard Silberstein and Peter Fenwick???

[56] ML Letter No. 65. Note however the cautionary note struck in the next sentence,. 'Yet it is generally that same science which is made the weapon to break our heads with'.

[57] 'Good News for Business', *The Week*, Issue 1182, 30th June 2018, opposite p. 43.

So for example, if you were jogging through the woods close to Waltham, Massachusetts in the USA, the chances are that you might be joined by a fellow runner who appeared to traverse the forest path and negotiate rocky terrain as nimbly as yourself. Only after a few minutes it may dawn on you that your companion was in fact a humanoid robot – see Figure II-2. Weighing 320lb at 6ft 2in tall and named Atlas, it was created by Google-owned Boston Dynamics.[58]

Figure II-2 Atlas, the Humanoid Jogger in the Woods near Waltham, Massachusetts
Photo Credit: http://www.ibtimes.co.uk/boston-dynamics-unveils-humanoid-atlas-robot-that-can-run-outdoors-handle-rocky-terrain-1515921

Or were you to visit Nanyang Technological University in Singapore you would initially be impressed by Nadine, the receptionist dressed in a smart black suit as seen in Figure II-3. She parts her long, dark hair neatly, smiles politely and would greet you with a friendly 'hello', even remembering your name and previous conversations if you had met her before. She appears to be proficient at her job and exhibits personality, moods, and emotions. So if you were to tell her that you had a hospital appointment, she would naturally respond in a different tone to the one she would use if you said you were getting married. You would be excused, however, for harbouring a nagging feeling that Nadine appeared to be only slightly less than human, which is not surprising, since 'she' is one of a new generation of androids.[59]

Researchers at the Royal Society, writes Philip Collins in *The Times*, claimed that a computer 'had passed the Turing test and thereby achieved human intelligence'.[60] Coming from a esteemed institution like the Royal Society, the fallacy of such a statement is deplorable. As the article explains, on what grounds is the Turing test a measure of human intelligence?[61] 'The fact a computer can fool a third of a panel of people into believing that its responses to a set of questions put to it are human ones merely shows the ingenuity of [human] programmers'. Moreover, what exactly is meant by 'human intelligence' – something that ranges from below the imbecile to the genius and beyond?

> **The computer is just a big calculator: it can no more be said to be thinking than a clock can be said to be telling the time.[62]**

Alan Turing would sure have said much the same thing – see his earlier observation that a computer could process any problem – provided that it were given rules by human programmers for the solution.

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[58] 'Boston Dynamics Unveils Humanoid Atlas Robot that Can Run Outdoors and Handle Rocky Terrain', *International Business Times*, 18 August, 2015. See the video in http://www.ibtimes.co.uk/boston-dynamics-unveils-humanoid-atlas-robot-that-can-run-outdoors-handle-rocky-terrain-1515921.

[59] 'Human-Like Robot "Nadine" Who Has a "Personality, Mood and Emotions" Unveiled in Singapore', abcNEWS, 31 December 2015. See the video in http://abcnews.go.com/Technology/human-robot-nadine-personality-mood-emotions-unveiled-singapore/story?id=36032196.

[60] 'Stay Calm: The Robots Are Not Taking Over', *The Times*, 8 August 2014. Collins goes on to state, 'scientists are so far from comprehending the mystery of human consciousness that4 they are in no way equipped to create it'.

[61] The Turing test is a test of the ability of a machine to exhibit intelligent behaviour equivalent to, or indistinguishable from, that of a human. See A. M. Turing, 'Computing Machinery and Intelligence', *Mind*, 59, 1950, pp. 433-460.

[62] Ibid.

Figure II-3 Nadine, the Android Receptionist at Nanyang Technological University
Photo Credit: http://abcnews.go.com/Technology/human-robot-nadine-personality-mood-emotions-unveiled-singapore/story?id=36032196.

Let us make our final case for the overall supremacy of human over artificial intelligence by citing a highly revealing, throwaway remark made Mark Zuckerberg, Chairman and Chief Executive Officer of Facebook. Inspired by the superhero Iron Man, who has his own robot assistant, Zuckerberg has decided to install the latest home automation in his house. He wants it to be able to let his friends in by 'looking at their faces when they ring the doorbell'. But here comes the rub. 'I'll start teaching it to understand my voice to control everything in our home – music, lights, temperature', he wrote on his Facebook page. Note the words: 'I'll start *teaching it* [emphasis added]'. This is the giveaway: a perfect attestation that however much robots may become a part of human lives and society, they will never surpass human beings because the one thing they singularly lack – creative freedom – comes from the human heart, mind, and brain – not from computers, 'wet' or 'dry'.

Robots may well excel in any mechanically repetitive, rule-based activity, but for anything involving human qualities of sensibility, judgement, creativity, and imagination, robots can only mimic or impersonate the human behaviour that has been pre-programmed into them – even by other robots perhaps, but in the final analysis, always by humans as the first link in the chain. For example, in the case of Nadine the receptionist described above, it does not take much (human) intelligence to see how emotive words like 'hospital' or 'married' can be pre-programmed into the android software to produce appropriately different response tones.

Would the zealous protagonists of artificial intelligence who like to tell the world that we lumbering robots, known as human beings, will soon be outstripped by androids find the courage of their own convictions by being content with an android mate for intimate and loving physical relationship, as an alternative, or in preference to a human being of flesh and blood? Nonetheless, it is incumbent upon us humans not to become robot-*like* as a result of rampant technology mechanizing and de-humanizing our lives.

It is easy, then, to become intimidated by such scary stuff. However, the resolution rests in a simple appeal to common sense – common amongst so-called ordinary folk, but a rare quality amongst the boffins of super-science because of the complete subjugation of wisdom by excessive intellect, by the mind usurped by its emissary, or in occult parlance, the light of buddhi-manas clouded by kama-manas.

As there are no grounds for concern *in the long term*, we may remain calm and revert to our overriding theme about the unfolding of consciousness and the composition of Man at all levels of his being.