



UNLOCKING
CONSCIOUSNESS



BRIAN MIND FORUM

Appendix 003

Quotations Relevant to Cognitive Neuroscience

The Greatest of all natural resources is human intelligence

The Exploration of Knowledge is the greatest adventure of life

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“All men desire to know”

Opening words of ‘*Metaphysics*’ Aristotle c 300BC

“Give me a fulcrum and I will move the World”

Archimedes: Syracuse 100 BC

“What is corrupting is not the attempt to do the impossible, but the failure even to attempt it”.

Thomas Paine 1737 - 1809. As edited by Roger Scruton 2010

“No one can attain an adequate conception of the whole truth. Everyone can make a small contribution to our collective understanding”.

Aristotle: Athens. c300 BC

“I seem to be like a boy playing on the foreshore, diverting myself with shining pebbles, whilst the great ocean of truth lies all undiscovered before me”.

Isaac Newton

“Every single idea, every single concept, every single piece of information we have about our world and how it operates has been conceived originally in a human brain”.

Leonardo da Vinci,

The noblest pleasure is the joy of understanding

Leonardo da Vinci

Felix qui potuit rerum cognoscere causas
[Happy is he who could learn the causes of things]

P. Vergilius Maro, ‘Virgil’.

*“Though I wanted to think that everything was false, it was necessary that the ‘I’ who was doing the thinking was something; and noticing that this truth, **I think, therefore I am**, was so*

solid and sure that all the most extravagant suppositions of the sceptics were incapable of upsetting it, I judged that I could accept it unhesitatingly as the first principle of the philosophy that I sought."

Rene Descartes, 1637

Unlike any other empirical object in Nature, the Mind's presence is immediately apparent to itself, but opaque to all external observers.

George Makari 2015

It is becoming increasingly clear that to understand living systems in any deep sense, we must come to see them not as machines, but as stable, complex, dynamic organisms

Carl Woese.

"If men could learn from history, what lessons it might teach us? But passion and party blind our eyes, and the light which experience gives us is a lantern on the stern, which shines only on the waves behind us."

S. T. Coleridge

*"But remember, please, the Law by which we live,
We are not built to comprehend a lie,
We can neither love nor pity nor forgive.*

If you make a slip in handling us you die!" Rudyard Kipling, The Secret of the Machines.

All theories are conditional and will eventually disappear. Facts remain. Facts are the main thing.

Maurice Allais. Paris NS p31, 27 Nov 2004

Science seems to be all about totting up the numbers to come out right, while making sense of the world is left to poets

David Malone.

He is a man who knows the price of everything and the value of nothing.

Oscar Wilde.

Do not say a little in many words but a great deal in a few.

Pythagoras of Samos c500 BC

Language and thinking are completely intertwined and dependent on each other

Wittgenstein

Language creates reality

Wittgenstein

If you have not got a word for it, you can not know it

Wittgenstein

The present only has a being in nature. Things past have a being in the memory, only. But things to come have no being at all, the future being but a fiction of the mind, applying the sequels of actions past to the actions that are present.

Thomas Hobbs

When we are born we can do almost nothing, but our brain enables us to learn to do almost anything.
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What is not known to us is not necessarily unknowable

After Nietzsche

Our brain is the only system in the world we know about that is capable of forecasting the future and make preparations for possible eventualities. Thus, we are beginning to control our environment.
Brain Mind Forum 2014

It is almost impossible to understand a solution until we understand the problem.

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“Of all the stupendous inventions, they who conceived how to communicate their most secret thoughts distant in time and place simply by the arrangement of two dozen signs upon a paper”.

Galileo

“Measure what is measurable and make measurable what is not”

Galileo

“We need to stay completely honest with ourselves and acknowledge that we have only discovered a tiny fraction of what there is to know about the human brain”

VS Ramachandran. *Tell Tale Brain*

Mnemosyne, Goddess of Memory.

Daughter of Uranus & Gaea

Mother of the nine muses

Poetry

History

Flute playing

Lyre playing

Tragedy

Dancing

Song

Astronomy

Comedy

“ If any one faculty of our nature may be called more wonderful than the rest, I do think it is memory. There seems something more speakingly incomprehensible in the powers, the failures, the inequalities of memory, than in any other of our intelligences. The memory is sometimes so retentive, so serviceable, so obedient; at others, so bewildered and so weak -and at others again, so tyrannical, so beyond control! We are to be sure a miracle every way, but our powers of recollecting and of forgetting, do seem peculiarly past finding out.”

Fanny Price in *Mansfield Park*. Jane Austen, 1814

“First learn to be a craftsman: it will not stop you from being a genius.”

Eugène Delacroix

We shall not cease from exploration

*And the end of all our exploring
Will be to arrive where we started
And know the place for the first time*

Little Giddings. T S Eliot

All our knowledge brings us closer to our ignorance

T S Eliot.

The vast majority of human beings dislike and even actually dread all notions with which they are not familiar. Hence it comes about that at first appearance innovators have generally been persecuted and always derided as fools and madmen.

Aldous Huxley.

Originality is the one thing which unoriginal minds cannot feel the use of. How could they?

John Stuart Mill *Essay on Liberty*

*“The future belongs to the unreasonable man, who looks forward not back,
who thinks the unthinkable, and is certain only of uncertainty”.*

George Bernard Shaw

Constancy is the playground of dull minds

Yuval Noah Harari, 'Sapiens'

It is not the strongest of the species that survive, nor the most intelligent, but the ones most responsive to change.

Charles Darwin.

Adapt or perish, now as ever, is nature's inexorable imperative.

H. G. Wells.

Whosoever desires constant success must change his conduct with the times.

Niccolò Machiavelli

Minds are of three kinds. One is capable of thinking for itself: another is able to understand the thinking of others; and a third that can neither think for itself nor understand the thinking of others. The first is of the highest excellence. The second excellent, and the third worthless.

Niccolò Machiavelli

Give us grace to accept with serenity things that cannot be changed, courage to change the things which should be changed and the wisdom to distinguish the one from the other.

Reinhold Niebuhr

Everyone thinks of changing the world, but no one thinks of changing himself.

Leo Tolstoy

To improve is to change. To be perfect is to change often.

Winston Churchill.

Only the wisest and stupidest men never change

Confucius

Keep on the lookout for novel ideas that others have used successfully. Your idea has to be original only in its adaption to the problem you're working on.

Thomas Edison.

Human Freedom is not an illusion; it is an objective phenomenon, distinct from all other biological conditions and found in only one species, us.

Daniel Dennett.

The world is moved along, not only by the mighty shoves of its heroes, but also by the aggregate of the tiny pushes of each honest worker

Helen Keller.

Never doubt that a small group of thoughtful committed citizens can change the world. Indeed, it's the only thing that ever has.

Margaret Mead.

Throughout history; the really fundamental changes in society have come about not from dictates of governments and the results of battles but through vast numbers of people changing their minds, sometimes only a little bit.

Willis Harman.

Rules are not necessarily sacred, principles are.

Franklin D Roosevelt.

Any Fool can make a rule and any fool will mind it.

Henry Thoreau.

It is in the nature of people as they grow older to protest against change, particularly for the better.

John Steinbeck.

In confronting the many challenges that the future holds in store, humankind sees in education an indispensable asset.

Jacques Delors.

The goal of education should not be seen as simply that of training brains whose basic potential is already determined. Rather the goal is to provide rich environments in which to grow better brains.

Andy Clark.

There is no limit to the contribution every citizen can make.

Thinking is a skill we can all learn.

The field of ideas, innovation and invention is open to everyone.

We all have a brain of almost limitless ability if we can only work out how best to use it.

It is our own personal laboratory we can each observe.

Every one of us has the facilities to participate in understanding how everything works.

We can all take part in the most exciting adventure of all time

Exploring the last great frontier of science-

Exploring cyognition.

CTR

"I am writing this book – to be read either now or by posterity, it matters not."

Johannes Kepler on completing 'The Harmony of the World'. 1616.

Imagination is more important than knowledge. Knowledge is limited, whereas imagination embraces the whole world

Albert Einstein

No man has ever experienced reason, but in a human figure
Epicurus: from the De Rerum Natura, Lucretius Carus cBC 100.

Theories can never be proved. They can only be disproved.
Carl Popper

All knowledge is provisional
Carl Popper

“Who of us would not be glad to lift the veil behind which the future lies hidden; to cast a glance at the next advances of our science and at the secrets of its development during future centuries?”
David Hilbert.

We must know. We will know.
Gravestone of David Hilbert

Living systems are cognitive systems, and living is a process of cognition. This statement is valid for all organisms, with or without a nervous system.

Francisco Varela, Professor of Cognitive Science, École Polytechnique:
Professor Matura, University of Chile

The greatest obstacle to scientific progress, after all, is not ignorance but the illusion of knowledge.
James le Fanu. ‘Why us’ p108

Information is the unifying principle of science
Claude Shannon.

If people were to think together in a coherent way, it would have tremendous power.
David Bohm.

It is increasingly evident that the educational methods we have been using for the past centuries no longer suffice. They are based on assumptions about the nature of knowledge, the learning process, and the different aptitudes for learning that have been eclipsed by new discoveries.
Lauren Resnick.

We are in an era where the ideas of a single person alone seldom lead to fruition. All ideas originate with individuals, but their ideas must fit in with a matrix of innovation before progress is made.
Sir Alex Broers.

*I have spread my dreams under your feet
Tread softly because you tread on my dreams.*
W.B.Yeats

From earth are all things and to earth all things return. From earth and water come all of us....No man hath certainly known, nor shall certainly know, that which he saith about the gods and about all things; for, be that which he saith ever so perfect, yet does he not know it; all things are matters of opinion Men imagine gods to be born, and to have clothes and voices and shapes like theirs Yea, the gods of the Ethiopians are black and flat-nosed, the gods of the Thracians are red-haired and blue-eyed. ' ... Yea, if oxen and horses

and lions had hands, and could shape with their hands images as men do, horses would fashion their gods as horses, and oxen as oxen Homer and Hesiod have ascribed to the gods all things that are a shame and a disgrace among men, theft, adultery, deceit, and other lawless acts "

Xenophanes of Kolophon, Southern Italy 500 BC.
Fragments John Burnet, *Early Greek Philosophy* London 1908. p 126

Ah! But a man's reach should exceed his grasp, or what's a heaven for.

Andrea del Dart: Robert Browning

One of the objects of our existence on this planet is to achieve complete self control. When we have done this our next objective will be to achieve independence from our environment, whereupon we can explore the universe.

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An imbalance between rich and poor is the oldest and most fatal ailment of all republics. The real destroyer of the liberties of the people is he who spreads among them bounties, donations and benefits.

Lucius Mestrius Plutarchus c. 46 – 120 AD (Plutarch)

Tomorrow we will have learned to understand and express all of physics in the language of information.

John Archibald Wheeler

Memory

"The palest ink is more reliable than the most powerful memory"

Confucius

A great Clash occurs when Creativity meets the Curriculum.

Guy Claxton

Education is the potential flowering of an individual rather than a testing of their ability

Anish Kapoor.

Democracy is more than just a system of government. It is about a community who live as equals under the protection of law and justice, that protection which grants honour to whoever deserves it, which regulates trade and commerce, which punishes and reforms those who have committed errors. A community like this is held together not by blood ties but by laws under which all citizens are equal. The law corrects the flaws and imperfections of individuals, supports innovation, experiment and tolerance of opinion and lifestyles that do not impinge on the opinions and lifestyles of others; it limits conflict and competition, rewards the will to do and to achieve, encourages the strong and supports the weak. In a society like this shame does not lie in being humble or poor, but rather in doing nothing to improve one's condition.

Aristotle C300 BC

The foundation of democracy is faith in the capabilities of human nature; faith in human intelligence and in the power of pooled and cooperative experience. It is not belief that these things are complete but that if given a show they will grow and be able to generate progressively the knowledge and wisdom needed to guide collective action.

John Dewey.

Je n'ai fait celle-ci plus longue que parce que je n'ai pas eu le loisir de la faire plus courte. (I did not have time to write a short letter)

Blaise Pascal. [but, claimed by many others !]

The Economic Consequences of the Computer Revolution.

Hitherto [1848] it is questionable if all the mechanical inventions yet made have lightened the day's toil of any human being. They have enabled a greater population to live the same life of drudgery and imprisonment, and an increased number of manufacturers and others to make fortunes. They have increased the comforts of the middle classes. But they have not yet begun to effect those great changes in human destiny, which it is in their nature and in their futurity to accomplish.

Only when, in addition to just institutions, the increase of mankind shall be under the deliberate guidance of judicious foresight, can the conquests made from the powers of nature by the intellect and energy of scientific discoverers become the common property of the species, and the means of improving and elevating the universal lot.

John Stuart Mill

Principles of Political Economy Book IV Chapter VI

Programming is easy. What is difficult are the problems we try to solve, and creating robust complex systems from simple instructions.

Programming is about reducing problem to their simplest parts, then designing logical abstract patterns to provide solutions.

Being human is the ability to ask questions

Thinking is the tolerance of new ideas

Analogies are patterns of patterns

Learning is building structures of pattern, relationships, hierarchies, mechanisms and rules.

The Brain is always looking for patterns. Hence games like cross words, chess and jigsaws are so perennially popular.

Beauty is about symmetry and proportion.

Creative Thinking is:-

To see established facts in a new context

Contemplate our present knowledge in the panorama of the millennia

Think in unpredictable channels

Countenance the ridiculous

Consider the impractical

Imagine the impossible

Decide on the illogical

Conceive the unlikely

Do the unattainable

And be right.

Bliss was it that dawn to be alive, but to be young was very heaven

Text of the inditement of Galileo before the Inquisition in 1615, and his abandonment of his views. *The Sleepwalkers* Arthur Koestler, 1959. Pages 602-608 Papal Reprieve, October 1992.

Descartes for the 17th Century

I think therefore I am
Cogito ergo sum
Je pense donc je suis
Ich denke also ich bin
Ik denke dus ben ik
Penso dunque sono
Pienso pues soy
ЯДЧМАЮ ЭНАЧИТ Я СЩЕСТВЧЮ

Descartes of the 21st Century

I think therefore I am in control
Cogito ergo imperio sum.

ON EDUCATION

What boy in the vigour of his youth wishes to spend his precious time in a serried classroom, while unpredictable adults try to stuff largely useless facts into his restless brain and corral his leaping intellect into regurgitating standard answers to their stylised questions with pen on paper in a way he will never use again; when books and television and the internet overflow with a cornucopia of fascinating knowledge that his vaulting ambition yearns to master; when he can hear the muscles of his body call and feel the grass beneath his running feet, the sun on his face, the wind in his hair, a ball in his hand; when there are girls to kiss, trees and mountains to climb, a world to explore and a universe to conquer?

To whom much is given much is expected.

Genius is the ability to see connections and relationships that lead to novel extensions of our knowledge and the ability to present new concepts in a way that persuades the community they seem reasonable and obvious in the context of the present and are beautiful over time

Everything that we now believe to be true was once thought unlikely, if not completely impossible, while their proposers were thought to be fools, idiots or worse. All our ideas and beliefs about the world and its operation, often long held through many ages to be the revealed truth, have eventually been proved to be wrong, or at least incomplete. All we can say is that on the balance of probabilities what we currently believe is likely to be right, but, in

fact, the only thing we know for certain is that we know nothing for certain. We live in a world of constructive uncertainty.

Constructive uncertainty

Quantum Physics 20th Century

The only thing we know for certain
Is that we know nothing for certain.

Socrates Athens 350 BC

I am the proximate result of millions of years of
Effort and struggle, father and mother
To sons and daughters down all eternity.
Over the years a great pyramid of people have made me possible,
Their genes make me what I am
And I give thanks to all my ancestors for my existence,
And in my life I will try and honour them
And vindicate all their hopes.

“Being wrong is the first step to being right”.

Francis Bacon

I can but put my ideas before the world
Knowing I am probably wrong,
In the hope that cleverer people than I
Will be stimulated by my mistakes to suggest better solutions;
And in awe of the possibility that
I may have got one or two details right.

CREDO

Throughout my life I have always met people who are much better looking than me, who are much stronger than me, who can run faster, jump higher, jump longer and throw things further: people who can do wonders with their hands, create beautiful things, make lovely sounds, while I can do nothing with mine. I have met people who are much cleverer, with much superior brains, vastly larger memories, who can think more effectively, respond faster, and can concentrate for longer: people who have much better judgement, with greater compassion, who are kinder, more generous and more tolerant: but I defer to no one as my superior: and I look on no one as my inferior.

I Am

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