

Science - The New God? The Conclusion

The Final Furlong

The Oscar winners in the history of science have almost always been creators of theory: Newton and universal gravity, Darwin and evolution, Maxwell and electromagnetic fields, Einstein and relativity. Theory explains, theory predicts, theory suggests new directions for thought and experiment. It is because of theory that we've been able to develop engines and planes, synthesize countless pharmaceuticals, unravel and understand the structure and patterns of many diseases. There are some extremely magnificent and wondrous successes that are down to the 'magic' of theory. Yet it is important that we are not deceived as there is an abundantly full graveyard of theories that were considered to be the 'truth' in their time, only later to be discovered to be very flawed or indeed totally false. The earth being flat springs to mind, and that theory reigned supreme until the voyage of Columbus changed our whole perception of the planet. More recently the great Sir Isaac Newton, who was for many a prophet sent by God and arguably the greatest scientist of them all, has also fallen foul of the mistake that theory is indeed fact. For over two centuries his system of mechanics was unchallenged truth. However, during the 20th century it was shown to be lacking and though some of its 'truth' and relevance still remain it has been essentially overturned by Einstein's 1905 theory of relativity and by quantum physics. Scientists rarely claim fallibility but the facts speak for themselves. Theories come and theories go. Some hang around for longer than others, some die shortly after the moment of their birth, some even go on to be proven to be true.

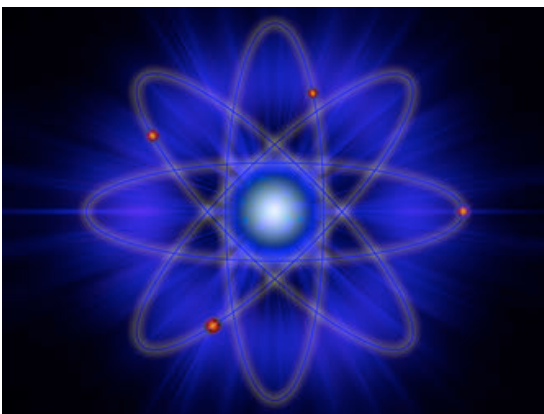


Sir Karl Popper (1902-1995) is a philosopher best known for his work concerning the validity of scientific theory. According to Popper, the nature of all theories is that they can be disproved, they can never be proved. He thought of science as a kind of lie detector! Once again Newton provides us with a wonderful example of this. His mechanics accounted for a myriad of observations on the earth as well as in the heavens. And as science pushed on, every new consistent fact and calculation hammered home the 'absolute correctness' of his theories. These included the motion of the moon, the movement of

molecules in gas, the flight of airplanes, even the trajectory of artillery shells. It would have taken a brave man to doubt the theory that never gave a wrong answer! It wasn't until the end of the 19th century that various observations began to undermine the 'certainty' of the Newtonian position. So observation triumphed over theory.

Francis Bacon, a member of the great English trilogy we referred to earlier, would have smiled. For he, in stark contrast to Descartes, trusted the senses completely. To him observation was everything, he saw nature as an 'open book' that couldn't be misread by an unprejudiced mind. Bacon, in a different yet equally important way as Descartes, helped to shape the landscape. His contribution however was a relatively lone voice that gathered most of its influence and momentum after he died. Bacon was part of a line of reason going back to the Greeks and Romans that was mistrustful of theory and revelled in the gifts of observation. It's worth pointing out, having been around in the time of Galileo, Bacon was witness to a world denying observation as it continually referred back to Aristotle, Aquinas and the fathers of the Church. Bacon's single-minded insistence was no less a rejection of authority than Descartes', he just saw it differently i.e. he believed what he saw not what he read!

Let us return to Popper. He felt the cracks that started to appear in Newton's theory were proof that the multiplication of positive cases does not increase the probability of a thesis being correct. In other words, although Newton's theories stood for an impressively long time, we should beware of the arrogance of believing any theory is final. It's not really a question of Newton being wrong, it's more accurate to say that the extent to which he was able to validate his theories at that time was limited. Newton himself knew his discoveries were incomplete. However, it was the world that held the view that nearly 'everything' had been discovered and the final frontiers of science had little left to unearth. This proved to be catastrophically wrong with the emergence of a number of key characters. Let us take an interlude at this point to look at their contribution. The first in our trilogy is Michael Faraday (1791-1867). He was a chemist and physicist who was renowned for his experimental genius. In the early 19th century he became interested in electricity and magnetism and as a result, crucial connections between the two were discovered and the notion of electromagnetic fields was born. In the Newtonian system gravitational or magnetic fields were not considered to have such a physical existence. They were merely a kind of 'equalising' process that balanced out the whole structure. But Faraday, through his experiments, convincingly demonstrated that such fields did exist physically. It was a puzzling revelation that could not be adapted to the Newtonian model because these fields appeared to propagate themselves in empty space! The precise implications of Faraday's findings were realised mathematically by the Scottish physicist and mathematician James Clerk Maxwell (1831-1879). It was he who, with dazzling insight, arrived at the equations that would explain the 'field effects' and demonstrated the behaviour of electromagnetic phenomena. He even calculated the speed of this propagation, which he discovered to be the speed of light. The discovery of the finite velocity of light had been proved by Ole Rømer in 1676 but it was Maxwell who understood its significance and unified it with the electromagnetic spectrum. He recognised that electricity, magnetism and light were all manifestations of the same phenomenon: the electromagnetic field. The fact that light did have such a velocity always and everywhere was to become one of the primary underpinnings of physics in the 20th century. This is why Einstein said in 1930 that "Maxwell was the greatest unifying influence in science since Newton". So the influence of Maxwell and Faraday pointed to a deeper realm and a range of phenomena, which was simply not acknowledged by the Newtonian system. Although it was Einstein who would finally overthrow the Newtonian view of our world, this process had begun long before him. This snapshot would be incomplete without the mention of the Dutch physicist Hendrik Antoon Lorentz (1853-1928). He established equations of motion for charged particles. When combined with Maxwellian equations these provided rules for both particle and field behaviour. More details of an underlying 'order' were being exposed of which we had no previous knowledge. So the sense of certainty that the finishing line of understanding was in view was rapidly having to be reconsidered. The conceptual shock of these events would go on to reverberate for the next hundred years. Some could legitimately argue they are still reverberating now.

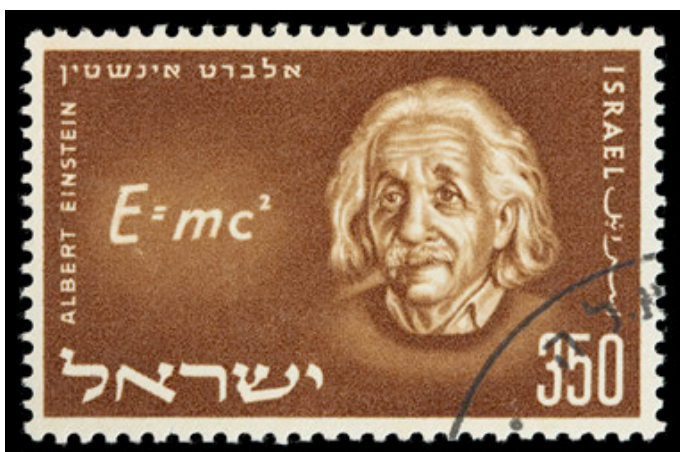


This period of history would be incomplete without some reference to Albert Einstein (1879-1955). In 1905 Albert Einstein published four papers. All four were revolutionary but the third – 'On the Electrodynamics of Moving Bodies' contained the special theory of relativity. Ten years later Einstein produced his general theory and the scientific landscape was once again transformed beyond measure. Einstein abandoned the Newtonian concepts of absolute time and space as being separate phenomena and unified them. His theory described space and time as different aspects of the same reality,

forming a continuum that curved and enveloped itself. Gravity was a distortion of this continuum caused by the presence of mass. It is this marriage of mass and energy with the magical constant of

light that produced his formula $E=MC^2$ and would redefine the boundaries of our understanding. Relativity was to change our understanding both of the very small and the very large.

These discoveries were again illuminating that science was not the 'road to truth' or the 'panacea for all ills'. Niels Bohr (1885-1962), one of the greatest architects of quantum theory said: "it is wrong to think that the task of physics is to find out how nature is. Physics concerns what we can say about nature". The objective eye could see a humbling of science in the face of these discoveries and yet when we look at the practical applications of science, it is obvious that no such humbling has taken place.



It's interesting to note that, despite the revolution that ensued, Einstein himself was a classicist almost to the point of obsession and so his view was that he had done nothing more than add to the very well laid foundations of science. He had built on Newton's work, not overthrown it. He believed the world behaved according to the classical notions of causality and consistency. Every effect had a cause that could potentially be ascertained and the same physical laws applied throughout the universe. A lot of this was not new i.e. the

belief that the world was accessible to human reason. He did however bring a perspective never seen before and that, combined with his humanistic passion and the strangeness of his insights, led to him being so emblematic: for many, a modern day genius.

The story from here has many more twists and turns but our point we believe has been made... science is not infallible and we must be suspicious of anything that suggests otherwise. Valuable? Useful? Life-changing? Almost certainly yes but it has also mislead us (we're not suggesting intentionally) from the truth about ourselves, as far as we are able to know that. For those who want to take a closer look at Einstein's influence and those who were pivotal at the time, references abound as much has been written. For further exploration, others to consider include: Arthur Eddington, Max Planck, Peter Atkins, Werner Heisenberg, Lewis Fry Richardson, to name a few.

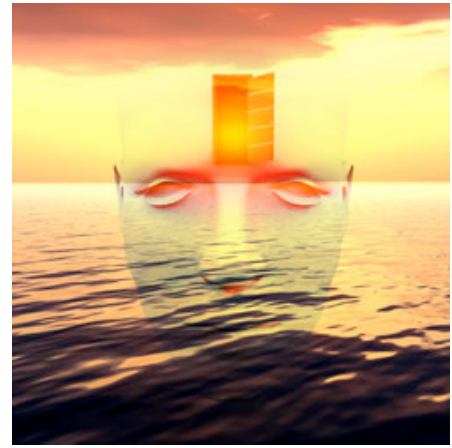
The Birth of Psychoanalysis

Although there have been many spectacular failures along the way, science was forgiven most of these because it delivered in so many other ways. By the end of the 19th century (post Darwin) as we've said, there was an arrogance which led to the belief that most of the substantial truths were now known, and that only a refinement of the current revelations was needed. As seemingly all frontiers had been crossed and there was little way to go, attention turned to the mind, the generator of all this reason and discovery.

And so psychoanalysis was born. Its creator Sigmund Freud (1856-1939) saw psychoanalysis as the continuation of scientific endeavour. In fact he would become irate if this discipline was labelled as anything but scientific. When Havelock Ellis described him as an artist and not a scientist, Freud was furious and described this attitude as 'the most refined amiable form of resistance, calling me a great artist in order to injure the validity of our scientific claims'. Freud saw himself quite clearly as the inheritor of the scientific vision and impulse of Newton and Darwin. Freud famously wrote, 'Man's observation of the great astronomical regions not only furnished him with a model for introducing order into his life, but gave him the first point of departure for doing so'. He already thought that it was possible to understand the final frontier (the mind) through the lens of what had

been unearthed about the physical universe. So he began his scientific search for causality and origins into the drives of the individual.

His most recognisable contribution is the elaborate bridge he built between the adult and the 'drama' of childhood. He started by studying pathological conditions and moved on to what he saw as the universal drama of the self as a series of conflicts through which we are obliged to pass to attain any degree of stable maturity. The human self in Freud's hands developed a stratosphere all of its own which he posited was: id, ego and superego. The conscious mind became a very thin layer resting upon the raging storms of the sub-conscious mind, which itself could be accessed through dreams and analysis. The debate around the value of Freud's contribution continues to rage but some of his observations and reasoning have no doubt been useful to our understanding. What is equally true is that he also describes human existence as being a triple misfortune. Just as Darwin's assessment of man's lot was somewhat diminishing of our value, fatalistic Freud saw us not only as feeble in the face of nature's superior power, but our feebleness extended to our own bodies too. In addition, he saw us as living in a state of 'perpetual compromise' as we had to adjust our natural instincts and urges due to the relationships we have within our families, and with the state and society.



The paradox of Freud's contribution is that on the one hand he claims his philosophy and ideology have a scientific basis and yet the conclusions he draws fall outside the typical boundaries of scientific validation. For example : "Freud's narrative of the self and his methods conclude that if one is to achieve happiness then the route via which it might be achieved is unique for each person. There is no golden rule and so we each have to work out how we can be saved if indeed we can"...Hardly encouraging or hopeful! And if we accept such a hypothesis the question remains: how were such conclusions 'scientifically' arrived at? Yet despite the lack of optimism we can draw from some of Freud's conclusions, psychoanalysis and its various offsprings have unquestionably offered a valuable paradigm for examining the human condition from the inside and not purely from the outside. So while, whether Freud's work truly qualifies as science is debatable, the fact remains he saw his work as the climax of a scientific tradition of sceptical enquiry which had begun 250 years earlier with Descartes. He felt his work went on to confront and explore the true nature of the self and develop further the epistemology of the great sceptic Descartes.

The Finishing Line?

The story we have tried to tell is essentially about the erosion and the demise of the self in the face of science's rise to supremacy. Along the way we've heard voices like Descartes, Kant and Hume fighting for balance as the self comes under repeated assaults by science's growing belief that it is the new bastion of truth. Anything that hasn't been able to stand up to its scrutiny (observation and reason) has been cast aside. Faith and religion began to show cracks at the point of Galileo's defining contribution, which is why at the time Galileo fell foul of the fear that his discovery would threaten all existing beliefs, which has proven to be the case. In the face of the emerging cracks, faith and religion tried desperately to maintain their dominion. But despite the best efforts of the Church and the fundamentalists, science continued to increase its market share to such an extent that both in the 20th century and now in the 21st century it reigns supreme, dominating our world-view.

However, despite science's rise to the pinnacle of human understanding, let's not forget that nearly all of science's theories have had their seeming 'invincibility' exposed as flawed, incomplete or inexact. The mechanical insights of Newtonian physics have cracked and are heavily haemorrhaging under the gaze of quantum physics. Quantum physics has taken us deeper into the



realm of the invisible, beyond the atom, and is slowly changing our understanding of the self and our environment. One cannot deny that science's gifts to us are many, however, its threats to our self-preservation are ever-mounting: the atom bomb and the greenhouse effect spring to mind as examples of the destructive expression of science. In our pursuit of understanding and truth, have we gone too far in the wrong direction? Are we now so obsessed with 'knowing', that 'meaning and purpose' have been lost?

A Softer Science?

As the drive of 'hard science' continues, the green shoots of a 'softer science' that is less pessimistic and less certain in its view are definitely emerging. This softer science is building bridges rather than behaving like a thug. It is more inward looking and soul-searching as it recognises science doesn't have a monopoly on the truth any more than the organised and orthodox religions claimed to have had (and mainly still do). They too were valuable and useful instruments of understanding, but in many ways they fell into a similar pit of arrogance and certainty and came to fear the competition of Scientia Nuova. Isn't it a shame that science and religion were unable to form an alliance? We believe this would have created a better outcome for us all because if the best of science and religion could have drunk from the same cup then just maybe the threat of the extinction that hangs over the world right now might not exist. Maybe science and spirituality would have created a world of plenty where hundreds of millions of people wouldn't be starving, especially when there is clearly enough to go around! Maybe if our principles and values were different we'd be making things 'right' here on earth first, rather than spending billions trying to reach new frontiers in space. Isn't there something back to front about pushing our understanding forward whilst dismantling the fabric of our souls? Where's the conscience in a world that steps over suffering, famine and poverty to reach a prize? What is the prize anyway? Haven't we reached the point where we are now simply striving because we can, not because it's right or has purpose?We think the evidence of the last 400 years speaks for itself. We hope this document will encourage all who've taken the time to read it to search their hearts, consult their minds and question the way the world is going. And more importantly ask the question, what can you, I, we, do about it? Like Ghandi said: "Be the change you want to see in the world".



Thankfully, as we said, a softer science is emerging. It's operating under new names: neurotheology, epigenetics, psychoneuroimmunology, various forms of mind-body medicine. Some schools of psychotherapy that are also bridging the divide by integrating mind, body, spirit and environment are also emerging. These green shoots of hope are appearing because despite its domination over the last four hundred years, science has proved to be an inadequate instrument in helping us to understand meaning and purpose. It continues to churn out answers to

various questions but has brought us no closer to knowing who we are or to understanding the very essence of our existence. Science's obvious effectiveness means the developed world and now even some parts of the less developed world are bowing at its altar. It is for many the God of our time,

the new religion. It, like many of the religions that once dominated our world view, has not been interested in co-existence.

So how will these green shoots fare in such a hostile climate?.....Time will tell. What is for sure is we need a new way of looking at ourselves and the world.

It would not have been possible to include here all the characters relevant to this aspect of history. We know there have been some important and significant omissions, such as Rousseau, Thomas Hobbes, Tom Paine, Voltaire, James Watt, William Blake, Ernest Rutherford, JJ Thompson, Huygens, Hooke, Hertz, Marconi, Graham Bell, just to name a few. For those who want to research the paper trail more precisely there's plenty of opportunity to do that elsewhere. Our primary objective was not to give a history lesson but to highlight some of the ignorance that lies beneath the way we live, and which shapes so many of our decisions and choices. We also wanted to illuminate what we believe has been the casualty of the ascent of science, namely the spirit. For us it seems that science, having brought us to this point, is now busily engaged in its own salvation. Having taken its knowledge to new and giddy heights, it has on the one hand, created a more advanced world, and yet on the other, made things appear more fragile than ever. We seem to live in a world that's more confident about its own knowledge and wisdom and yet is more ignorant about its essence, its meaning and purpose. Isn't it time we faced this paradox?

With the fall of antiquity and with that the demise of a large chunk of spirituality, science has given rise to another questionable force, which is the power of economics. Throughout history trading in all commodities, sadly even humans, has been a core characteristic of our way of life but the modern world, with even less values and principles at its centre has meant that economics has become a more threatening force. Our diminishing concern for one another has created a more 'me me' culture and that has led to a change in the nature of our trading and the worshipping of another God: economics and material wealth. Now more than ever we seem to have come to define ourselves by what we possess, our acquisitions, and we equally define others in this way too. Have our material ambitions brought us closer to the truth...? Have our acquisitions really made us happier and more content? Look around you – the answers are staring us in the face.

Conclusion

The German philosopher Nietzsche said that life can only really be understood looking backwards but it must be lived going forwards (paraphrased). We hope you will have a better understanding of the present having peered through the porthole of the past. The purpose of this synopsis is not to change minds. Its purpose is to encourage you to use your own mind. We are suggesting that if you are sitting in the seat of complacency, possibly accepting a reality you have not chosen, then it's worth getting out of that seat and questioning the 'wisdom' of our age. Question your assumptions, perceptions and current understanding. Is what you believe built on a firm foundation? We want you to doubt even what you've read here, if it doesn't sit comfortably with your experience. The facts woven together in this summary will not meet with everyone's approval and that's fine. We do not seek a following.

On the contrary we want you to stop simply following, walking in the 'darkness of compliance'. At the very least let this article be a catalyst for you to go and seek, and find, your own answers. Our hope is that you will go on your own quest, your own personal enquiry and not stop until you are satisfied with your answers. Go and find your own truth, not one that has simply been served up to you, either by science or religion. We believe that your ultimate arbiter is your experience. Learn to trust that, and we believe you



will taste the ultimate fruit....peace of mind. It is from this place of peace that all other virtues, insights and powers flow. We stand completely by the contents of this document even though we know that in some parts it may challenge various perceptions, or even offend, although we sincerely hope not. We have no divisive intent as we know the future of our species depends on unity, cooperation and love.

“The cure of a part should not be attempted without the treatment of a whole.
No attempt should aim to cure the body without the soul. If the head and body
are to be healed, then you must begin by curing the mind – that is the first thing. Let
no one persuade you to cure the head (the body) until they have first given you their soul to be
cured,
for this is the great error of our day in the treatment of the human body –
that the physicians first separate the soul from the body.”

Plato (428 BC – 347 BC)

Plato said these words some 400 years before Christ. And yet it seems to us that the same mistake he refers to continues to be made today! Have we, in spite of our advances, really learnt the importance of the ‘whole’? Or do we continue to pursue the myth that understanding and healing can be achieved only through the ‘part’? Can we truly understand anything by looking at only part of it? In fact, how can we ‘fix’ something by placing our focus and efforts on any one area? Surely that means we’re bound to miss something?... Our belief is that we are ‘missing something’ as we continue to overlook the intrinsic value of the self. The countless external journeys that science has taken us on mean that we have lost touch with our inner essence. It’s time to tame our egos and reclaim our relationship with the spirit. Science is invaluable, of that there is no doubt, but it is only ‘part’ of the story so let us not make it our God..... The journey of the spirit is a different journey that science may be able to help us with but it almost certainly does not have all the answers. Therefore we believe you need to open your mind to other avenues of discovery. This website offers you some of those avenues. We’re sure that if you listen to your heart you’ll find those paths that are right for you. We wish you a safe passage on your voyage of self-discovery.

FURTHER READING?

‘Science...the New God?’ is deliberately written in a non-academic style. It is not a typical piece of research as defined by modern-day parameters. It is an extensive commentary on how we, at Reach, believe science has been escorted by the ego of humankind to a precarious place in history. From our perspective, this is largely the result of looking ‘out’ into the world for our answers, having neglected to look ‘into’ ourselves. The imbalances that this has caused have been many and we have been and are still paying the price for that: socially, politically, economically, psychologically and spiritually. The purpose of this document is hopefully to ‘awaken’ the individual from the slumber of ignorance that the world appears to be caught up in. We believe it goes far enough to illuminate our point. However, there will be those who, understandably, may want to look more closely at this subject and perhaps question/query our hypothesis and so the following material may be helpful to that end....

Summa Theologica. Thomas Aquinas

The Human Condition. Hannah Arendt

The World Within the World. John D Barrow

Theories of Everything : The Quest for Ultimate Explanation. John D Barrow

Causality and Chance in Modern Physics. David Bohm

Ecology in the Twentieth Century: a History. Anna Bramwell

The Wisdom of Science : Its Relevance to Culture and Religion. Hanbury Brown

The Tao of Physics. Fritjof Capra

The Birth of a New Physics. I. Bernard Cohen

The Origin of Species. Charles Darwin

The Blind Watchmaker. Richard Dawkins

The Selfish Gene. Richard Dawkins

A Brief History of Time : From the Big Bang to Black Holes. Stephen W Hawkin

The Life and Work of Sigmund Freud. Ernest Jones

Where is Science Going? Max Planck

The Impact of Science on Society. Bertrand Russell

Descartes : The Project of Pure Inquiry. Bernard Williams

The Quantum Self. Danah Zohar

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