

A Mysterious Reduction

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I marvel at science, and I'm fascinated with technology. I read scientific digests weekly, and I'm on first name terms with all manner of tools, gadgets, computers, devices and machines. Although I don't often catch a glimpse of it, I appreciate the imperious beauty of mathematics and wonder at the diverse ways we find to apply it. I do regret that so much ingenuity down the years has been co-opted for violent purposes, but science is always demanding of support, and where there's a war machine to be made, the powerful will always invest. This problem is as old as war itself; science will never be free of this burden until we give peace a chance, a phrase with a rather familiar ring to it.

Not everyone feels the way I do. For some, the discoveries of science appear to be pulled directly from Pandora's Box. While it is true that the applications of scientific discovery have a very mixed record of benefit to mankind, this is hardly the fault of science. Modern science – from the renaissance onward – and the mathematics that underpins it, is pretty rigorous, but its utility is always open to interpretation. The doors it unlocks are many and various. It is man, however, who decides which doors to open, which remain closed, and mankind must bear the responsibility for its choices. Science in theory is neither good nor evil, but strictly neutral. You wouldn't think this from the sociological evidence; religion and science have been at odds from the very beginning. Both have a case to make, and both are founded on problematic positions. Who wants to go first?

There is a fundamental aspect of religion or, more properly, belief, that science by its nature must abhor, and that is faith. The scientific method – the gold standard of reductionism – provides the nearest thing to proof science will admit to, without going quantum on us. (In the quantum world, all bets are off; I think God, should he or she exist, is punishing the scientists for their impudence by teasing them mightily with a counter-intuitive reality in which every rule of science is broken, but still works. Quantum science reduces its practitioners to something approximating religious superstition; even Einstein was taken aback with quantum entanglement – where particles can interact simultaneously while distant from each other – and referred to it as “spooky action at a distance”).

In the world of science, the proof is everything, and the measure of its validity is the



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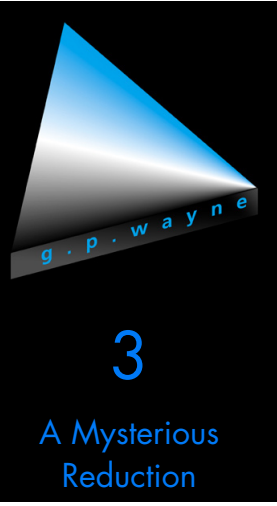
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integrity of the method by which it was derived. In all these processes, in all science, faith is diligently excommunicated on a daily basis, like offering up an atheist's prayer each morning. Nothing can be believed, only proved. In place of belief, science has the hypothesis, which in their lexicon is the untested theory. A scientist may say he or she believes something might be possible, but that's just a turn of phrase. What they mean is that they have a theory, but haven't tested it yet. Beliefs in the world of science are ephemeral, transient and rather second-class.

This would be very well if it wasn't for a certain dogma that pervades scientific thinking, clashing head-on with religion with all the predictability of a disaster movie. The proper distaste science has for faith in its own doings has evolved into a complete dismissal of all faith. Science even goes so far as to suggest that anything its methods cannot validate also cannot exist, which rules out God, of course. Scientists are often scathing about those who oppose their views with only beliefs to guide them, calling them ignorant, superstitious, backward, foolish, naive, anti-science and the rest. Their vitriol reveals an uncomfortable truth, for scientists in their defensive passions demonstrate a powerful belief at work; by their own lights, their faith in the creed of scientific rationalism must therefore also be an irrational act, since at no time can science be proved by scientific method to be omniscient, except in retrospect; that is, when we know everything there is to know. If arrival at this apex of knowledge sounds unlikely – for it is certainly a journey we have yet to complete – then what we are seeing is yet another clash of religions, a war between disparate beliefs that can never be resolved. It is not the noble struggle supporting the ascendancy of reason over ignorance, as science would have us believe.

For lay people, science is a demanding faith to follow. Science is very precise; hard-edged and steely-eyed, like a schoolteacher you are always scared of because he sees, with an insight akin to X-ray vision, every flattery and deception, mistake and misjudgement, even those transgressions committed miles away and in the dark. Kind of inhuman, you might say, which is also the feeling invoked by the cold glass maze of experiments, the sterile labs, shiny microscopes and angular machines, the lab rats and smoking beagles, the chemical plants and nuclear reactors, satellites and statistics, computer simulations and gene maps. Hard science and a hard world made from it.

People are not like that. We are soft, rounded, indeterminable, messy, vague, imprecise, malleable and immutable in equal, and contradictory, measure. Yet people are science, for it would surely not exist without us. Science is the act of observation, the universe its object; without the observer, what measure can be made of the observed? None the less, science would like to do away with the behavioural paradoxes that, in my view, make humans so interesting. They try, but always fail; you cannot reduce the mysteries of life, the universe and everything to an equation. How long is a piece of string-theory?

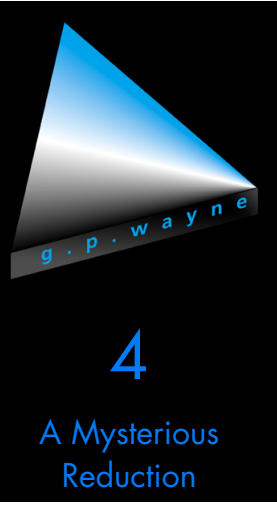


Here then is the incongruity which plagues the scientific mind. At the heart of belief lies mystery; that which our consciousness requires faith to address because all other methods are inadequate. Science would, if it could, eliminate all mystery from our existence, because to do so would not only be the attainment of science's ultimate goal – the theory of everything – but also invalidate belief and faith as tools (which science despises), in favour of hypotheses and rigorous proofs (which science adores). A mystery, tacitly left unsolved, is not seen as an asset to the human condition, but a weakness of mind, a vacuity of intellect or a failure of method. The unknown has no intrinsic value to science; it is merely that for which the appropriate mathematics has not yet been formulated. It is therefore all the more interesting to me that the place where science gets in trouble is the very same junction of the known and unknown that humans find so provocative, and from which we are rewarded so generously – and mysteriously – from time to time.

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I speak of the small epiphanies, the wonder of it all. Our ability to be deeply moved is a very enigmatic feature of perception, itself the greatest mystery of all. Who knows whether we have a soul, if God exists, if there is a plan to all this, or just utter chaos and a stroke or two of luck? It seems to me that the meaningful part of our consciousness, the aspect we can freely rejoice in and enjoy, is not just that we have perceptions, but that it is possible to be aware of them. The part of us that is moved, touched, sometimes deeply affected, is so strange we need a concept like the soul just to discuss it. The soul is therefore correspondingly strange because we can't see it, cannot find consensual proof of its existence, and yet most people insist they have one. We all express our notions of soul with startling, if allusive, consistency.

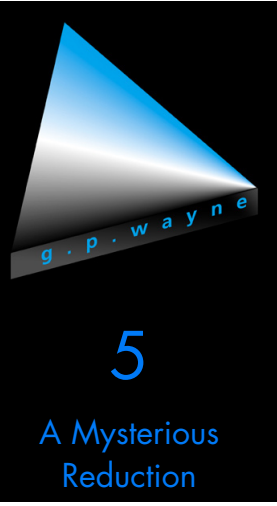
On the other hand, try examining the soul in a laboratory and you'll soon require a large supply of aspirin, coupled with the patience of a deity. Science is enraged by our concepts of soul, of spiritual or faith-based experience, because while they are not so foolish as to insist these concepts don't actually exist, scientists harbour the powerful conviction that they are not what they seem, that such experiences are a mirage, a faulty interpretation of the facts. It is a self-defeating argument because there can never be a consensus on personal experience, not least for the blindingly obvious reasons that only the individual ever has them, and they are never alike. Even where a group of people are said to experience together a life-changing event (a mass hallucination, as science would dismiss it), their descriptions of what happened and what it all means are wholly personal, utterly subjective. This uniqueness seems to me a great virtue, since our individuality is constantly under threat elsewhere. There



is little I can truly claim to be entirely my own, but my spiritual life and the personal reality in which I exist are the great exceptions. They belong to no-one else but me, and to their existence only I can attest, a position that also puts my experiences outside the reach of science. It is a weakness of scientific theory's ambition to be all-encompassing, that only consistent phenomena can be subject to its methods. What good would it be to know the speed of light or have a map of the human genome, if on subsequent days they were completely different; that the same tests that prove a theory today would fail tomorrow? No mystery will yield proofs; if it tested consistently it wouldn't be a mystery, would it?

Science would also deny me the full benefit of my experiences as a person. I have had things happen in my life that are beyond understanding, that are so strange they cannot be spoken of without sounding idiotic, and yet have affected me so powerfully the course of my life has been redirected immediately as a result; and I am certainly not alone in this. Using the terms that science employs, every explanation for the smaller and greater epiphanies of my life would also demean my experience of them. What is most important to me is the profound, the transcendental. Science seeks to reduce these, the greatest moments of my life, to anomalies of my febrile imagination, to coincidence, mass or solo hallucination, rationalisation, superstition, suggestion, psychological problems and, if I'm truculent enough, utter madness. They explain my perceptions as the firing of random neurons, connections between the wrong ganglia, eccentric electric phenomena and misread chemical messages. Reductionist science tries to reduce me and my life to sets of numbers, and anything that can't be enumerated must therefore be discarded. They try to rebuild me out of the smallest components they can reduce me to, but every time they try, the construct is rather more capable, more complex and more unpredictable than the mere assemblage of components would suggest. Determinism applied to humans is like assembling on a chassis one engine, four wheels, a drive shaft, steering wheel and a gearbox, then being very surprised indeed when the thing flies. (It is at this point scientists usually realise why installing brakes might have been a good idea.)

Science tries to reduce everything to understandable quanta, for it believes that in doing so it can also understand the relationships between components. Applied to my spiritual life, this method can only be disrespectful of my experiences, because I have no proof that these experiences necessarily embody the interpretation I give them, or that I even had such experiences at all. Science claims their own explanations can be proven, and in their self-righteous fervour they dismiss the quanta of my spiritual life because it can't. Lucky for me, I don't give a damn for their explanations, mainly because I don't need an analysis to know what has happened to me, or to appreciate my life. I already know when I'm happy. I have faith, coupled with a belief in myself, and whatever little wisdom I possess, it is sufficient for me to realise that the



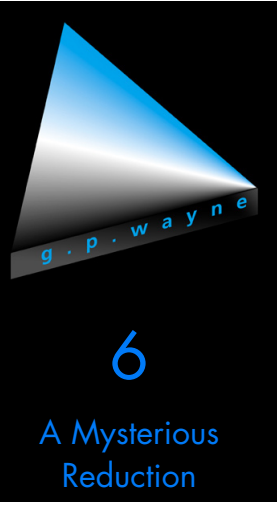
real merit of my life lies in the mysteries I experience, the fact that they cannot be explained, and that they are utterly unique to me. I grant you the freedom to live in a reality different from mine, and accept that both are equally valid. Science insists that there can only be one correct interpretation of the available data (even if they don't have it yet) and they attempt to make reality as hard and fast as the machines they employ to investigate it. I think this goes against the grain of human experience, because without mystery I believe we would just become very, very bored.

Science is also given to much hubris; insolent pride coming, as usual, before a fall. Any number of falls, in fact. Science is, at times, as blind to the cause and effect relationships between itself and an equivocal society, as the US government is uncomprehending of the bad will generated by its foreign, military and trade policies. History records the many promises broken by science and scientists, the money ploughed into improbable research and impetuous technologies. We end up with nuclear power stations but also hydrogen bombs. Penicillin and VX nerve gas, telescopes and spy satellites, the big bang and C4 plastic explosives, weed-killers and poisoned wildlife, central heating and global warming. For every development that science has informed, there are any number of failures, and some terrible mistakes, like Thalidomide or Eugenics. Every bad idea, every fearsome weapon, every man-made plague and pestilence; each had its devoted propagandists. When, for example, science tinkers with the very stuff of life itself – DNA – we have very good historical grounds for scepticism, so it doesn't help when our concerns are contemptuously dismissed, our fears derided as groundless. It is no longer credible to say "trust me, I'm a scientist". We are not awe-struck children turning lights on and off, on and off, incredulous and bemused by the wonder of electricity, and we well remember what happens when we trust science blindly.

All too often, science seems to act with indecent haste; I don't want to stop scientific progress – if that's what it is – but I do want science to go slowly enough to avoid serious accidents, get its facts straight, and ensure that the gain of scientific knowledge is not at the expense of a civilisation that ends up paying for it, in more ways than one. It is a problem that touches us all: science is virulent. It is certainly the case that scientific knowledge travels faster than a speeding bullet. The virtuous interpretations of its findings are quickly transmitted round the entire globe. Then again, so are its depravities.

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If it were possible, I'd feel a bit sorry for religions. They've been up against it from the very start because they cannot indulge in the smug complacency science derives from its so-called proofs. Before the middle-ages, this didn't matter; no-one had

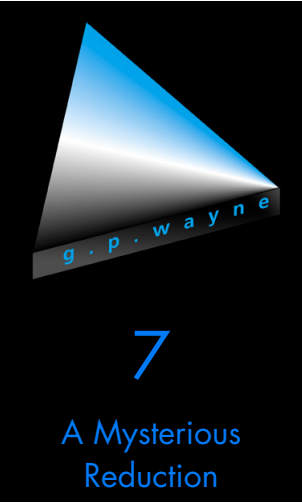


proof of anything much, so reality was up for grabs and the best, or most forcefully maintained, dogma could win the day. In recent history, religions have become disadvantaged because no theology can trot out measurements, a few calculations, some X-rays, an infra-red satellite picture and several double-blind field tests for peer review, publication in a journal, and anticipate universal piety thereafter. A religion cannot publish its results and wait for confirmatory tests by other theology labs, because God doesn't do requests or cover versions. Theological reasoning can only be applied up to a point, and beyond that we are asked to believe – and derive strength in our beliefs – not from the data, but from our faith.

Science is legitimised by the consistency of its predicted results. We would not have CD players if science hadn't discovered coherent light (lasers), nor could we have lasers without being able to ascertain the nature of light and the frequencies of it; without knowledge of photons, wave and particle duality; without Newton's laws of thermodynamics or research into optics, prisms and computing. The theology of science is the tenet of electrical potential; the fact of science is the electricity that connects you to the Internet and transports your mouse clicks over thousands of miles near instantaneously. The theology of religion is God, but the fact of religion is only available to dead people, if at all. Religion becomes scientific only when its proofs come from beyond the grave. We keep sending couriers to collect the results, but they never make it back.

I think religion has a deeper problem than its reliance on faith, and here science has it at a real and genuine disadvantage. Science evolves, where religion does not. Science accepts and, for the most part, welcomes change. Newly proven theories on one subject may inform so many other branches of science that it is impossible to ignore the ramifications. Indeed, the quality of science depends on keeping up with new discoveries, for without knowledge of them, science will merely repeat its errors, and no researcher wants to investigate in ignorance a known dead end. Conversely, religions abhor change, and resist any challenge to doctrine; not for nothing is a tablet of stone difficult to revise. When opinions differ sharply over theological issues, religions fracture into various schisms, often waging war on each other in more or less literal terms. Science too has its doubters, but only in regard to the specific interpretation of data. Where a schism occurs, it lasts only as long as it takes to do the experiments and derive the proofs; the flat-earthers are few and far between these days. To religion, a schism is an affront and a permanent setback; to science it embodies the potential for advancement. Asking questions and challenging the established order is the lifeblood of science, where religion is rather less tolerant of its heretics.

The social architectures of religion and science reflect this difference. Science is designed to be flexible, fluid, communicative, filled with discovery and novelty. Its



followers look forever forward towards the next experiment, and value any change that may come with the result. Science evolves like the universe it studies; it knows the limits of its knowledge today and seeks to improve on it tomorrow. Religion, on the other hand, is inflexible, conservative, forever guarding its doctrines from change and its icons from revision, rarely seeking any new ideas in favour of repeatedly debating the old ones. Religion recognises no limits to what it already encompasses, which is a convenient sophistry because such a position cannot be improved on. Religion harbours one of mankind's most foolish ambitions; to keep everything not only the way it is, but the way it has always been, a task of such singular impossibility you would think we'd have realised by now. But faith is, apparently, static. God exists outside time and is therefore unchanging, even though everything God has created is subject to constant update, trapped in an infinite cycle of destruction and renewal. This strange paradox between the perpetuity of deities and the temporal nature of their creations seems to me, in this light, rather artificial, perhaps created out of a need for reassurance. The universe may be chaotic and unpredictable, in the face of which, religion suggests we poor humans take comfort from an unchanging vision of God. If He or She exists, I wonder if God likes being reduced to the status of an eternal security blanket?

4

Both science and religion are based on beliefs; faith in doctrine or doctors, theologies or theodolites. Largely engaged in guerrilla skirmishes with each other, these local conflicts sometimes escalate into the kind of open warfare waged in previous centuries, where a theory based on the movement of planets could get you excommunicated; a minute observation might find you crouching over a chopping-block instead of a microscope. This conflict is merely the latest example of a much older struggle, in which organised religions sought to displace their pagan equivalents; belief systems seem always to attempt exclusivity, and become thoroughly intolerant as a result. In this, science, with unwitting irony, accurately emulates its more unreasoning historical forebears. Yet neither science nor theology pays the real price for their bigotry; it is always the community of mankind that bears the brunt.

It is clear that science in the industrial world is winning the war, displacing and discrediting religion in favour of dazzling scientific and technological achievements. It doesn't really need to try so hard; science does not have to prove its theories to us whilst strangling our beliefs in anything else. We just play the CD, drive the car, light up our darkness and wonder at Hubble's pictures from the beginning of time itself. We believe, truly we do; what choice do we have? For choice is indeed the issue: if we



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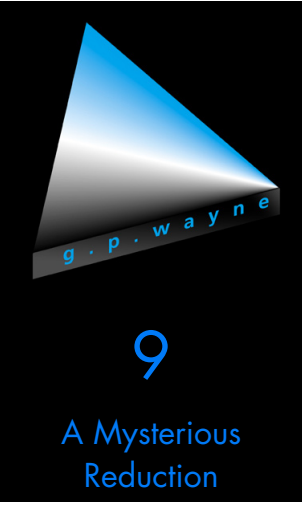
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do not choose to believe exclusively in the hard facts of science, apparently there are now no other options except superstition. As usual, creationism comes immediately to mind.

Religion shines a light on the interior of man, illumination powered by faith rather than a solar cell. Unfortunately, in its role as faith's advocate, religion doesn't do itself many favours. In the west, the notion of dedicated religious practice is rapidly turning into a stereotype of the extremist; if it isn't fundamental Christians burning books then its mad Muslims with explosives tied to their bodies. Neither group are representative, but they do get the headlines and the TV coverage, while ordinary believers of every faith – or none at all – are going about their daily business doing harm to no-one. Fundamentalists who resist scientific theory on theological grounds are quite foolish, and must feel very threatened given the extremes they are prepared to go to in their denunciation. Science is a hierarchy of ideas, founded on the basics of physics, chemistry, biology, mathematics and so forth. You can't pull one card out – the fossil record, for example – without bringing down the whole house, for if science can get it wrong on so basic a level, then all science must be equally suspect. You can't pick and choose which bits work, and which don't, because the whole edifice of science is built on rational, proven foundations, block by block, like the periodic table for example. Remove any one block and the whole thing must fall.

Those who take their ancient texts at face value discredit religion as a whole. The idea that the fossil record is being interpreted wrongly, because the Earth is in reality only 6000 years old; that notion that the universe was literally created in seven days instead of billions of years; that dinosaur fossils are fakes because they aren't mentioned in the bible; these are the doctrines of scared and not very bright children. In what way is their piety increased by dismissing the value of reasoning, an ability that was also a gift from their creator? We were not born to faith alone, but to logic and proofs of the senses. To deny science is to draw conclusions based on a wilful, self-serving distortion of fact, a weakness science does not display to any great measure. Faith does not need to be logical; science demands it.

While our respect for religion has diminished there are, as always, those that would use faith to further their political aims, even in this day and age. Leaders who inform their policies with faith tread a very dangerous path, for while science can predict with tolerable accuracy the outcome of its actions, faith never can. We need both the predictable and the unpredictable in our lives; one gives us continuity in the face of chaos, the other allows us to meditate on the mysteries of order and disorder, and our all too temporary experience of them. When governments confuse rationality with zealotry, science is persecuted as enthusiastically and gleefully as religion; one reason



the Nazis didn't develop atomic weapons quickly enough to deploy them in world war two was that, in their terrible bigotry, they threw out or murdered their best Jewish scientists, and burned or banned their works. Policies need more than faith to place them in the proper social context.

So the war between these two absolutist institutions rages on, but in the end I believe it is incumbent on science to make the first move towards a lasting peace; this is not a war that benefits anyone by being won. We need science and belief equally, because between them, they reflect the whole range of the human experience. Religion has already retreated and declared an uneasy truce, for it can no longer maintain its absolutist stance in the face of scientific evidence and achievements. Science, on the other hand, has usurped the claim to absolutism and seeks not reconciliation with the old enemy, but to destroy it completely, perhaps seeking revenge for the iniquities of the past, now that the balance of power has shifted in its favour. Even as religion seeks to reconcile the profane with the sacred, science should respond by abandoning its claims to primacy, by allowing that there will always be an unknown and that mystery is valuable, by admitting that science does have its limits, and by recognising that tolerance and respect are more worthy than bigotry and condescension. God is absolute, but so is Nature. Why can both sides not agree they might be talking about the same thing, and that the diversity of our interpretations is as much an aspect of the face of God as it is a demonstration of our secular intelligence? Without such an agreement, the only thing science and religion can be said to have in common is their unremitting intolerance, and that hardly seems a worthy recommendation for either.
