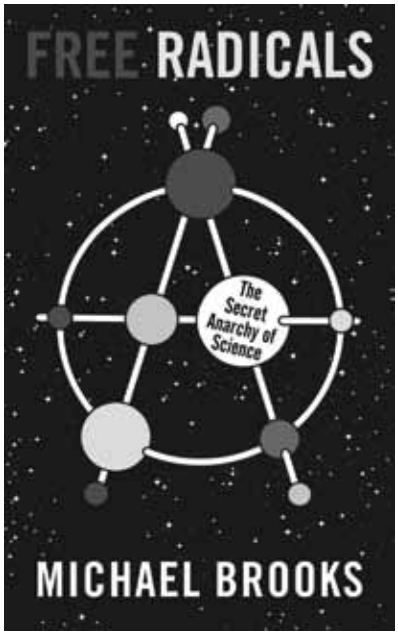
The ends justify the means—the secret of science's success

Free Radicals: The Secret Anarchy of Science
Michael Brooks
The Outlook Press, New York, 2011



Jerry Bergman

Darwinism defenders often claim that creation is not science, and therefore cannot be taught in the public schools, and articles by creationists are not appropriate for science magazines. Dr Brooks discusses in his book just what science is, what scientists do, and how it really functions in the real world. In short, he documents that science in practice is what scientists do, and this book is about what scientists do to achieve scientific breakthroughs.

The author, a scientist insider with a Ph.D. in quantum physics, exposes the less well-known side of scientific discovery, documenting the fact that scientists and the media have purposely obscured how science actually works. The scientific establishment present themselves as cool, logical, level-headed persons searching for the truth. However, as Brooks carefully details, many often will do almost anything—take drugs, follow mystical visions, lie, and even cheat—to make a breakthrough or stay on top of their field. In short, the ends justify the means. In Brooks' words:

> "… scientists take drugs, they follow crazy dreams, they experiment on themselves and on one another, and occasionally they die in the process. They fight—sometimes physically, but mostly in intellectual battles. They try to entrap one another, standing in their colleagues' way to block progress and maintain the lead. They break all the rules of polite society, trampling on the sacred, showing a total disregard for authority" (p. 6).

Furthermore, some scientists will even

> "… commit fraud or deceive or manipulate others … conjure up seemingly ridiculous ideas, then fight tooth and nail to show that the ideas are not only far from ridiculous, but exactly how things really are … . Science is peppered with successes that defy rational explanation and failures that seem even more illogical … . This is not the 'wacky' science, the crazy things that happen on the fringes of research. This is the mainstream. These anarchies are behind many of the Nobel Prizes of the last few decades … . It really does seem that, in science, anything goes. And this is no modern phenomenon. Science has always been this way" (p. 6).

He adds that one of the rare senior scientists to have dared to expose these facts was British biologist and Nobel laureate Peter Medawar. He wrote that it is not rare for scientists to

> "… 'actively misrepresent' themselves. The famed scientific routine of deductions based on experiments that were themselves based on logical hypotheses 'are simply the postures we choose to be seen … when the curtain goes up and the public sees us … . The illusion is shattered if we ask what goes on behind the scenes'" (quoted on p. 5).

He added that in the end

> "Science is civil war without the bloodshed. There are sieges, and there are bridges to be blown. There are people who must be removed: those who used to be heroes but are now complacent and ineffective must be forced aside for the good of the cause. But … some of this old guard still have arms and ammunition, and will fight to the very end. … many scientific anarchists know what it is to lose everything in the pursuit of discovery" (p. 193).

Furthermore, for half a century "scientists have been involved in a cover-up [about how science actually works] that is arguably one of the most successful [cover-ups] of modern times" (p. 2). Both the creation and perpetuation of "the myth of the rational, logical scientist who follows a clearly understood Scientific Method" has effected everything in science, including

> "… the way it is done, the way we teach it, the way we fund it, its presentation in the media, the way its quality control structures—in particular, peer review—work (or don't work), the expectation we have of science's impact on society, and the way the public engages with science's impact on society, and the way the public engages

with science (and scientists with the public) and regards scientists' pronouncements as authoritative. We have been engaging with a caricature of science, not the real thing. But science is so vital to our future that it must now be set free from its branding. It is time to reveal science as the anarchic, creative, radical endeavor it has always been" (p. 2).

He then spends over 300 pages documenting these claims. The book makes it sound like the author had an exclusive scoop, but most of his observations are well known to those who have a good background in the history of science and regularly read biographies of scientists. The problem is:

"Science is a fight to the intellectual death, but not between equal adversaries. It takes place in a gladiatorial arena where the challenger has to overcome not only the established champion, but also his or (more rarely) her supporters. And, whether in attack or defense, the fight is rarely clean" (p. 214).

He concludes that success in science is not at all like the public stereotype.

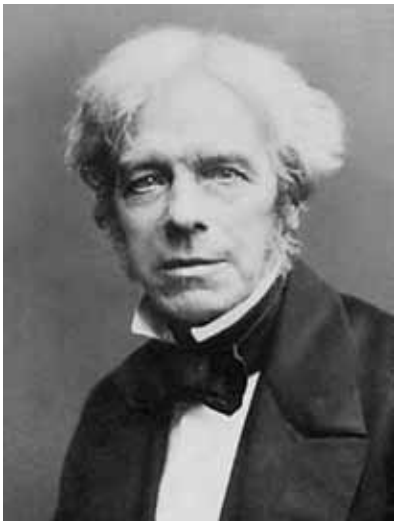


Figure 1. Michael Faraday believed the New Testament gave a clear mandate for science.

The Bible as a critical source of scientific inspiration

Brooks also documents the fact that the Bible and Christian teaching were both a critical source of insight in producing many major scientific breakthroughs. An example is Michael Faraday (figure 1), who believed that "the New Testament gave a clear mandate for science." For example Brooks wrote that Faraday noted St Paul's observation

"… that, 'since the creation of the world God's invisible qualities—his eternal power and divine nature—have been clearly seen, being understood from what has been made, so that men are without excuse' … . It was his calling, as he saw it, to study nature, which was 'written by the finger of God,' and make clear the eternal power and divine nature of the Creator. That, after all, was how the people could turn to Him and be saved. As Faraday put it, 'unraveling the mysteries of nature was to discover the manifestations of God.' Small wonder, then, that he seemed so unmoved by the technological applications of his discoveries: his calling was to expose the laws of nature, and thus the nature of God" (p. 34).

Faraday's major scientific research area was electricity, and "finding the link between magnetism and electricity would be the key to making progress" in science (p. 35). And Brooks writes that Faraday's creation worldview

"… would help him do just that. If God said He had made Himself known through nature, then nature's laws must be comprehensible. 'I believe that the invisible things of HIM from the creation of the world are clearly seen,' Faraday declared. All he needed to do was to find out where to look. Perhaps that makes it sound trivial. It was not. Science is not straightforward or obvious; it is not about simply collecting enough evidence to prove a point. It is about making connections" (p. 35).

Worldview is a critical factor in achieving insight because the research has "shown that you can hand scientists all the evidence they need to make a breakthrough, but there is no guarantee that the breakthrough will come" (p. 35). Furthermore, Faraday succeeded whereas Ampére did not because

"Ampére was convinced that electricity was the flow of some kind of fluid within wires … . It got him nowhere. Faraday, on the other hand, had a simpler angle of attack: the nature of God, which helped him to think outside of the box" (p. 36).

In another area, Faraday was able to think in very different directions to explain the mechanism for electricity, namely the movement of charged particles, and as a result, he

"… was almost entirely alone in the scientific world in considering the role of empty space … trained scientists … thought only in terms of the influence of something at one point on something else some distance away. But the Bible clearly stated that God filled all of space" (p. 36).

Faraday concluded from his creation worldview that he [Faraday] was

"… investigating a 'perfectly designed system' in which all events are tightly ordered by divine providence and held in a self-sustaining system with matter and force both conserved. Forces can be transformed into one another, but neither created nor destroyed by any human power. Added to this was Faraday's concept of symmetry … . For him, everything in nature was somehow correlated with something else … . All of this led Faraday to a particular view—a preconception—of what he would discover in his experiments. First he discovered the magnetic field

that inhabited 'empty' space around a magnet. His view of the integrity of all things led him to conceive this field as being composed of closed loops: for him, circular forms were more reflective of the Creator than were lines that stretched merely from one point to another" (p. 37).

Brooks added that the discovery of electromagnetic induction also came from the "spiritual part of Faraday's mind". This approach helped him to appreciate

"… the phenomenon whereby the movement of metal wire with a magnetic field generates electricity in the wire. This was revolutionary to the trained mathematical scientist, but it all made perfect sense to Faraday. The phenomena of electricity and magnetism were tied together in mutual embrace. If a moving electrical conductor produced a magnetic field, then a moving field would be expected to produce a current in a conductor" (pp. 37–38).

Brooks concludes that, thanks to Faraday's "faith-inspired discovery" we have electrical power delivered to our homes, schools and offices. Furthermore,

"… thanks to the symmetry of nature, Faraday showed that we can turn the arrangement on its head, allowing a current to flow within a magnetic field to create motion. Here we have the genesis of yet another staple of the modern world: the electric motor that powers everything from giant industrial plants to computer disk drives" (p. 38).

Moreover:

"Faraday was by no means the only scientist to be motivated by a religious faith. Nicholas Copernicus, who removed the Earth from the centre of the universe, referred to nature as 'God's Temple' and claimed that God can be known through the study of nature. It is ironic that the same attitude … would be heavily criticized if it were raised in scientific circles today" (p 38).

Another example of a creationism inspired scientist is William Harvey (figure 2), who was motivated by Copernicus's orbiting planets theory and ended up

"… adopting the same view as Faraday—that God would use a system of 'unity in diversity'—the surgeon William Harvey theorized that the human body had a circulatory system that mirrored the orbits of the planets. 'I began to think whether there might not be a Motion, As It Were, In A Circle,' he wrote in 1628, when he revealed the results of his investigations into the movement of blood around the body. His conclusion was that the heart 'is the beginning of life, the sun of the microcosm, even as the sun in his turn might well be designated the heart of the world'" (pp. 38–39).

Brooks added that, even though Christianity was a critical factor in scientific discovery in the past, unfortunately

"God is not popular in science these days. A survey of members of the US National Academy of Sciences revealed that 85 percent reject the notion of a 'personal God' … . The astronomer Neil de Grasse Tyson … turned the statistic on its head, lamenting that 15 percent of 'the most brilliant minds this nation has' accept the idea of a personal God. 'How come that number isn't zero?' he asks" (p. 39).

The hostility of some scientists is irrational. For example Oxford University chemist Peter Atkins wrote that "I don't think you can be a real scientist in the deepest sense of the word" and be religious:

"For Atkins, religious belief and a scientific worldview are mutually 'alien categories of knowledge'.

Figure 2. William Harvey, father of the field of modern physiology, according to Brooks was openly motivated by his Christian faith and the insight it gave him to do his research.

However, the evidence doesn't bear Atkins' statement out. Michael Faraday, for one, stands as proof that holding religious beliefs … can provide the key to scientific discovery" (p. 39).

Summary

The author concluded that he has documented "fraud is 'normal misbehavior'" in science and scientists obtain ideas through many ways, including

"… drugs or mysticism or hallucinations or religious faith. We have seen that polished powers of persuasion, a silver tongue, can do wonders for the acceptance of your idea. Sometimes, though, you just have to … face up to sheer, bloody-minded obstinacy with a fighting spirit. You don't give in to the belittling by your peers or even your superiors; you don't just give up on your 'hopeless' or 'misguided' idea. You find ways to beat the system" (p. 215).

He concluded that this is why success in modern

> "… science is not for the meek and mild. It is red in tooth and claw; its very ideas and breakthroughs are subject to the law of the survival of the fittest. Good scientists must strive to overthrow, undermine and destroy their colleagues' reputations. It's all neatly summed up in a quote attributed to the American playwright Gore Vidal. 'It is not enough to succeed,' he said. 'Others must fail'" (p. 215).

He concludes "having explored the lengths to which scientists will go in the pursuit of discovery, it has become apparent that 'anything goes' is a virtue—the secret of science's success" (p. 247). In short, science progress is often the result of "torment, dreams, visions, restlessness, lying, cheating, despair, brawling, bullying, desperation, and—in the end, when everything works out—a moment of euphoria that makes it all worthwhile" (p. 260). All science work is motivated by some goal. In the past religion was important, as illustrated by Faraday, today science itself has in some ways become a religion and has produced a new motivation.

My major concern is that Brooks provides little data on how common these attitudes are. Most of the scientists quoted are very well known, and have achieved enormously in science, but what about the scientists that spend years in achieving the details of some species of bacteria that fills in some holes in our knowledge of pathogens without resulting in a significant breakthrough in the treatment of disease or other noteworthy advancement in bacteriology that achieves notoriety?

References

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