

Imperial College London
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Is There a Difference between a *Good* Scientist
and a *Successful* Scientist?

Assignment in Ethics Module

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‘I have never seen Francis Crick in a modest mood,’ is the famous opening sentence of James Watson’s 1968 book *The Double Helix*. The book, a scientific bestseller, tells the story how Watson and Crick made their revolutionary discovery of the DNA structure. But the appeal of the book lays very much in the exposition of the characters of this science drama. The book was so frank that the involved people even threatened Watson with legal action for libel.

The book also coincided with the growing movement of sociology of science that revealed various aspects that have influence in the making of science, i.e. aspects beyond the scientific method and objectivity, like character. These insights prove relevant when we start looking for answers to the question: ‘Is there a difference between a *good* scientist and a *successful* scientist?’

The way I have chosen to explore the title question is to break it up to another two questions: ‘Do you have to be a good scientist (or person) to be a successful scientist?’ and ‘Does success make you a good scientist?’ These questions enable us to explore major ethics theories and discuss their relevance to science. We will look at how we could define the role of the scientist according to utilitarianism, deontology and virtue theory.

First, does success make you a good scientist? Science itself is often seen as a utilitarian enterprise and therefore it is not surprising that in modern science, the concept of success is usually tightly connected to utilitarian ideas. The original utilitarian principles of maximizing pleasure and minimizing pain, as defined by Jeremy Bentham and John Stuart Mill, are still considered a valid measure of research results.

We must only look as close as the 2008 Nobel Prizes for Medicine to find confirmation to that. Half of the prize was awarded to German cancer researcher Harald zur Hausen for his discovery of human papilloma viruses causing cervical cancer. The second half was shared by French researchers Françoise Barré-Sinoussi and Luc Montagnier for their discovery of human immunodeficiency virus (HIV).

The first discovery made it possible to develop a vaccine against cancer-causing viruses, thereby saving numerous lives, i.e. reducing pain. The same is true for the work of the French researchers although to a smaller extent – identifying the virus is only the first step in the long way of finding treatments.

This is not a rare example. The scientists who are mentioned in history books are usually the ones who are credited with some major discovery or invention that has significantly improved the lives of people. Utilitarianism has an intuitive appeal when discussing science.

But the general criticism towards utilitarianism is also relevant here. There are uncertainties associated with research: it is often impossible to foresee the consequences of research and even when the consequences of research can be anticipated, people may disagree about their social value (Resnik, 1998).

Utilitarianism also presupposes comparability of several sorts: across different actions and across people who are subjects to these ‘good’ actions (Goodin, 1991). We need to ask whether it is possible to make such comparisons and how to measure the resulting happiness or utility.

It is true that science has developed methods to compare the work of scientists and uses that to measure their success. The number of publications and citations is an essential evaluation tool in science: tenure and promotion committees assess a scientist's research efforts based largely on the quantity of publications; for government funding, in order to receive funding and to continue receiving it, scientists must produce results (Resnik, 1998).

Science is, for most scientists, a career. «A successful career in science is achieved through publications, grants, research appointments, tenure, and awards,» Resnik notes (1998: 3).

There is the implicit assumption that if a scientist is successful by that measure his or her work has advanced science to a great degree and therefore promoted the well-being of people. But following the original 'hedonistic' utilitarianism is this assumption not deceptive?

Utilitarian theory insists that «to be good something must be good, somehow, *for* someone» (Goodin, 1991: 242). But what good and for whom is, for example, taxonomy or the study of distant galaxies? One could be a successful scientist but yet a scientist whose work does not deal with the pleasures or pains of fellow humans. As people are measured by their actions, can these scientists considered to be good? Or does the knowledge that science bring us about the world around us – even if it is accessible to only a few like in the case of, say, the nature of pulsars – belong to the preferable intellectual pleasures that Mill talks about?

Utilitarianism has tried to tackle these issues by moving away from the 'hedonistic' ideas of promoting pleasure and avoiding pain, and talking more about 'preference satisfaction' or 'welfare utilitarianism' (Goodin, 1991).

According to preference utilitarianism if a person happens to have preferences that go beyond (or even counter to) that person's hedonistic pleasures satisfying those preferences is nonetheless a source of utility for that person. «It is good – good for them – to have their preferences satisfied whatever those preferences might be» (Goodin, 1991: 243). We can well imagine that the quest to discover the secrets of the nature is a common preference.

Welfare utilitarianism talks in terms of the satisfaction of interests and suggests to suppress short-sighted preference satisfaction in favour of protecting people's long-term welfare interests (*ibid.*: 244). This approach encourages us to see science as a unified entity whose existence serves the interests of the society. This helps to justify basic research that has no direct applications or so-called blue sky research that may not lead to a breakthrough at all.

These approaches, however, lead us astray from the original question about a good scientist. Because of the problems of comparability and measuring happiness, utilitarianism seems to have fewer problems when seen as a standard for public rather than private choice, Goodin notes (1998: 248). But our question 'Is there a difference between a good scientist and a successful scientist?' demands to look at things on the individual level and there an additional problem arises from the fact that by our definition success is something stable – once you have achieved it, almost nothing can take it from you – whereas being good in the utilitarian sense depends on individual actions.

So it is possible to be a successful scientist and do ethically bad things. For example, the German chemist Fritz Haber developed a method for synthesizing ammonia, thereby making it possible to produce fertilizers cheaply and in large quantities. This meant that agriculture

started to produce more food and saved many people from hunger. Haber was awarded a Nobel Prize for the discovery, making him thus also a successful scientist.

Yet, in World War I he developed poison gasses for the German army and oversaw their deployment in Ypres. Thousand of soldiers were killed in that attack but the hoped justification of being able to end the war sooner was not realized. There we have a successful scientist who has done both good and bad things, as seen from the utilitarian perspective.

A remarkable ethical choice emerges from Haber's story. His wife Clara saw the use of poison gas as barbarism and disgusted her husband's part in it.

Clara Haber pleaded with her husband to forsake poison gas. She presented facts. She asked in the name of human sympathy and kindness. She brought forth all the sentiments and feelings with which women stir men. Finally, she quit protesting and demanded that Fritz Haber have no part in the nefarious business. /.../ Stubbornly, Haber overruled his wife's every suggestion. /.../ Fritz Haber went to the eastern front to supervise the installation of gas cylinders. That evening Clara Haber committed suicide. (Goran, 1967: 71-72)

For the critic of utilitarianism this can be considered as evidence of the characteristic impersonality of utilitarianism: «What we ought to do, individually and collectively, is for the utilitarian independent of any consideration of who we are or any special duties that might arise from that fact» (Goodin, 1991: 246).

Haber's own argumentation belongs more to the realm of deontology: doing your duty, following the rules. According to Goran (1967) Haber «told his wife that a scientist belongs to the world during the times of peace but to his country during times of war. He could not

effectively, he said, be a world citizen during periods of stress; and not to help his country with all his power was tantamount to self-destruction. He fought for a triumphant Germany, one whose might would enforce justice and order, preserve culture, and cultivate science.»

This kind of duty, as Haber himself says, is necessary only in extraordinary circumstances like a war. The Manhattan Project is another famous example of that. But deontology also has an everyday role in science: there are many rules that scientists are expected to follow to have their work accepted as science. To be a good scientist means to follow the rules.

Falsification, fabrication and plagiarism are the worst of 'sins', results can be disputed when the used method is not sound, for certain experiments there is a legal framework setting out the necessary procedures etc. The infringement of rules can destroy the scientist's reputation and discredit all his or her work.

But not all rules are equal. Sometimes end do justify the means for successful science, like Crick and Watson sidestepping lab director's orders in their pursuit for the structure of DNA. While following the rules makes a good scientist in the deontological sense, this is always not enough to become successful.

We now return to the question of character that we started this essay with. «It is true that a certain kind of aptitude is required to do successful research,» Watson emphasizes the role of character in his latest autobiography *Avoid Boring People* (2007: 152). Both utilitarianism and deontology have been criticized for ignoring the character in determining what is good. This has revived the virtue theory.

Cottingham (1998: 24) summarizes the Aristotelian concept of virtue ethics: «Guided by excellences of intellect, we can set about training ourselves as to develop excellences in character – courage, generosity, magnanimity, and so on – the permanent dispositions of action and feeling that will constitute true virtue, the 'activity of the soul in accordance with reason'. Strengthened by the installing of the right habits, and guided by a rational vision of the good life, we shall be able to actualize the potentialities we are born with, and achieve an optimally successful and enriching life – the life of *eudaimonia* or happiness.» The main concepts are thus acting according to reason and developing one's character towards virtues.

The problem with Aristotle's assumption that the good for humankind can be identified by reference to human nature is according to Cottingham the indeterminate nature of human nature due to necessary social and political assumptions. «The more open-ended and subject to continuing dialogue the notion of 'human nature' turns out to be, the more indeterminate the resulting blueprint for *eudaimonia* risks becoming,» he says (1998: 26).

In *Avoid Boring People* Watson tells about the manners he picked up during his life in science. For example: *Hire spunky lab helpers*, *Never be the brightest person in a room*, *Work with a team-mate who is your intellectual equal*, or *Science is highly social*. More a literary device than a normative list, these statements still reflect what 'virtues' he values in scientists. And in his frankness ruthlessly exposes the character flaws of people he met and worked together. He showed that successful scientists sometimes have bad character even if it is only the lack of modesty (which was, of course, the ideal of Plato).

If you ask any scientist whether character matters for a good researcher, they will probably agree and come up with list of necessary qualities. In the same way that ancient Greeks made

a list of the ‘cardinal’ virtues and ranked types of character, it should be possible to do the same for specific scientific virtues. But the question that occupied ancient Greeks also remains important here: are there universal basic standards, a kind of core morality?

And when we find these core standards how do they relate to the core morality of the society? It was, after all, Hume who said that one can be a philosopher (or scientist) but one must be first a man (Rollin, 2006: 247). Are the moral virtues the same or can one have character flaws that annoy other people and yet be a perfectly virtuous scientist? For example, the physicist Paul Dirac was a famously anti-social person who would sometimes not speak a word during dinner parties.

I have not discussed this relationship in my essay, instead taking the approach of ‘special ethical relativism’ (Resnik, 1998) which allows to focus on ethical issues specially related to science and scientists.

In the end none of the ethics theories was able to successfully unite the notions ‘a good scientist’ and ‘a successful scientist’, often because either term has no meaning in that particular theory. Every approach brings out a different aspect of ‘goodness’ or ‘success’ but also entails specific problems.

Much of essay has juxtaposed ideas from ethical theories of how things ‘ought to be’ and the way things ‘really are’ in the world of science. It is important to make that distinction for that can guide us in making judgements. As Rollin notes (2006), we don’t have to settle for one theory. «Given that social ethics needs to work in the real world, not just to be conceptually

consistent and coherent, the ethical theory adopted in democracies is a mixture of consequentialist/utilitarian notions and Kantian/deontological notions,» he says (*ibid.*: 62).

Bibliography

Cottingham, J., *Philosophy and the good life: Reason and the passions in Greek, cartesian and psychoanalytic ethics* (Cambridge University Press, 1998)

Goodin, R.E., 'Utility and the Good' in P. Singer (ed.) in *A Companion to Ethics* (Blackwell, 1991)

Goran, M., *The story of Fritz Haber* (University of Oklahoma Press, 1967)

Mackie, J.L., *Ethics: Inventing Right and Wrong* (Penguin, 1990)

Pence, G., 'Virtue Theory' in P. Singer (ed.) in *A Companion to Ethics* (Blackwell, 1991)

Resnik, D.B., *The Ethics of Science: An Introduction* (Routledge: London and New York, 1998)

Rollin, B.E., *Science and Ethics* (Cambridge University Press, 2006)

Watson, J.D., *Avoid Boring People: Lessons from a Life in Science* (Oxford University Press, 2007)