

The Omertà and Beyond

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Origins of the enchanted view

Analyses of the historical, philosophical and sociological origins of the various stereotypes of science and scientists may help us understand where the enchanted view of science comes from. Here we always refer to positivistic and sometimes Popperian philosophy of science which is understood to implicate that science is about facts directly derived from experiments that can thus be rather objectively and directly verified. Based on this unique 'scientific method' science yields objective knowledge. The other important source is the Mertonian sociology: in order to see to it that scientists resist temptations, science is organized around the well known Mertonian principles. Peer pressure is organized in a sociological system. Although Merton's sociology was designed and required because scientists are human, paradoxically the Mertonian world view is romantic and idealized and free from (conflict of) interests and politics.

It has been pointed out that Kuhn in *The Structure of Scientific Revolutions (SSR)* describes science as a system separated from the rest of society. However, he allows for psychological and sociological influences in debates about content, paradigm change is brought about by new data, but not without fierce negotiation between humans which involves all the game playing seen elsewhere in society. Economic interests coming from stakeholders outside are not explicitly referred to. In SSR professional conflicts of interest are obvious and are treated as normal and healthy in scientific debates, probably because Kuhn assumed that it was all taking place in a perfect Mertonian system where the players voluntarily adhered to the well known values.

External values not directly relevant to the content or to the practice of science do not play a role, are not believed relevant and are not allowed. Issues of problem choice are thus treated as totally internal affairs to science and scientists. Problem choice therefore is not considered an issue apart from ideas that at every stage of a paradigm or field

automatically a limited set of problems comes forward that the field agrees to be the top issues to be studied. Merton obviously, but also Kuhn, allows for elitism and stratification. Not all debaters are equal, but this is within the accepted way the game is played. The Matthew effect is pointed out as a sociological given, and not felt to be very problematic.

This picture of science shows that science is intrinsically conservative, will resist change and innovation despite the Mertonian value system. Many have criticized Kuhn suggesting that he has written a normative and not a descriptive account of science because he seems to like the initial resistance to rejection of old theories and programs to allow for stable development and evolution of them avoiding loss of potential.

The enchanted view of science that results from these very influential descriptions or (to put it correctly) normative ideas about scientific activity is still largely the default mode when science and scientist are discussed in a public or more formal debate. The gossip and stories about clashes and fights between prominent scientists are of course all over the newspapers, TV and internet, and are enjoyed much, but the formal and official response is that those all are harmless because it is happening in 'Mertonian space'.

As a consequence there are a few issues that are increasingly felt to become problematic:

1. The idea that there is somehow always a high degree of consensus in science, or that it is possible at every given moment for any issue to generate that consensus for practical use by policy and public.
2. It is generally believed that problem choice is guided by 'an invisible hand' determined by internal developments that we agree on based on the prevailing paradigms in a given field of research.

Ideological use of the enchanted view

It is relevant to analyze the use of this dominant stereotype in the different contexts, and specially for what purpose it is used and sustained. Of course, many especially those who

are ignorant of the practice of modern science, naively teach and disseminate the classical view. This holds for high school teachers and even many who teach undergraduates. Those who have been exposed to the practice at the frontiers of science, often do not want to be or do not see why they should be, the cause of disillusion (disenchantment) that scare potential students away.

In other more formal and public cases the enchanted view it seems is used with a political aim. This enhanced view is propagated and used to formally react to questions from outside science to defend science as unique and the only system we have to make reliable knowledge. The unique virtues of the system and its players, protection from non-scientific influences and interests and of course the scientific method are the defense lines. Fraud and bad science are in this reaction, universally treated as exceptions in an otherwise perfect system of self-cleansing peer review and post-publication criticism. All representative appearances of Robbert Dijkgraaf, the former president of the Royal Society, are typically in that style. Interestingly and in fact worrisome, he was never critically approached by a critical interviewer on this point. He was to all of us the ideal son-in-law and was given special programs on public TV. The Royal Society was most happy with four of these years of enchanted science. It was for instance well covered in the news that Dijkgraaf went to Princeton and Clevers took over.

It is believed that by sticking to this position and telling this version of science, public trust and trust from the key persons in administration and by representatives is maintained. It is felt that if we would tell the truth about how science works, how we know what we know, why we believe what we believe, how and to what extent interests shape our knowledge and scientific opinions, the public will lose faith and science will fall.

There thus seems to be an *omerta* (or, conspiracy of silence) regarding the practice of science. This has been shown early on by Gunther Stent in his analyses of the reviews of *The Double Helix* by Jim Watson. This issue was not whether Watson had been unfair and critical about his colleagues, but that the reviewers were embarrassed by the honestly

and shamelessness by which he informs the reader how 'unscientifically' they behaved and how by all kind of sneaky and dirty tricks important parts of the critical data were gathered by Watson and Crick.

Box in Dutch on Omertà

'The Double Helix' is een bestseller uit 1968 waarin Jim Watson ongeneerd het verhaal vertelt van de ontdekking van de dubbele helix structuur van DNA, door Francis Crick en hemzelf in Cambridge, 1952-3. Hij ontziet daarin zijn collega's, maar vooral ook zichzelf niet als het gaat over ijdelheid, eerzucht, na-ijver, rokkenjagen, slinkse trucs, naïviteit en koppigheid. Piet Borst stelt in de NRC 12 januari 2013, dat Watson een sappig verhaal, met een unieke kijk op de wetenschap, maar geen 'historisch verantwoord feitenrelaas' wilde schrijven. Uit de recent verschenen geannoteerde uitgave van 'The Double Helix' blijkt echter dat er feitelijk niet veel mis is. Zijn collega's Crick en Wilkins hadden vooral een geheel ander, belangrijker bezwaar waaraan Piet Borst, maar ook de auteurs van dit nieuwe boek voorbij gaan. Ze vreesden voor het respect voor de wetenschap.

Wilkins schreef aan Watson dat ook hij weliswaar 'tired (was) of the polite covering up and misleading inadequate pictures of how scientific research is done', maar Watson ging te ver, hing de vuile was buiten. Het mysterie dreigde voor altijd verstoord te worden. Gunther Stent schreef in 1968 een 'Review of the Reviews' die liet zien waarom Watson door respectabele collega's zowel is toegejuicht als verguist: hij had als een van de eerste topwetenschappers 'de omerta' gebroken. Ik denk dat het, om allerlei redenen, goed is om Watsons voorbeeld te volgen en de mythe voorgoed achter ons te laten, al was het alleen maar om de interactie tussen de wetenschap en de 'echte wereld' beter te begrijpen (deze brief werd in NRC gepubliceerd op 19 januari, 2013).

Breaking the omerta?

When we break the omerta, will we gain more in the long run than we lose short term? The use of these stereotypes may reassure some, but at the same time it confuses the public about what science has to offer to solve specific societal issues. For instance it

does not help to explain the debates and pluralism about climate change, the use of Flu and HPV vaccines, the battle against cancer, the coming epidemics of CVD and dementia, the cause and solution of the economic crisis, the approaches to multicultural societies, etc. It does not help to understand the interaction between scientific advisers and policy makers and governments. Sometimes scientists seem to agree, sometimes not, but it is unclear to the public why that is. It is difficult to explain to outsiders from within the classical view what type of pluralism can occur and for what reasons. The difference between professional and economic conflict of interest and how this affects integrity and trust.

Will we be better able to explain bad science, bad pharma and fraud and that it will happen more and more by honestly explaining the system and its problems?

Questions to be discussed

- How to avoid these stereotypes?
- How to exchange them by - in our view - a more realistic view of science and scientists? (if one can at least to some extent agree on that?)
- Can this be done without a further loss of trust in science and scientists?
- How to avoid a general distrust and loss of faith - and even nihilism - regarding modern science when we explain truthfully how science really works?
- How is knowledge constructed and produced in physics, experimental psychology, economics, life science, geology, ...
- How do we account for and explain the influence of internal and external forces and interests on science and still say that we believe that 'science can be trusted'? Or don't we?
- How do we think the well known 'politics of science' can be explained without disturbing the trust and faith in science?