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Perspective

Hype and hypocrisy: The slippery slope to falsification and fakery in science

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The IOCD action group, *Chemists for Sustainability*,[1] has previously written about the challenge of fake news and fake science and the damage that is caused both to science and society when false information is generated and circulated in the popular media or scientific press, or when facts based on sound evidence are publicly dismissed out of hand by individuals or groups to whom the truth is inconvenient.[2] In the extreme, this denial of facts and promotion of lies can be fatal. It can cost the lives of individuals – for example, the deliberately falsified claims about the dangers of vaccinations such as MMR have resulted in fatal infections. And it can imperil the environment of the entire planet and the livelihoods and health of the world's population – as is being caused, for example, by the denial of the existence and anthropogenic causes of climate change.

In a new article published[3] in early 2020, the group has further examined some of the origins of fake science that begin within science itself. The article recognises that, in particular, a combination of two drivers can lead scientists, albeit unintentionally, into actions that eventually become unethical.

One of these drivers is the exuberant joy that human beings naturally feel in a discovery and the elation they experience when they are able to communicate their findings to others. An early, though probably apocryphal, example that is widely recounted was the discovery by Archimedes, while takin a bath, of a method for measuring the volume of irregularly shaped objects by their displacement of water. According to legend, Archimedes ran naked into the streets of Syracuse, shouting "Eureka" ("I have found it"). Other scientists have claimed such "Eureka moments", full of drama and highlighting the insight of the brilliant and prepared mind, including Isaac Newton's discovery of gravity on observing a falling apple and Auguste Kekulé's realization of the structure of benzene in a dream in which a snake was biting its own tail.

But the gratification and accolades that come with being acknowledged as the originator of a scientific advance can tempt the scientist into using hyperbole (exaggeration, or "hype") to promote the importance of the results obtained. There is a danger that this hype can stretch the truth too far and lead to a false impression being given about the significance of the findings.

The second driver may then come into play. The rewards for producing significant science are not just found in the accolades and status given to the discovering scientist. They also accrue to the department and institution where the scientist worked, the journal where the results were published and the agency or government that funded the research. All have a vested interest in promoting the work with which they are in some way associated. The result is an atmosphere in which hyped claims are encouraged for the importance – especially the potential, eventual "impact" – of the findings. Scientists tweet their breakthroughs, university development offices issue press statements, journals adorn their covers and contents pages with imaginative graphics and funding bodies and governments proclaim their foresight and skill in picking winners. The fact that the vaguely defined eventual "impact" may never happen is conveniently swept aside, with all concerned hypocritically turning a blind eye to the long term while taking their credit in the short term.

The confluence of hype and hypocrisy which drives exaggerated claims must not be ignored or dismissed as an amusing or irritating by-product of scientific endeavour. As the article argues, it is the

beginning of a slippery slope, the first steps along a continuum, a pathway that leads from hype and hypocrisy to falsification and fakery. The damage is particularly severe, because it originates within the scientific endeavour itself. It therefore not only adds to misinformation and false expectations among both the science community and society at large, but also compounds the growing levels of mistrust in science by some sections of social and political groups and the increasingly frequent dismissal of 'experts' that are now characteristic of our post-truth[4] age.

We argue that scientists and their institutions must take the lead in generating a deep-seated reform of the entire system that promotes, encourages, or simply ignores advancing steps along the hype-hypocrisy-falsification-fakery pathway.

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References

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