

Science and the show society

Paul Caro

Académie des Technologies

Paris, France

Science and the media

- Scientists have their own media to publish their work : the scientific publication system. The contents of this system are so protected that it is virtually impossible for the public to penetrate.
- Knowledge of science is then transmitted by the media : journals, television and the show industry at large

Science popularisation and the rules of story telling

- Most of the stories told by the media are constructed along the rules of story telling which are basically those which have built the success of legends, tales, novels, movies, sit-coms ...
- Science is no exception, especially the mythologies are often reflected in the choice of topics (for instance the end of the world by asteroid impact, or stories about origins using prehistory and astrophysics or monsters such as dinosaurs.)

The scientist as Hero

- One of the basic character of tales is the Hero. It can be good or bad (cf. the TV cartoons for children) but he always knows a lot and uses a sophisticated technology (from magics to machines). There is a complete list of potential parts as Hero for the scientist from the Guide, or Saviour, of Humanity to the Mad scientist « from Faust to Strangelove ».
- Tales, literature, movies, make a use of those characters.

Is it desirable to be a Hero ?

- The scientific system itself creates Heros (the Nobel Prize for example) designing then to the public people who can represents the scientific community in almost any field.
- It is of course desirable to be such a Hero. But that needs outstanding discoveries.

How to make outstanding discoveries ?

- The quality of the discoveries is usually rated by the scientific community itself.
- But some believe media can help.
- Especially when the discovery fall into a category which is prone to illustrate a well known mythology which will attract the attention of people, including colleagues.
(Unlimited energy source or health benefits of holy water recognized)

Types of scientific misconduct

- The most common type of scientific misconduct is negligence : bad experiments, bad methodology, wrong methods. This can be corrected through some education of the scientists.
- Another type is deliberate dishonesty. One may expect that this is a rare variant !

Pathological science

- This is another type of scientific misconduct, and the most sensitive to the media influence.
- The components of pathological science were described by Irving Langmuir as early as 1953.
- A number of scientific scandals exhibit the criteria defined by Langmuir

Langmuir rules

- A celebrated scientist one day announces a discovery which challenge classical science with great consequences. This creates a debate among scientists and public opinion may be involved.
- The experiments which support the claims are always of a type where the signal to noise ratio is very weak.

Example

- The discovery of the « memory of water » was announced in the press in Paris the day before the paper was published in Nature on June 30 1988.
- It was typically a Langmuir's case. No intention to cheat but a strong belief in the interpretation of borderline data.
- The more the scientist is famous the most difficult it is to disprove the claims.

A mythological situation

- The cases of pathological sciences are often examples of a romanesque show for which the media set a stage between comedy and tragedy as the scientists involved tend to play the part of martyrdom (cf Galileo) or of the misunderstood scientist (the Prophet) whose revenge will be in the future (two literary characters).

Damages

- These situations (memory of water, cold fusion, or « structured » waters) induced by real and respected scientists, which last for some time before they disappear, are damaging within the scientific community but also outside of it, in the public opinion, as extravagant claims are dismissed in a mood where scientists do not appear to be people as serious as expected by the public.