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# The case for a 'deficit model' of science communication

By: [David Dickson](#)

**A democratic dialogue over science-related issues is critical for modern societies. But providing reliable information in an accessible way is an essential prerequisite for this to occur.**

In 1921, the eminent editor of what was then known as the *Manchester Guardian* — now just *The Guardian* — wrote an essay celebrating the newspaper's centenary. The essay contained a memorable phrase that has since become a cornerstone of the free press: "Comment is free, but facts are sacred".

The editor, C. P. Scott, pointed out that this did not mean that its reporters, writers and editors should lack conviction or feeling. It was important, he wrote, for a newspaper to demonstrate its commitment to a set of core values. Among these he included "honesty, cleanness, courage, fairness, and a sense of duty to the reader and the community".

But he also pointed out that the primary role of a newspaper was to gather news. "At the peril of its soul it must see that the supply is not tainted," said Scott. "Neither in what it gives, nor in what it does not give, nor in the mode of presentation must the unclouded face of truth suffer wrong".

Sadly, we are currently witnessing a worrying trend within much of the world's media, where a traditional commitment to reporting facts is giving way — under a combination of commercial and political pressure — to a more colourful, but less reliable, tendency to concentrate coverage on interpretations of fact (or 'spin').

One can think of examples ranging from the coverage of the Gulf War in the US press, to the way in which the media tends to cover science-related controversies, such as the safety of genetically modified crops, human-induced climate change or the ethics of human cloning and stem cell research. In all such cases, it is becoming

increasingly difficult to separate out the factual basis of what is being reported from the 'spin' that is exerted on the way that the story is reported and presented.

### **Empowerment through factual reporting**

What is true of news reporting in general also applies to the public communication of science and technology. One of the challenges facing all of those engaged in such activity is not only to make science communication an important channel for the essential dialogue between science and society, but also to ensure that this dialogue is solidly based on fact.

In other words, both journalists and other types of science communicator face the task of providing individuals with the facts that empower them to engage properly in such dialogue. Their ultimate goal should be to ensure that decisions emerging from such dialogue are taken in a way that is both appropriately democratic and informed.

Substantial and effective dialogue will only take place when those on both sides have a sound understanding of the relevant factual evidence; indeed evidence-based decision-making is an ideal that we should aspire to at every level of society, from local communities to the top levels of government. If the relevant evidence is absent — which often, sadly, turns out to be the case — then it is surely the role of the science communicator to fill the gap. In other words, to make up the relevant 'knowledge deficit'.

### **The traditional 'deficit model'**

Technically speaking, this is a slight 'spin' on the term 'deficit model'. The original purpose of the phrase, coined by social scientists studying the public communication of science in the 1980s, was not to describe a mode of science communication. Rather it was to characterise a widely held belief that underlies much of what is carried out in the name of such activity.

This belief has two aspects. The first is the idea that public scepticism towards modern science and technology is caused primarily by a lack of adequate knowledge about science. Related to this is the idea that, by providing sufficient information about modern science and technology to overcome this lack of knowledge — or 'knowledge deficit' — the public will change its mind and decide that both science and the technology that emerges from it are 'good things'.

Those who came up with this argument were entirely correct in pointing out that this type of thinking, combined with the desire to overcome public scepticism, motivated much of the early 'public understanding of science' movement — and indeed continues to do so in many parts of both the developed and the developing world.

They were also correct to point out that the hypothesis on which the model is based is highly flawed. Increased knowledge about modern science does not necessarily lead to greater enthusiasm for science-based technologies. Indeed, there is considerable evidence to the contrary. For example, the more knowledge an individual has about a potentially dangerous technology (such as nuclear power or genetic engineering), the more concern he or she may well feel about that technology.

In modern societies — particularly given the power and pervasiveness of today's communications technologies — trust and respect need to be generated; they cannot be taken for granted or imposed from above, whether in science or any other type of social activity.

That implies the need for an openness to dialogue, and a willingness to come out from behind closed walls, whether these belong to the ivory towers in which scientific knowledge has traditionally been produced, or the boardrooms and corridors of power in which key decisions about the production and application of this knowledge are taken.

To quote a statement made by the UK's Committee on the Public Understanding of Science (or COPUS) — itself a manifestation of a belief in the traditional 'deficit model' approach to science communication — when it decided to close shop in December 2002, "We have reached the conclusion that the top-down approach which COPUS currently exemplifies is no longer appropriate to the wider agenda that the science communication community is now addressing."

### **A new role for science communicators?**

But where does that leave the science communicator in general — and the [science journalist](#) in particular? One response is to say that they should dedicate themselves primarily to the concept of dialogue. This is the approach urged by Britain's House of Lords in a report published in February 2000, when it argued that "direct dialogue with the public should move from being an optional add-on to science-based policy-making and to the activities of research organisations and learned institutions, and should become a normal and integral part of the process". Indeed this call has since

become a prominent theme for public communication of science activities, at least in the United Kingdom.

But if we include in our discussion the stronger concept of empowerment, we come up with a different set of practices. It is here that the concept of the 'knowledge deficit' comes back into play. Put in its bluntest terms, as the 17th century philosopher of science Francis Bacon expressed it, "knowledge is power" (with its corollary that a lack of knowledge leads to a lack of power).

Journalists tend to operate within this philosophy. They report a dialogue when it takes place; indeed, the sharper the dispute — and the more significant its content — the more enthusiastic we are likely to be about turning it into a news story. But the nature of the journalist's job makes it difficult to engage directly in the process of dialogue.

Conversely, the ability to convey facts accurately and in an accessible manner is one of the most powerful ways that the journalist can assist the process of empowerment. And this empowerment can itself have important political implications, particularly when the facts conflict with statements being made by official sources. Look at the role played by inadequate official information about the Chernobyl nuclear accident in the 1980s in leading to the crisis of public confidence in — and eventually downfall of — the government of Soviet Russia.

Indeed, it can be argued that it is factual inaccuracy, rather than biased reporting, that is the major failure of much modern journalism. A journalist cannot and should not remain totally objective about the issues he or she is covering. Indeed a passionate interest can often inspire high-quality reporting. The most damaging distortions come when facts are reported inaccurately. For the wrong facts can never become the basis of good decisions; truthfulness in journalism is essential in a way that objectivity is not.

### **The responsibility of science journalists**

When engaging in an issue of science-related public controversy, both the science communicator and the science journalist in particular have a responsibility to ensure that any publicly-stated position is well grounded in the current state of scientific knowledge.

This can involve knowing not only what scientists believe to be true, but also what they can only speculate about in the absence of convincing evidence. Indeed, it is

important for journalists to know how to distinguish between the two. But in either case, public statements should at least be compatible with the current consensus within the scientific community; where they deviate from this consensus, the science communicator should indicate that fact (and, where appropriate, the evidence for it).

Thomas Jefferson, one of the principal authors of the US Declaration of Independence, once wrote "whenever the people are well-informed, they can be trusted with their own government". Less familiar is the phrase that followed, namely that the reason for informing people was to ensure that "whenever things get so far wrong as to attract their notice, they may be relied on to set them to rights".

Jefferson was not saying that information about the good should balance information about the bad. Rather, he was saying that criticism of the 'bad' must be "well-informed" — or accurate — if it is to be corrected. Which comes back to the argument that providing reliable and accurate information in an accessible way is an essential part of the process of social empowerment.

### **Empowerment through accurate information**

This is particularly true when it comes to considering the role of science and technology in meeting the needs of developing countries. For the communication of accurate scientific and technological knowledge must be seen as a *constituent* and *integral* element of the development process.

Indeed, science and technology communication is essential to building the capacities of governments, NGOs and industry to use science and technology effectively in the pursuit of viable development strategies.

In other words, those engaged in different aspects of policy-making can benefit – and be 'empowered' – through access to authoritative information and informed opinion on key issues at the interface between science and society, which is the main goal of the SciDev.Net website.

The process of democratic dialogue over science and technology-based issues is critical to the effective functioning of modern societies. But providing reliable information in an accessible way — in other words, filling the relevant 'knowledge deficit' — is an essential prerequisite of both healthy dialogue and effective decision-making.

Government and scientific institutions have a responsibility to provide the openness and transparency that can enable this to happen. Science journalists and other science communicators have a responsibility to ensure that it does.

*This editorial is based on a presentation made on 22 June to the PCST (Public Communication of Science and Technology) Working Symposium on 'Strategic Issues in Science and Technology Communication', held in Beijing, China.*