

Effective Communication of Science in a Culturally Diverse Society

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Abstract

This paper outlines three practical issues to consider in order to communicate science effectively in a multicultural society. These are the recognition of all cultures in the development of science, equitable use of language and a mutual critique between science and culture. Emphasis is placed on the view that public accessibility into and participation in science are matters of basic human rights, justice and equity.

Paper

Effective Communication of Science in a Culturally Diverse Society

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Introduction

This paper outlines a few practical issues to consider in order to communicate science effectively in a multicultural society. Public understanding of science cannot be seen as a luxury in the information age. Studies indicate that scientifically literate societies are stronger economically. This is because a better-informed citizenry can be more innovative and would be critical users of the products and services of science and technology. The effect is more wealth creation and a general improvement in the standards of living of the members of that society. Effective communication of science has thus become a socio-economic imperative for developing countries.

A discourse about science communication has to consider epistemological issues. In particular, our conception of the nature of science will inform our communication strategies. If science is simply seen as a body of knowledge, communication will be characterized by efforts to transmit information from the experts or scientists to the laypeople or the public. Immediately, this paradigm reduces the public into subservient non-critical recipients of scientific knowledge. On the other hand, if science is seen as an on-going rational effort to discover the workings of the physical world, the public is empowered to critically engage the scientific process. The view of science as a process rather than a product demystifies science and opens the door to ordinary people to see themselves as participants in the discovery process. This is the stance that I will adopt and advocate in this paper.

The issue of public knowledge of and about science in multicultural societies, given the role of science in the increasingly knowledge-based global economy, needs to be approached also from the perspective of social justice and equity. In this perspective, the question that is pertinent to this paper is, how can science be communicated in a just and equitable manner? The regard for the diversity of cultures in the communication of science is a key factor in addressing this question. But then, what is culture and what has it got to do with public communication of science?

Culture and Science

Many scholars have attempted to proffer definitions of culture. Patel (1997) and Aikenhead (1996) provide comprehensive reviews and analyses of the concept. Culture can be seen as the way in which a group of people packages its life experiences. This “package” of experiences involves attributes such as communication, social structures, customs, attitudes, values, beliefs, worldviews, skills, behaviour and technologies. From this definition, it does not require a conceptual leap to see that each culture will have its own “package” about how nature works. Since science itself is a human construct, then science represents a specific package of human experiences about nature.

Public communication of science, therefore, amounts to a cross-cultural undertaking. There is a gap that needs to be bridged between the science culture and the culture of the public that is being addressed. The success of the communication will depend on the extent to which the public is able to negotiate between the different cultures. Public communication of science will fail if it does not take cognisance of the cultural background of the public that is being addressed.

The decision about how to integrate culture in science communication is not an easy one to make and should be approached with circumspection. The choices that are made in this regard will depend heavily on the views that are held about science, culture and the aims of public communication of science. A matured approach to public communication of science would have as its ultimate goal what Hodson (1993) called the “promotion of social cohesion through critical awareness and the establishment and maintenance of a socially just society through the acceptance and celebration of diversity, the enhancement of the self-esteem of all, and the elimination of racism”.

A matured approach to public communication of science does not attempt to wield science as a hegemonic power-tool for exercising dominion over the so-called non-scientific community. Such an approach can only exacerbate the status quo of general apprehension for science within communities, with the youth fleeing to other fields of study for their careers. This is the unfortunate reality in South Africa and further North in the continent.

Public communication of science should work to counter this situation. Science communication efforts should be used to bridge the conceptual divide between what is known as science and the mundane struggles of life of the public. Through public campaigns people should be made to realize the major role that science is playing in their lives. Moreover, they should be made to appreciate the role that they themselves can play in the further development of knowledge about how nature works. This could be achieved by promoting indigenous science as well as presenting alternative tools for probing into the workings of nature. Science, engineering and technology partnerships should be established with rural communities, the homeless, the unemployed and people living in informal settlements. These are often forgotten communities, who eke out their living on the margins of society. Their interface with science can restore their self-esteem and open a whole new chapter in their lives, where they can see science as a possible means of making their lives more manageable.

The aim of this paper is not to provide an extensive treatise. It is rather to present a few principles that could be considered for effective communication of science across cultural divides. The following section will focus on three principles and associated strategies.

Some principles for effective communication of science across cultures

1. Recognize the contributions of all cultures in the development of science

I have argued above that every culture has its own science, which can be seen as an indigenous science of that particular cultural group. Ogawa (1995) calls this indigenous science a “culture-

dependent collective rational perceiving of reality.” In this context ‘collective’ implies that this rational perception of reality is held in similar form by many people in that group to allow effective communication.

One way of recognizing the scientific endeavours of other cultural groups is by presenting examples of practices and beliefs about nature, which demonstrate a rationality that is informed by the respective socio-cultural contexts of those groups. Examples in traditional medicine, building, clothing and food processing and preservation could provide ample demonstrations of scientific thought within different cultures. This approach could provide a platform that would enable people to identify with scientific objectives, methods and efforts. Instead of seeing science as an exclusive endeavour belonging to a peculiar kind of people, they will see it as a natural human response complementing their own quest for understanding nature.

Apart from the above approach, it is worth recognising the fact that modern science evolved through the contributions of all nations. In all societies, there are examples of people who have effectively transcended cultural divides to excel in science. This can help societies build confidence in science as a means to their own development. It will certainly provide role models for the young people to emulate.

2. Use language equitably in scientific discourses

Language is both an aspect and a means of expressing culture. South Africa is a multilingual society yet English increasingly dominates both the social and scientific discourse. This is notwithstanding the advent of democracy in 1994, the recognition of 11 official languages for the country and the establishment of the Pan South African Language Board to promote multilingualism.

The problem with language issues is that the responsibility for policy formulation often rests with people who do not necessarily experience the difficulties involved. This is especially true with science communication. As a result public communication of science in South Africa is rarely undertaken in the mother tongue of the target audience. The reality is that the language barrier makes people feel stupid as they experience difficulty not only in making sense of what is being communicated but also for the limitations it places on them responding to the message. The stigma that often goes with expressing difficulty with English adds to the burden of the marginalized people. They then suffer what Tobin (1996) calls symbolic violence. Some of the manifestations of symbolic violence are described by Ogunniyi (1997) as: feeling misplaced, failing to find reliable supportive cultural templates and not asking questions for fear of being ridiculed. As a last resort such people, finding the language barrier impossible to negotiate, resort to a number of defence mechanisms in relation to science, such as lack of interest, feigned enthusiasm, inanity, blind faith and reactionary responses. All these reactions run counter to the objectives of public communication of science.

In a research carried out with learners (Manzini, 2000) the use of the mother tongue in scientific discourse had the following effect on the learners:

- Greater participation
- Increased ability to express themselves in a variety of tasks
- Greater motivation and optimism
- Broader range of thinking tools
- Better connectivity with concepts in own life-world culture

I think it is fair to expect that the use of mother tongue in the broader communication of science would yield similar results.

3. Mutual Critique between Science and Culture

The presentation of science as unproblematic and value-free is dishonest. In almost every field of science moral questions and dilemmas arise. Nations today are battling with arduous questions concerning genetic engineering. Throughout the history of science there has always been questions about safety, ethics and environmental concerns. Increasingly, questions are being asked about the research methods that are employed in scientific investigations. Consumers of the products of scientific discoveries demand to know whether animals were maltreated during the course of research and development. In the presentation of science these questions and dilemmas should not be swept under the carpet, in order to portray science as holy and worthy of reverence. People should be accorded the opportunity to evaluate science in terms of their own cultural norms and values.

Having said the above, I do not by any means advocate a romantic view of culture as occupying a moral high ground over science. Cultural beliefs and practices should also be subjected to scientific scrutiny. There are superstitions and beliefs prevailing in our society that cannot stand the scrutiny of science. Public communication of science should provide an avenue for society to reflect on and debate practices such as:

- Body mutilations to promote social, mental and moral development;
- Rape of virgins to cure aids;
- Use of body parts as muti to bring fortune and prosperity; and
- Methods of detecting witches.

I am not suggesting that science can address the problems caused by behaviours based on myths and superstitions. However, I think public communication of science that pretends these beliefs don't exist will fail dismally to address the needs of the community. A healthy debate between the different cultures can promote mutual understanding and help refine peoples' ideas and preconceptions.

Conclusion

Effective and equitable communication of science in a democratic society is not an option but an imperative. As the above discourse has indicated, public communication of science can help entrench democracy and promote the creation of a free society. A free society is a society in which all ideas and cultures enjoy equal rights to expression. The association of science with socio-economic development motivates the view that public accessibility into and participation in science are matters of basic human rights, justice and equity. The three principles discussed above would contribute to an effective and equitable communication of science in a multicultural society.

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