

## **Parallel Session 9: Theoretical framework evolution around PCST**

### **CONCEPTUAL SPACE: A NEW UNDERSTANDING OF POPULAR SCIENCE**

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#### **Abstract**

This paper suggests a new model for understanding how the meanings of scientific knowledge are challenged and negotiated. It suggests that we treat ideas not as things but as spaces to be shared and explored. Like urban space "conceptual space" is the result of design, history and use. Spaces/ideas are not always used as intended. Popular science aims to open up this conceptual environment but to open up spaces means to lose control over them. The challenge for scientists is not just whether they are able to do this but whether they are willing.

**Key words:** model, negotiated meanings

#### **Text:**

##### Old models:

Popular science is now at a critical phase in its history. The marketing exercise that often passes for science communication is looking increasingly irrelevant - a vision of modernity in a post-modern world. Likewise, the models employed to understand the popularisation of science are now generally acknowledged to be inadequate - a linear model of communication, a deficit model of understanding and (commonly) a presentation of science as an unproblematic collection of facts. Most work within this standard view concentrates on the "effectiveness" of media with the public as empty vessels needing to be filled with the "right" answers and scientific "literacy" a measure of how full those vessels are.

This might be called the first generation model of popular science. A second generation has tried to go beyond a simplistic transmissive model to give a more complex account of science communication. For example, Hilgartner uses the metaphor of a stream to show a spectrum of contexts for popularization (Hilgartner 1990) and Lewenstein uses the analogy of a web in his account of cold fusion to show a whole network of interconnections (Lewenstein 1995). Often this rejection of a transmissive model comes with a call for a "dialogue" between science and the public.

Accepting this need to consider the context for communication I want to suggest a third generation model based on contextualized interactivity, a

cultural approach which sees popular science not as an accumulation of information but as a struggle over meanings.

### Conceptual Space

My previous work has argued that popular science is best seen as a "forum" where what is popular meets what is scientific. I now want to develop this spatial imagery further with the idea of "conceptual space" as a new model for understanding how the meanings of scientific knowledge are challenged and negotiated

I want to shift from thinking about ideas as objects that get passed from person to person and to start thinking about them as spaces. I believe this shift in imagery is applicable to ideas in general but is especially important for our understanding of science in particular. We are already familiar with spatial imagery. Academics "locate" their work within a particular subject "area" and "orientate" themselves with respect to other researchers in the "field". There are disciplinary "boundaries" and "frontiers" of knowledge. We are also familiar with non-physical spaces where things happen and people interact (e.g. in cyberspace).

However, I think there is something new that arises if we take this metaphor seriously: firstly, if we consider an analogy with urban space, and secondly if we apply these ideas to our understanding of popular science.

### Analogy with urban space

Urban space is the product of design, history and use. More particularly we should note that:

1. space can be created and closed down . The more open and accessible a space the greater the variety of use and the less control there is over it.
2. we interact with space . Urban space shapes what we do and how we do it; equally, space may be used in ways other than intended

Similarly, conceptual space is the result of design, history and use. As urban space shapes what we do and how we live, so conceptual space shapes what we think and how we think it. In both cases we interact with the space and transform it for ourselves as it, in turn, transforms us. We can draw out the analogy further:

- to close down a space restricts what we can do there (e.g. prevent us asking certain questions)
- use is not always as intended (e.g. variety of Darwinisms, popular appropriations of chaos theory)
- people keep revisiting the same places/ideas or avoid other places/ideas (i.e. prefer not to think about...)
- some places/ideas are functional and only visited when needed (e.g. science?)
- some places/ideas are more permanent than others

### Conceptual space and popular science

By reframing our understanding of science in public, conceptual space also suggests a way forward to go beyond the simplicities of science communication. There is no simple boundary between science and the public, nor any simple line of communication between them. Instead we can see the open spaces where not everything is done or thought for rational or rationalized ends, and restricted spaces, fenced off and policed, where only the persevering few are able to venture.

Thus, our new concern should be with access to spaces; with freedom of movement; with helping people to navigate and showing them different routes; with opening up the conceptual environment. However, the desire to make science more public may conflict with an equally strong desire on the part of scientists to control the meanings of what is made public. To open up conceptual spaces means to lose control over them. The challenge for scientists is not just whether they are able to do this but whether they are willing.

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