

Science communication through the looking glass

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Over the last three decades science communication practices have grown in volume, expanded internationally, and diversified in formats. As objects of research they are in constant flux, requiring researchers to be agile and self-aware.

We sought to devise a means to represent, in synopsis, the multiplying objects of science communication research, and the various perspectives available to researchers within which to view these objects.

Patterns and trends in science communication research have been analysed by bibliometric and other means. Typically, these analyses have looked at formats of publication, research methods, media and actors, and scientific content areas in focus.

Our aim was less to provide a guide to the state of the art than to indicate the options, including those that are little-tried or emerging, that are open to the researcher who is examining the field. We propose sets of analytical frames and modes of research as requiring consideration before the choice of research methods.

We considered several ways of representing the expanding field of practice and the overlaid conceptual layers through which the field, or parts of it, may be usefully examined. Our attention is principally on the researcher who is observing the field and seeking to identify patterns and relationships within it.

We envisage the researcher looking through adjustable lenses or filters that highlight different aspects of the objects under examination. This suggests – metaphorically – a looking device, or optical instrument, through which the researcher brings parts of the overall picture into focus.

The field of modern science communication practices has grown from narrowly defined activities concerned with perceived inadequate scientific literacy and its remedy, science popularisation. We represent the broadening range of topics and formats of activities in four widening, spiralling arcs that continue to expand in the 21st century as science communication broadens beyond institutional structures and is found embedded in increasingly diverse artistic and cultural forms.

We envisage the spiral lying on one side, widening from left to right along a time axis, and with successively more numerous activities and inclusive activity-types inscribed on the arcs. The resulting field of current practices is irregularly populated by clusters of activities of greater or lesser weight and depth; it is bounded by and intersects with other fields to various extents.

In science communication research (SCR) we include practice reflection and conceptual analysis, as well as formal, empirical studies. Its historical growth can be represented in a similar way to that of science communication practices, expanding outwards over time from tightly circumscribed concerns with dissemination techniques and accurate translation of scientific information.

SCR has expanded its vision and perhaps paradoxically, become its own field by drawing from social studies of science, educational research, museum studies, mass media studies, and much more.

We represent SCR's expansion as sets of analytical frames (AF) and research modes (RM) through which the researcher looks into the field of practices, reaching to greater or lesser historical distance. Among these four adjustable filters, AF1 and RM1 stand for an earlier phase of science communication research, AF2-3 and RM2-3 for more recent and emerging approaches. The device's eye-piece, however, is inscribed with two guiding concepts of SCR, namely that it is concerned at the highest level with

- anticipation, i.e. research that enables preparation for many possible futures in science, in society, and in science-in-society

and/or

- self-reflection, i.e. research that enables mutual learning relationships with each other and their respective histories between science-in-society actors, including SCR.

The field of practices

Each successive arc includes items that correspond to the dimensions of Publics; Representations; Contexts; Actors:

Arc 0: Lectures; Collections; Societies; Savants

Arc 1: Literacy; Popularisation; Media; Journalists

Arc 2: Perceptions; Interactives; Institutions; Explainers

Arc 3: Diversity and Participation; Sci-Art, Theatre and Film; Social Media and Cafés; Professionals

Arc 4: Uses and Pleasures; Comedy and Slams; Civil Society; Activists, Fans and Critics

Analytical Frames

AF1: Education; Promotion; Perceptions; Documentation; Social relations; Production

AF2: Internationalisation; Mobilisation; Institutionalisation; Professionalisation; Innovation

AF3: Appropriation; Localisation; Politicisation; Socialisation; Sense-Making; Critique

Research modes

RM1: Prescriptive; Descriptive; Evaluative

RM2: Action; Constructivist; Collaborative; Theoretical

RM3: Comparative; Design-based; Interpretive; Critical

In further development of this model, we will write a key to the terms just listed, defining each of them briefly. We will also produce a visualisation including a slide animation and/or an exploded graphic showing a funnel / cylinder in plan and cross-section. A further possibility is to present the instrument as a simplified phoropter (see below), the device used for eye tests; analytical frames could be on one eye and research modes on another, and the field of practices is the wall chart.

