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UNIVERSITIES AND SCIENCE COMMUNICATION

Universities, science communication and professionalism

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Abstract

This essay examines several distinct roles universities play in science communication, with particular reference to professionalisation in the field. It identifies the ways in which universities have facilitated, even driven, that continuing process. But it also notes the potential and actual contradictions between some of the roles of universities, reflecting current developments in higher education across many different contexts.

Keywords

Professionalism, professional development and training in science communication

Introduction

Among the activities of universities that have a bearing on the professionalisation of science communication, employment and education stand out from the others. Universities are employing more personnel in public relations, public engagement and outreach roles that fit into the broad field of science communication. They increasingly require those carrying out those activities to be professionally qualified in some appropriate subject. A scattering of universities — counted in single-digit numbers in any one country — provide education programmes aimed at least in part at equipping graduates to undertake such work in a professional manner. The possible tensions and contradictions are immediately evident: the recruitment of science communicators to perform institutional promotion may not sit easily with postgraduate education that aims to develop in science communicators a critical understanding of scientific and social institutions.

In an earlier essay [Trench, 2012] I presented science communication as an essential but also tricky enterprise for universities — vital, in that universities are in a privileged position to facilitate public communication of, and participation in, science; vital also in that it explores the spaces between and beyond the sciences and the humanities; vulnerable, in that education and research in science communication may strafe against traditional disciplinary boundaries and institutional goals; vulnerable also because it may fall between the cracks. A comprehensive review of the state and challenges of science communication [Davies and Horst, 2016] gives much attention to the currently changing roles of universities as an influence on the professional practice of science communication and as a source of internal conflicts for practitioners who feel responsible both to their profession and to their institution [Davies and Horst, 2016, p. 71]. A

contribution to a forthcoming study of communication in higher education [Entradas and Bauer, in press] identifies as trends that "academic and research institutions are increasingly in an 'arms race' for attention to attract students, staff and funding streams for their research", and that "the communication function of academic and research institutions is becoming increasingly the remit of professionals and professional activity".

The discussion of professionalisation in science communication has been marked by different and inconsistent uses — not always made explicit — of the key terms. When we refer to "professional science communicators", we may be drawing attention to the way in which public communication of science is no longer mainly the work of amateurs; we may also be referring to science communicators being employed specifically to be such and who do their work competently. When we refer to professional skills or continuing professional development with regard to science communication we may mean something equally well expressed as practical skills or practical training. But it is one thing to say that someone does their work professionally, or that a certain work has professional elements, and to say that this activity is a profession. As science communication also seeks to define itself as a field, or as an academic discipline, possibly "hybrid" [Priest, 2010] or "emerging" [Trench and Bucchi, 2010], it matters that definitional terms are used with care.

From the history of long-recognised professions, such as law, engineering and architecture, or more recently — and still — emerging professions, such as nursing and journalism, we can identify some characteristics of being, or belonging to, a profession:

- A limited, and widely accepted, definition of the relevant competences and tasks
- A structure of employment and a career path
- Formal training, possibly to degree level
- Access to a body of organised knowledge about the work and its social implications
- Autonomous judgement on how to handle an assignment, including making corrections, if necessary
- Membership of an association, institute or society, possibly with formal admission procedures and internal reward systems for service or outstanding contribution
- Attendance at conferences, meetings and other networking opportunities
- Responsibilities to observe explicit and/or tacit codes, standards or norms of conduct
- Recognition of the profession in law and/or in contracts
- Obligations through statutory regulation and/or access to systems of self-regulation, including sanctions for misconduct
- Access to continuing professional development (CPD) courses, as a means to keep up-to-date

The ladder of professionalisation

On this ladder, and allowing for variations between countries, we can say that journalism and public relations — both closely related to, but longer-established than, science communication — are not (yet) full professions, though they show the marks of advanced professionalisation. Science communication is somewhat lower down the ladder but also clearly in a process of professionalisation. There are thousands of science communicators who are professional in the manner in which they are employed and perform their duties. But this is increasingly turned into an unqualified assertion that science communication is a profession [e.g. Sánchez-Mora et al., 2015; McKinnon and Bryant, 2017; Gascoigne and Metcalfe, 2017]. On the other hand, the opposite has been put forward in a discussion of "informal science learning" [Matterson and Holman, 2012] — used both as a near-synonym for, or to refer to a sub-set of, science communication — that drew attention to the "lack of theory and knowledge base" and suggested that practitioners "can be characterised more as craftspeople operating through a model of apprenticeship, observation and audience approval" which the authors contrasted with the professional tradition of formalised mechanisms for recording knowledge and for training. Professionalisation in informal science learning (ISL) in the United States prompted the representative network of US science centres, ASTC, and a university-based research centre on informal science learning to produce a 'professional framework' based on surveys of science centre and museum practitioners that aims at "ensuring that professionals working in science center-type settings have the necessary knowledge and skills to apply the substantial and growing evidence base in ISL. . . and [at] understanding and supporting the needs of the full range of ISL professionals during their basic education and at particular points throughout their careers".[1]

A summary and nuanced view has also been articulated:

> The ecosystem of science communication is diversifying and, as part of this . . . science communication is becoming professionalised. Science communication is no longer the embattled preserve of a few 'visible scientists'. It is a domain populated by a wide range of full-time communicators (alongside many enthusiastic volunteers), whether those are scientists who have turned to communication full-time, communication professionals from other domains (such as PR), or a growing cadre of individuals specifically trained in science communication [Davies and Horst, 2016, p. 82].

The moves by universities and other higher education institutions into science communication education from the 1980s was the most significant step to date in science communication's professionalisation, rather as the earlier moves into journalism education was for the status of journalism, and the more recent moves into nursing education are for the status of nursing. The spread of science communication education programmes, mainly — but not exclusively — postgraduate diplomas or Masters that 'convert' science and (sometimes) other graduates into science communicators, has been widely observed and commented on. Some surveys of such programmes have treated them mainly as sources of training to produce professionals [e.g. Massarani et al., 2016] or sought to establish to what level they provide "professional skills" training [e.g. Mulder, Longnecker and Davies, 2008; Hong and Wehrmann, 2010], including, for example, in media writing, graphic and online media design, public relations strategies.

[1] See www.islframework.org.

Journalism education in universities — at least in the English-speaking world[2] — struggled for some time to win acceptance among a generation of practitioners who had learned typically through informal apprenticeship arrangements. Early journalism courses in further and higher education concentrated very strongly on practical elements but, over time, they came to resemble other programmes in the humanities and social sciences. As well as preparing students for employment, they aim to develop students' analytical and interpretive abilities. This may mean the graduates enter the jobs marketplace with a critical perspective on the media industries, rather as the freshly qualified architect or engineer may consider conventional practices or attitudes in the profession they are entering to be antiquated or inappropriate.

The ability to detach from the way the job has traditionally been done and to interpret independently the requirements of a client or employer are marks of the professional. Assessing universities' science communication programmes from the perspective of professionalisation might more valuably look at the intellectual or theoretical content than at the practical. Already over two decades ago, Turney [1994] distinguished between science communication programmes that focused on skills and those that took in "the big picture". The distinction still applies, though it can be refined to take account of the proliferation and diversification of such programmes in the intervening period.

Types of necessary knowledge

In discussion of the growth and maturing of science communication, we need greater clarity of what is meant by professional education. The knowledge of how to do certain tasks has its essential place in professional education, but so too does the knowledge of what it means to be a professional — in ethical and other social perspectives — and also the knowledge of the accumulated research around the practice, its history, its organisational contexts, its social impacts. The disciplinary settings of university education in science communication vary considerably and, consequently, the content and professional orientation of those programmes. They may be found in departments of life sciences, bionics, applied sciences, education, social sciences, history of science, as well as in communication or media studies, or free-floating between departments. A survey of Latin American programmes [Massarani et al., 2016] showed that no two of them had precisely the same institutional setting.

The particular contexts of science communication education may reflect an opportunity arising or an influential individual present in a particular place at a particular time. Some postgraduate programmes require entrants to hold a degree in a science subject, others do not. With long experience in teaching science communication, and referring to the widespread practice of targeting such education at science graduates, Felicity Mellor remarks that "to become a professional science communicator is to cease to be a scientist. Our students are *humanities* students, their scientific qualifications notwithstanding" [Mellor, 2013, p. 919]. Some programmes are very strongly oriented to producing qualified

[2]Journalism had a longer presence in, for example, German and French universities, though as an academic subject strongly linked to linguistics and/or philosophy, in which context more attention may well be paid to what it *means to be* a journalist.

practitioners, operating in close association with employers of such practitioners,[3] others expect their graduates to spread more widely, including into research. The divergences apply not only to the scientific and other content of the programmes, but also to the model of professionalism they present. Rarely, however, is this made an explicit topic in the programmes; TU Delft in the Netherlands — perhaps uniquely — includes a core module on professionalism in its science communication Masters.[4]

Of course, denominated education programmes in science communication are not a prerequisite for professionalisation in the field. Specific political and cultural conditions can also mean that science communication is widely done in a professional manner by people who identify as professionals in contexts where there are no, or very few, denominated university programmes in science communication. This is notably the case in Nordic countries, where there large numbers of dedicated and highly qualified science communicators — including in the higher education sector, but also in the state sector and science centres — but whose qualifications are not specifically in science communication. Of the Nordic countries, only Finland has a Masters in Science Communication. Legal obligations on employers to support continuing professional development and on higher education institutions to do public engagement, strong associations and networks, and a civic culture supporting social responsibility and ethical awareness also drive the professionalisation process.

A recent article in this journal [Medvecky and Leach, 2017] made the case that ethical codes need to be developed for science communication and the keywords attached to that article - including "professionalism" and "professional development and training in science communication" — defined this case for codes as an issue of professionalisation. Curiously, however, there was no explicit reference in the text of the article to professionalisation of science communication. That review considered the ethical norms applying in science, journalism and communication as points of departure for developing a code suitable for science communication. "Working out an ethical base for science communication requires we work out what is at the core of science communication and how science communication relates to these fields," it is stated [Medvecky and Leach, 2017, p. 4] — and it might well have been said that working out the professional model for science communication requires the same kind of definition and reflection.

The link between ethical conduct and university education in a newly developing field was also made 70 years ago with reference to public relations. Boston University (BU) set up a School of Public Relations in 1947 which awarded the world's first academic degrees in public relations. The then BU president envisaged that public relations would become "a vocation, which should be entered only by persons who have pursued a course of study leading to a professional degree, thus making it comparable with the professions of the ministry, law, medicine, and teaching" and that a graduate of this School "must be honest, honest beyond legal

[3]One of the most recently established Masters programmes in the field is offered by Ca Foscari University, Venice, in association with Science Gallery Venice, a new science centre hosted by the university; for 30 years Australia National University has offered a Masters in partnership with the Shell Questacon Science Circus, though in the past decade also a more academically oriented Masters, with more students.

[4]For more on this, see the essay by Wehrmann and Van der Sanden in this Commentary.

requirements . . . incapable of lying and treachery, of deceit and trickery, of duplicity and chicanery" [Fiedler, 2017].

Wide spectrum of activity

University-based activity in science communication covers a wide spectrum from fully instrumentalised science communication serving narrow promotional purposes to science communication as an intellectual pursuit that serves self-awareness and reflexivity within higher education and research institutions. Most universities with an investment in science communication have activities at several points along that spectrum, sometimes in uneasy (or unrecognised) co-existence. This can be illustrated by reference to Imperial College London, one of the pioneers in postgraduate education in science communication, appointing John Durant as the first professor in this subject in the early 1990s. Imperial has maintained and expanded its Masters offerings in science communication over 25 years, currently admitting over 50 students between its two programmes. The college has invested strongly in public communication of science through its own and other media, providing outlets for students' contributions and employing its own science communication graduates in their information services.

Along with all this, however, Imperial a decade ago appointed Robert Winston as Professor of Science and Society, unconnected with the education and research ICL was undertaking in that field. As a celebrity medical scientist, with a strong public profile from presenting television programmes, Winston has been a public relations asset for the medicine- and science-oriented college. Similar appointments elsewhere had already been treated sceptically [Miller, 2008] and Winston's appointment was characterised as reflecting "a split within universities over the perceived role of academics with respect to public science" [Mellor, Davies and Bell, 2008, p. 4]. [5]

In September 2016, ICL prominently reported on its web site that Winston had appeared on the US television chat show of British TV personality James Corden, lighting gases in studio to shoot large flames.[6] Thus, an expert in reproductive medicine becomes a science communication performer of the kind that educators and researchers in the field would presumably subject to critical scrutiny. This case points to the wider issue of how universities competing in the market for student and staff recruits deploy science communication in contradictory ways.

The current attention to issues of professionalism and professionalisation in science communication may be taken as a sign of the growing maturity in practice, education and research in the field. This article suggests that greater care should be taken in how this process is understood. As outlined above, it should be seen as a process that is bringing benefits to those working in the field but also as a process that may never be completed, in that science communication takes its place alongside formally recognised professions.

More than that, the process carries risks, specifically one anticipated already two decades ago [Lévy-Leblond, 1996], that the emergence of science communicators as

[5] It is noteworthy that this critical comment appears in a piece written by three people connected with the ICL science communication programme as graduates or as lecturers.

[6] See 'Professor Robert Winston brings science to hit US chat show', posted at http://www3.imperial.ac.uk/newsandeventspggrp/imperialcollege/newssummary/news_9-9-2016-11-22-54.

intermediaries between science institutions and wider society may absolve scientists from their social duties to communicate publicly. Responding to suggestions in the science centre community that researchers as communicators may be seen as competing with the staff employed specifically to do this work, two science museum staffers sought to redefine the publicly communicating researcher as an "ally" of the specialists and to propose that those working full-time in communication should rather ask themselves if they "have the expertise and authority necessary for training the researchers" [Calcagnini and Xanthoudaki, 2016].

It would represent dangerous hubris if (professional) science communicators were to define the practice of science communication as theirs alone. University education and other activities in the field should aim to support the present specialists and prepare the future ones to facilitate scientists in doing public communication as much as to do it themselves.

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