Cardiff sciSCREEN: A model for using film screenings to engage publics in university research

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Abstract

Cardiff sciSCREEN is a public engagement programme that brings together local experts and publics to discuss issues raised by contemporary cinema. Since 2010, Cardiff sciSCREEN (short for science on screen) has exhibited more than 50 films alongside short talks and discussions that draw on a range of disciplinary perspectives to explore the broad repertoire of themes found within different film genres. The aim of Cardiff sciSCREEN is to increase the local community's access to university research, while enabling university staff and students to engage a variety of publics with their work. In this paper, we first describe our method of public engagement, and then draw on data from a research survey we administered to sciSCREENers to discuss the relationship between the theory and practice of public engagement. Using research from public understanding of science (PUS), public engagement with science and technology (PEST), science and technology studies (STS) and film literacy, we discuss the ways in which our flexible characterization of science has made the programme inclusive, attracting a wide and varied audience. We consider the benefits of cross-disciplinary perspectives when communicating and engaging contemporary developments in science, where the term 'science' is taken to stand for the breadth of academic research and not merely the natural sciences, as well as discussing the importance of space in public engagement events.

Keywords: public engagement; science communication; film; multidisciplinarity; expertise

Key messages

- Cardiff sciSCREEN is an effective public engagement initiative with which to engage publics with contemporary scientific and societal issues. The screening of a film creates a shared experience between panellists and attendees.

- Attendees enjoy the pan-disciplinary perspective provided by multiple speakers from different disciplinary backgrounds.

- Public engagement is more than an activity. It is a process, and engagement programmes should be flexible enough to develop and adapt over time.

Introduction

While still peripheral, relative to the other academic activities such as research and teaching, public engagement has become more prominent in higher education institutes. The United Kingdom Research Councils describe public engagement as an 'umbrella term for any activity that engages the public with research' (RCUK, 2009: para. 2). The term covers a broad range of activities, such as science cafes, public lectures, public deliberations, community engagement projects, consultations and public art exhibitions (Watermeyer and Lewis, 2016). In the broadest sense, engagement can mean simply some form of personal connection with an individual or a group on a particular issue or topic (Lorenzoni *et al.*, 2007). A more detailed examination of the concept, however, reveals various types of initiatives and exercises that have different aims, and numerous mechanisms to accomplish these endeavours. Rowe and Frewer (2005), for example, distinguish between three modes of engagement based on the locus of information transfer: (1) *communication*, (2) *consultation* and (3) *participation*. Public *communication* is described as the flow of information from the sponsors of the initiative to the public; public *consultation* is defined as the transfer of currently held views and opinions from the public to sponsors during an exercise organized by the sponsors; and public *participation* is characterized as the exchange of information between members of the public and the sponsors. Within this framework, we report on a programme that is located towards the communication end of public engagement activities, but with dialogue and discussion woven into its fabric. Cardiff sciSCREEN is a programme initiated by researchers at Cardiff University (the sponsor) and open to all to attend (the public). Information in the form of developments in research, theory, analysis and experience is relayed from a panel of experts, mostly affiliated to the university, to those who attend. Importantly, attendees are also afforded the opportunity to engage in dialogue, ask questions, put forward their views and challenge speakers' ideas in a friendly, informal and stimulating environment.

This paper describes the Cardiff sciSCREEN model and discusses the theory underpinning the format. We include findings from a research survey that probed attendees' opinions of, and attitudes towards, the initiative. We draw on the results of this survey to show how public engagement theory has shaped the Cardiff sciSCREEN initiative, and how the programme, in turn, is, beginning to affect theory on publics, expertise and spaces for engagement.

The Cardiff sciSCREEN method

Cardiff sciSCREEN is a cross-disciplinary public engagement programme that uses local academic expertise, alongside lived and/or professional experience to discuss issues raised by cinema. Organized by an enthusiastic team of volunteers from a variety of specialisms at Cardiff University, the events are open to all, with people from both inside and outside the university attending. Discussions are entertaining and informative, drawing on a range of disciplinary perspectives and the broad repertoire of themes found across different film genres.

The concept of sciSCREEN, shorthand for science on screen, has a history beyond Cardiff sciSCREEN itself. Affiliated to the British Science Association (BSA), "sciSCREENs" have traditionally been organized with a single 'scientific speaker' talking after a typically 'scientific' film to a public audience. These sciSCREEN events are described as a 'film … paired with a short, informal talk by a speaker', generally 'followed by an open debate/discussion with the audience after the film' (British Science

Association, 2016). Cardiff sciSCREEN has modified this template in important ways. Cardiff sciSCREEN is multidisciplinary, with a variety of experts (usually four) speaking at an event from different disciplinary standpoints. Another critical difference from traditional sciSCREENs is that Cardiff sciSCREEN's topics of interest extend beyond the natural sciences to include wider academic research and the lived experience of people engaging with situations where university research is relevant.

Cardiff sciSCREEN assumes that people are more likely to understand and engage with science if they are also involved in discussions about its use, value and social context rather than simply being handed top-down explications about 'methods', 'facts', 'objectivity' or 'statistics'. Cardiff sciSCREEN invites those who attend to pose questions to the panel. Historians, sociologists, philosophers and artists speak alongside biologists, physicists and engineers. Non-academic professionals and people with lived experience have also contributed. While typical 'sciencey' films such as science fiction, adventure and fantasy make up a fair proportion of the screenings (for example, *Inception*, *The Hunger Games* and *District 9*), other 'non-scientific' films have also been screened, such as biopics (*Iris*, *The Imitation Game*), comedies (*Lars and the Real Girl, 50/50*) and documentaries (*The Garden*, *Project Wild Thing*), which situate 'science' in everyday life.

Each event has a similar but flexible format. First, there is a screening of a film, followed by a short break when attendees decant to another room for refreshments. Then follow three to five short talks of no more than seven minutes each from experts who respond to different aspects of the film. These may include relating their research or theories from their discipline to particular issues raised by the film, or sharing more personal, experiential knowledge. At the end of the talks, an open discussion is chaired between the speakers and the attendees. Refreshments are often provided in order to encourage a less formal atmosphere and to foster discussion and engagement, rather than a simple one-way transmission of ideas. Events have been held at Cardiff University venues, as well as off-campus in cinema spaces such as Chapter Arts Centre, the Odeon and Cineworld, and other non-cinema venues such as Rhondda Heritage Park and the Cheltenham and Cardiff Science Festivals. The programme is centred on five key principles, that it is: (1) simple, (2) effective, (3) enjoyable, (4) thought provoking and (5) inclusive. Our model is dynamic and dialogical, and films are chosen for their cultural relevance.

In the recent survey we administered, we asked sciSCREENers why they attend our events. One respondent's reply neatly summarizes the intention behind Cardiff sciSCREEN:

> [For] (i) Enjoyment; (ii) Good entertaining films; (iii) Greater understanding of [the] issue portrayed; (iv) Insight into literature and film making; (v) Discussion on current perspectives in treatment or research on topic; and (v) Opportunity to socialise and catch up with friends.
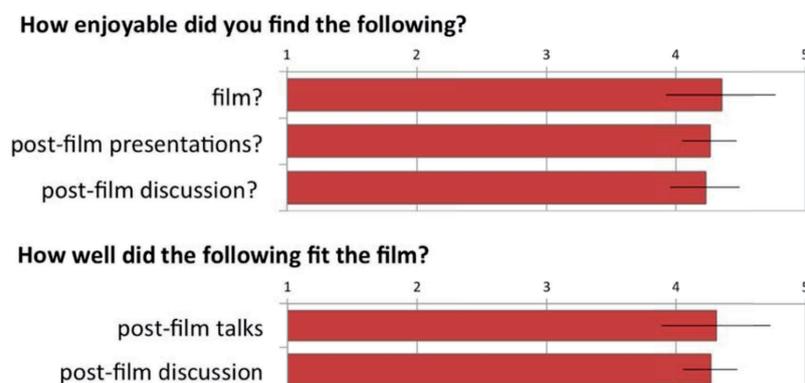> (Female student, 41–65).

In what follows, we describe the process of organizing a Cardiff sciSCREEN event, from securing funding through to uploading speaker essays on to our website (see Figure 1).

Funding

Funding is an important aspect of any public engagement programme. All the same, our experience shows that Cardiff sciSCREEN events can be organized on a relatively modest budget. Each event costs between £400 and £750, which covers the cost of the venue, the film license, the refreshments and a contribution to website hosting.

Figure 1: The Cardiff sciSCREEN Experience
We have constructed a word cloud to represent the fundamental ingredients involved in organizing a Cardiff sciSCREEN event. Five essential components are key to organizing a Cardiff sciSCREEN, and are coloured accordingly: (1) choice of film – blue, (2) funding – red, (3) the venue – gold, (4) the audience – brown and (5) the panel of experts – green. These are encircled by the many factors that need to be considered when organizing an event and are coloured to fit the correct category. Factors coloured in black relate to communication activities.

Although we have attracted funding for individual events and for a series of films from both external and internal sources, Cardiff sciSCREEN has no permanent core funding. This is, perhaps, evidence of the peripheral position of this type of event within the university's overall aims and goals. From within the university we have been supported at the school, college and central level; from outside the university we have been funded by, among others, the Medical Research Council, the British Science Association, Cancer Research UK, the Welsh Psychiatric Society and the Wellcome Trust. Most recently, we have been approached by a number of enthusiastic groups who bring with them their own funding, and using our experience and expertise we have worked in partnership to organize events tailored to their particular interests.

Film choice

Choosing the 'right' film can be more difficult than it sounds. There are four main issues to consider: (1) its appropriateness, (2) licensing, (3) its length and (4) the age rating. Our first consideration is that the film links to the agenda of the sponsor of the event and that there are enough ideas in the film that it will enable various experts to have a 'way in' to talk about a particular issue. Here, the organizing team play an important role in coming up with possible topics for discussion and matching those topics with potential speakers. Of course, when selecting a panel of four, not everyone is going to be able to attend or will want to speak. Consequently, we tend to compile a list of eight potential speakers who could present at an event, and from

Figure 2: Post-event feedback
Audience members were asked to complete an evaluation form at the end of each event. Questions were scored from 1 = 'not a lot' to 5 = 'a lot'. Data were collected from more than 900 evaluation forms following the most recent 20 Cardiff sciSCREEN events. Error bars indicate the standard deviation.

that list we usually get our panel. Second, when screening a film outside of the home or in a cinema, it is a legal requirement to acquire the appropriate copyright license. Filmbankmedia is an excellent resource that offers licenses for thousands of films. Nonetheless, they do not have the license for all films, which has meant we have not been able to screen every film we wanted. Next, we look at the film's running time. Some films that might otherwise work well as sciSCREENs are over two and a half hours long. We tend to look at films with a running time of an hour and three quarters or less. This enables the event to begin at 6 p.m. and finish at 9.15 p.m. Finally, the film's certification is also an important factor to consider. We do not tend to show films rated 18, but regularly screen films rated 15. This is in keeping with the age range of the people who attend the events. We are careful to include the rating of the film when advertising our events.

Advertising

We advertise forthcoming events in multiple ways. We have a mailing list, currently comprising 475 email addresses. At the time of writing, our Twitter handle (@sciscreen) is followed by over 760 people. (Of our Twitter followers, 62 per cent are female and 38 per cent are male; 89 per cent are aged 25–44. As a point of comparison, 48 per cent of all Twitter users are aged 25–44.) Close to 320 people are part of our Facebook group. We advertise forthcoming events on (1) our website (www.cardiffsciscreen. co.uk), (2) at the event location, (3) through the university and (4) at local libraries and community centres. We have also experimented with placing posters around the city for a small fee. When we have organized events off-campus, we have made use of the collaborating organization's marketing tools. For example, events at Chapter Arts Centre were included in their monthly magazine and programme. Our survey and evaluation have also shown that 'word of mouth' is an extremely effective advertising mechanism.

Evaluation

After many of the events, we have asked attendees to complete a short evaluation form. This feedback provides invaluable information for thinking about future events, and for determining what has worked and what could work better. It is also useful if, as

organizers, we need to report back to funders and apply for future grants. An ongoing element of the evaluation has been to ask attendees how much they have enjoyed the film and the talks, and whether the speakers are well matched to the film. Attendees tend to score us highly across the board (see Figure 2).

Website

Our website – www.cardiffsciscreen.co.uk – works as both a portal and an archive, providing a space for archiving, promotion and discussion. Many of the experts have turned their presentations into short essays, which are now hosted on the website. These are permanently accessible, extending the reach and legacy of the talks. Essay topics are varied, including subjects such as 'Roman history', 'Surveillance and the State', 'Zombies and monsters', 'The ethics of organ donation', 'Developments in robotics' and 'Genetic discrimination in employment'. These essays have been accessed tens of thousands of times. The website is linked to our Facebook and Twitter accounts and to Eventbrite, where attendees can book tickets to the events.

The Cardiff sciSCREEN public

Public engagement is more than a one-off event; it is a process. Cardiff sciSCREEN was launched in March 2010 and has to date organized over 50 events across a range of genres and certifications. Notable films have included *Moon*, *A Single Man*, *Robot and Frank*, *Take Shelter* and *The Hurt Locker* (see www.cardiffsciscreen.co.uk/films for the full list of films). Close to 4,000 people have attended our events in multiple venues both within the university and beyond. Cardiff sciSCREENs are free to attend and usually attract people aged 16 and above. In this section, we discuss the characteristics of the sciSCREENers who attend.

There is a significant body of literature problematizing the concept of 'the public' (Wynne, 1995; Renn, 2006). There are, of course, different types of publics; some are interested and invested in a specific topic of concern, and others are at some remove from the issue at hand (Lewis and Bartlett, 2015). Public engagement imagined and enacted institutionally often portrays the 'public' simply as non-university audiences. Our characterization of 'public' is not as static and takes into account the fluid nature of identities, as well as the different topics discussed. A university researcher one year may be a civil servant the next. Moreover, a librarian at a university or, indeed, a history postdoctoral researcher, may be no more or less a member of the 'lay public' on the issue of genetics than someone who does not work in higher education. As one respondent explains:

> I attend [Cardiff sciSCREEN] to keep in touch with what is currently happening in the real world – I believe the organisers select films which reflect relevant issues on the social and political science which I, myself, might have trouble locating as I am to[o] focused on my research.
>
> (Female PhD Student, 26–40)

Cardiff sciSCREEN therefore connects to diverse persons, attracting (1) employees of the university and (2) students at the university, as well as (3) those with no affiliation or connection to a higher education institution. Of the 86 respondents that completed our recent survey, 40 per cent were employees or students at the university and 60 per cent were not. Those who were not worked in a wide range of occupations, including as surveyors, librarians, secretaries, therapists, engineers and local councillors. Our

programme is also accessible and relevant to a range of demographics, attracting both the young and old. For example, A-level students and their teachers attend our events:

> They are an excellent way of engaging my A level students in the wider issues associated with the topics they study. They stimulate interest in careers in science [a]cross curricular themes.
>
> (Female teacher, 41–65)

As do those who are retired:

> I am recently retired on ill health grounds. I worked as a Radiographer and miss the educational side to my profession – as well as the social side. sciSCREEN helps fill the gap. I meet friends there and enjoy post-film discussion.
>
> (Retired female, 41–65)

We continue to advertise events to regular attendees, and 60 per cent of the survey respondents have attended more than four events, with 6 per cent having attended ten or more. Importantly, though, Cardiff sciSCREEN is not a closed shop. We also endeavour to attract new people, as is evidenced by our ever-increasing mailing list. Email addresses are collected as part of the evaluation and are added to our secure mailing list. Undoubtedly, though, there is still more work to be done to broaden the diversity of attendees at Cardiff sciSCREEN events. The occupations of our survey respondents are all likely to require some form of higher education training. Clearly, the types of people who attend are intimately linked to the venue of the event too. By moving Cardiff sciSCREEN around multiple venues, we are likely to engage with publics that are more diverse in the future.

In the next three sections, we critically discuss the importance of space and the role of the film and the expert talks in the Cardiff sciSCREEN experience.

The architecture of space

Space matters when holding public engagement events. The architecture of the venue can both constrain and guide the flow of the event. We have held Cardiff sciSCREEN events in multiple spaces over the years, with each having their own benefits and challenges. Some of these venues have been functioning cinemas and others have been makeshift theatres with the facilities to screen a film. At some events, we have held the talks in the same space as the film; at others, we have changed rooms for the talks. The original intention behind our events was to create a cafe-like atmosphere, busy but cosy, and to take the university and its research out to the local Cardiff community. These initial sciSCREENs were held in the modern and recently revamped Chapter Arts Centre, where the films were screened in the cinema, riding piggyback on their programme of usually new release films. We viewed the films in a traditional manner in the theatre, before talks and discussions were held in a breakout room. As one survey respondent remarked:

> This is a venue outside the university and therefore gives the impression at least of being more open to the public.
>
> (Female researcher, 26–40)

The discussion room could hold 40 people and the speakers were close to the attendees and at the same eye-line, helping to create a natural flow of conversation. The space was what Thrift (2006) might call an incubator, fostering intense and close discussion. Over time, audiences grew large enough to require a new space. The

larger venues at Cardiff University's Hadyn Ellis Building (HEB) and Bute Building have enabled more people to be present, with upward of one hundred people normally attending. Despite it not being designed as a cinema, the screening of the films in the modern lecture theatre works well and allows for more control over the films we screen. The panellists present in the same venue, on a stage in front of the screen, and survey respondents report that the comfortable seats in the auditorium, which look down on the speakers, are an important part of the experience. The increased size of the space, though, has meant that more stage-managing of the event is required by the chair, to avoid people speaking over one another. Despite our intentions to maintain an informal atmosphere, the initiative has crept a little closer to the public lecture style of engagement that we originally tried to avoid. Thus, both spaces have real positives but also come with their own challenges. When it comes to public engagement, big does not always mean best; quantity does not always outdo quality. That said, when we asked Cardiff sciSCREENers where they preferred events to be held, 36 per cent said the university, 36 per cent had no preference, 25.6 per cent said Chapter Arts Centre and 2.4 per cent said another venue (though it may be the case that some respondents have never attended events off campus, so are not in a position to compare). One survey respondent who has experienced multiple Cardiff sciSCREEN venues understands the switch to the university, but champions holding events in various locations and engaging with different communities:

> Holding events in the University such as the HEB [Hadyn Ellis Building] etc. is perfectly understandable, it's an accessible resource, especially when a tight budget must be adhered to. However, holding University events in different locations (not just trendy Chapter) opens up events to a wider audience who wouldn't otherwise consider attending.
>
> (Female manager, 26–40)

This comment chimes with the underlying sentiment behind public engagement – that universities should be 'of' as well as 'in' their communities (Bond and Paterson, 2005), and puts into words some of the reasons why we have also held events in places such as Rhondda Heritage Park.

The cinema experience

Film is central to the Cardiff sciSCREEN experience. When marketing Cardiff sciSCREENs, we have made concerted efforts to emphasize the film element of the event. We do not simply want to preach to the 'science converted':

> The events tend to show good films that I want to see. However, they offer the added value of providing intellectually engaging talks and discussions. The events provide the opportunity to learn more about a subject, in the context of enjoying a film. They provide the opportunity to think about ideas portrayed in a film and sometimes to challenge its representation of science/the environment/illness/disease/the future and sometimes this can mean thinking differently or questioning your own initial response or reaction to the film.
>
> (Male charity worker, 26–40)

We can begin to think of the role of film in our initiative more critically. Cardiff sciSCREENs can provide snapshots of atypical interactions with film texts, which raise interesting questions concerning the multiplicity of meanings of film for heterogeneous audiences. (In this section, we switch to using the term 'audience' as it is an established

concept in film literacy studies.) Such an evaluation illustrates the 'cultural turn' in film studies, which questions film-goers' uniformity and documents the practices of niche audiences who may be overlooked due to industry preoccupation with commercial viability (Nightingale and Ross, 2003). This is a key aspect of the social cinema movement, and in particular 'Cinema for All', funded by the British Film Institute, which aims to reach various communities through different types of film. Those who attend Cardiff sciSCREEN are also atypical in this regard. In 2014, only 18 per cent of UK film goers were aged over 45 (Statista, 2014); on the other hand 51.2 per cent of the Cardiff sciSCREEN survey respondents were aged over 40, and this could be considered as quite representative of the overall Cardiff sciSCREEN public. (Although some of our events have specifically targeted younger people, with help from the Research Council UK School–University Partnership Initiative.)

In the survey, a pronounced interest in film was captured in descriptions of why people attend: 'because I am interested in the film primarily' and 'I have a serious passion for film and film criticism'. Conversely, responses referring to the Cardiff sciSCREEN programme and the talks, rather than the films, suggest that film, as a media form, is not as central for some as for others. No survey respondents cite special effects as a source of pleasure, in contradiction to the mainstream appetite for spectacle, which has been evident since the 1990s (Turner, 2006). The cultural, political and social relevance of a film, the film-going event itself and 'the twin expectations of narrative and realism' (Hill, 1986: 54) are cited more frequently as significant sources of pleasure by Cardiff sciSCREEN attendees. Survey responses indicate that while 79 per cent of audience members consider that the choice of film 'matters a lot', they are flexible about the release date. No responses mention the centrality of director or star to the Cardiff sciSCEEN experience, confirming that Cardiff sciSCREENers' interest does not reside in a film studies domain so much as in a cultural studies domain that prioritizes the film text as a social object primed for analysis (Mikos, 2008):

> I particularly like the insights given by the expert speakers after the film. They really help to draw out the film's themes – themes that I might not even have spotted myself when watching – and asking them questions to clarify or expand on things.
>
> (Female librarian, 26–40)

Film, then, as part of culture, is used as the vehicle to discuss contemporary (scientific) topics and issues. This is reinforced by survey responses, which indicate that, while most people are drawn to events through the film, when asked directly about the most enjoyable aspect of Cardiff sciSCREEN the highest-rated category, with 27.9 per cent, is the multi-perspective film commentary. The film itself ranks second, with 17.1 per cent (see Figure 3). The following comments were typical responses:

> The themes discussed after the chosen film are usually incredibly interesting and informative.
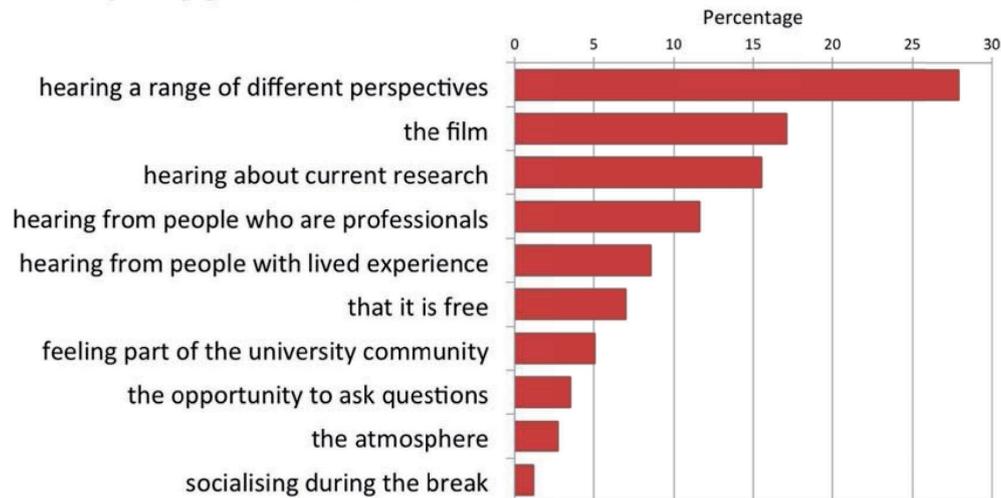>
> (Female PhD student, 18–25)

And:

> I like the mix of film and academic discussion to get me thinking, then [to] use at dinner parties and pass off as my own original thought!
>
> (Male NHS clinician, 41–65)

Figure 3: Response to participant survey
Attendees were invited to complete a short survey regarding their experiences of Cardiff sciSCREEN events. Participants were asked to choose their top three most enjoyable aspects of Cardiff sciSCREEN. Analysis is based on responses from 86 participants.

What do you enjoy most about Cardiff sciSCREEN?

Aspect	Percentage
hearing a range of different perspectives	~28
the film	~17
hearing about current research	~16
hearing from people who are professionals	~11
hearing from people with lived experience	~8
that it is free	~7
feeling part of the university community	~5
the opportunity to ask questions	~4
the atmosphere	~3
socialising during the break	~1

Lewis's (2003) distinction between 'marketable' films, which are defined by 'high concept' features and special effects and 'playable' movies, which are characterized by audience discussion, crystallizes Cardiff sciSCREENers apparent indifference to the first category and investment in the latter. Discussion and dialogue after the expert talks is broadly perceived to enhance the film experience by adding 'another dimension', 'depth and context' and 'meaning and resonance'. Indeed, survey respondents remark that informative discussion can salvage a 'mediocre' film:

> The events always make me think differently about a film, to situate it within a context that I am often unfamiliar with. This can mean that a mediocre film – like *Wolfman* for example – can actually make for a very enjoyable, engaging and informative discussion.
>
> (Female researcher, 26–40)

Other respondents acknowledge that film may play a role in facilitating more accessible and fluent discussion about scientific and other academic topics, while the discussions help them to remember the film more vividly long after the event:

> What I really like about sciSCREEN is the chance to watch a film and then really think properly about it in ways which I probably wouldn't otherwise – I like having the perspectives of the academics from different disciplines which again helps me consider the content of the film from points of view I wouldn't necessarily have done otherwise. I have remembered all the sciSCREEN films I have been to very clearly, whatever I have thought of the film – [which is] in contrast to most films I watch where I unfortunately have a tendency to forget them almost immediately! I like the fact that it brings together a lot of people from different backgrounds with common interests and that it is [there] to [develop] greater public understanding of science … helping people (myself included!) to better understand the role and relevance of different academic disciplines in many science-related areas.
>
> (Female film-lover, non-academic, 26–40)

It is also notable that 25 of the 86 survey respondents stress that the acquisition of knowledge is an important aspect of the Cardiff sciSCREEN experience. Discussion and presentation are regarded as higher sources of authority than the film itself, suggesting that panellists are perceived to be powerful 'sense-making units' by the attendees. Only one respondent in the survey pointed out that the film itself holds a rightful place as an authority in academic discourse. It is therefore the expert talks, rather than the films, which Cardiff sciSCREENers value as the source of authority on matters of knowledge, while the films play a significant role in situating the discussion and raising questions. We now move on to a discussion of this expertise.

Multidisciplinary panel and expertise

In this section, we attempt a more theoretically grounded analysis of the survey results by framing them within contemporary debates in the field of science and technology studies (STS). STS has a long history considering the interaction between experts and non-experts, mostly through two dominant types of *normative* models. The first, *expertise-central*, approach is represented by Collins and Evans's *Third Wave* programme (Collins and Evans, 2007), which aims to reinstate scientific expertise in public science debates as the best type of expertise in technical matters. While this programme admits a role for non-scientists, what we might call 'experiential experts', it unambiguously claims that while publics must be made aware of the fallibility of science, the status of scientific knowledge as the best kind of technical knowledge available must always be stressed in parallel. The second approach seeks to democratize science by demanding increased public participation in practically all scientific issues at every stage of a decision-making process (Irwin, 2006; Jasanoff, 2003; Wynne, 1995), something akin to the public participation and consultation approaches described by Rowe and Frewer (2005). This second model steers towards empowering the non-scientist members of society so that they become part of scientific processes and not just passive receptors of technical knowledge. Part of the survey sent to attendees explored their attitudes towards the expertise of the speakers at events.

Figure 4: Response to participant survey
Attendees were asked which category of expert they found (1) most authoritative and (2) most enjoyable. Data were collected from 73 and 79 survey respondents, respectively.
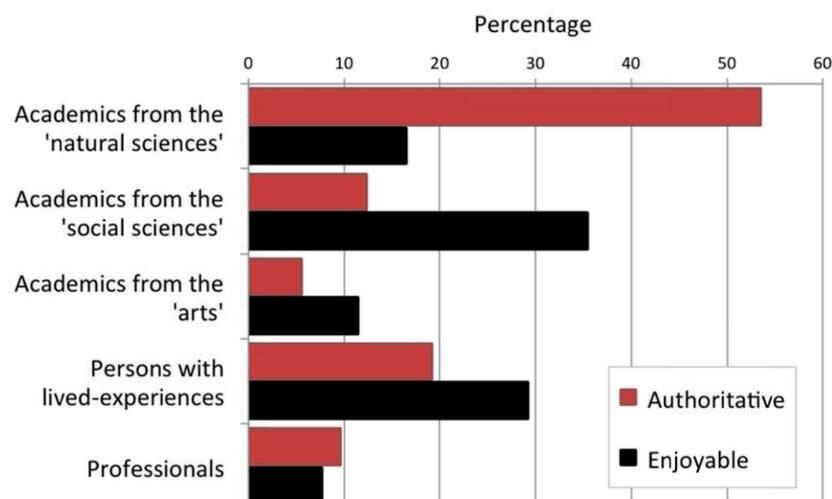
As an enabler of expert to non-expert interaction, it is interesting to note how Cardiff sciSCREEN attendees perceive experts as sources of technical knowledge with these two normative frameworks as the backdrop. The survey showed a difference in the degree of perceived authoritativeness between the natural sciences and social sciences in post-film discussions, with natural scientists being seen as more authoritative than other types of speaker, including social scientists, and those with lived experience being ranked second. However, when turning to the perceived degree of enjoyment of talks, the tables turn and social scientists and the humanities are seen as significantly more enjoyable, with natural scientists being ranked third, again behind those with lived experience, who were ranked second (see Figure 4).

Cardiff sciSCREEN panellists therefore appear to partake in two types of post-film interaction: natural scientists perform authoritatively oriented science *communication*, while social scientists would seem to align more with socially reflexive instances of *participation.* These patterns fit well into the classes of STS public interaction models discussed above.

There is nothing inherent in the Cardiff sciSCREEN 'formula' that specifically promotes either type of interaction. The survey seems to suggest that the discussants 'naturally' align themselves to the repertoires of 'natural science as authoritative knowledge' and 'social sciences as reflexive knowledge', with persons with lived experience sandwiched in between. Nevertheless, respondents also rebel against these categories and against the question itself, citing the pan-disciplinary approach we take as one of the most appealing aspects of the format. Considering the qualitative data from the survey, the *diversity* of expertise is often mentioned as one of the most positive aspects of Cardiff sciSCREEN:

> That is why the sciSCREEN events are so powerful, because there is never one authority on a subject but many different voices with important contributions to make.
>
> (Female PhD student, 18–25)

And:

> I like that [Cardiff] sciSCREEN involves a breadth of experts on the panel to deal with different aspects of a film, from the underlying science and societal issues through to the making of a film in terms of its characters and depicted context and how that reflects on both historical and contemporary attitudes within society.
>
> (Male civil servant, 26–40)

This evidence adds further weight to our multidisciplinary approach to communicating and engaging with contemporary issues and topics. It is the mix of disciplinary perspectives and expertise, discussing issues and topics, which draws a varied crowd to the events.

Summary

UK universities have recently been told that they have no less than a duty to communicate with the public about their work and to engage with communities (RCUK, 2016; see also Gregory and Miller, 1999). There is, arguably, more incentive under the Research Excellence Framework (REF) than under the preceding Research Assessment Exercise (RAE) to measure the impact of research on society. Alongside a measure of research environment and research quality, this could be said to promote the status of public engagement, with engagement sometimes discussed as being synonymous with, or a

pathway to, impact. Perhaps understandably, the response from some institutions is to go out there and demonstrate that they are running public events, without necessarily thinking about what they are trying to achieve and what publics want to engage with. The success of the Cardiff sciSCREEN initiative is that we have adapted a model to respond to the feedback we receive. We ask attendees what topics they would like to discuss and attempt to tailor events to these suggestions, within reason. We also sometimes ask funders for suggestions, as well as schools and institutes within the university.

Crucially, the programme is also underpinned by its social role, which facilitates meetings between friends and networking between colleagues. The initiative fosters community cohesion by bringing together academics and non-academics in a friendly, informal and enjoyable environment to discuss developments in science and their social and cultural implications. Bringing together a broad range of expertise beyond that of just the natural sciences has also tied together the wide and varied research that is conducted at the university, with the shared experience of film providing both the backdrop and the stimulus to encourage discussion:

> [Cardiff] sciSCREEN brings a wider lens and range of perspectives to bear upon a film that wouldn't otherwise occur to me. Watching films in normal life often constitutes fleeting entertainment and while I might ponder on tenets of a film, many of the perspectives I hear at sciSCREEN are ones that wouldn't occur to me. sciSCREEN constitutes a form of slower consumption that provides a safe/comfortable place for talking about a range of social and political problems. Moreover, it is very enjoyable.
>
> (Female lecturer, 41–65)

Using film as an interface for bringing experts and publics together is one way of disrupting the transmission model implicit in mainstream public understanding of science, creating common experience between so-called experts and non-experts around which cultural, social and scientific themes can be discussed without necessarily lapsing into a hierarchy of communication of speaker and listener. Fundamentally, Cardiff sciSCREEN tries to flatten the public communication model by simultaneously placing experience at the centre of engagement, while recognizing scientific and academic expertise as crucial inputs to matters of far-ranging public interest:

> I have to say that the idea of using film to communicate discussion about health/psychology is incredibly enlightened … It make[s] me think of people like Faraday and early surgeons in the 19th Century who would give public demonstrations and information about their discoveries and expertise.
>
> (Male, occupation not disclosed, 26–40)

Public engagement is, therefore, much more than the simple instrumentalization and metrification of academic work; it is also about positioning the university at the heart of the local culture. Cinema is ubiquitous; it is watched by academics and non-academics alike as a cultural activity. Similarly, research conducted by universities is a public good and can be made of interest to both those who work in universities and those who do not. Combining film with the communication of research therefore has afforded attendees from both inside and outside the university the opportunity to discuss contemporary developments in 'science'.

To conclude, in this paper we have described our model of engagement, detailing the role that film plays in attracting panellists and attendees, and in situating the discussion. Furthermore, we have discussed the relationship between space and

public engagement and considered how expertise is constituted by those that attend. We have evidenced this with survey results showing how theory has affected our practice and how our practice is affecting theory on public engagement.

Acknowledgements

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