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## **Reassessing dialogue: reflections from an amateur astronomy event**

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### **Abstract**

The discourse of public engagement with the sciences is based on the oft-cited premise that publics will, *a priori*, value 'two-way dialogue'. Despite the rhetorical emphasis on 'two-way dialogue' in the UK, research has illustrated that many science communication events retain an 'educational framing'. Do publics desire dialogue or education when they engage with the sciences? What do they value in a science outreach event? By investigating a specific event this study aimed to explore these important issues in more detail.

I studied a weekly 'Open Evening' organised by the Institute of Astronomy at the University of Cambridge, UK. Each event typically consisted of a lecture aimed at general audiences followed by questions and answers. Guided observations of the night sky with the local amateur astronomy group followed if the weather was clear.

A mixed methods approach resulted in a combination of data being collected. Participant observation through field notes complemented the collection of both quantitative and qualitative data from questionnaires. Audience demographics were analysed and participants were asked a number of questions relating to their general attitudes towards science outreach events and whether they wished to see more opportunities for dialogue.

Feedback from the questionnaires demonstrates that this is a popular event run by a committed team of scientists and amateurs. Most of the participants are well educated. Many attended regularly, often travelling great distances to do so. Overall, the majority of those questioned attended to learn something new directly from practicing astronomers, and 'to be enlightened'. The lectures were often cited as the most rewarding aspect of the event. This is in contrast to the policy rhetoric promoting 'two-way dialogue'. It suggests that the educational framing of the event was valued by attendees.

Views regarding dialogue were not always straightforward. 'Dialogue' meant different things to different people; some were unsure how to answer, and there seemed to be a low level of awareness regarding different types of approaches available in the public communication of science. While a number of respondents were enthusiastic about the potential for more interaction with scientists, many were not sure how such an event could be structured. Overall, these findings indicate that further work could usefully explore how publics understand and value different forms of engagement.

## **Introduction**

Over the past four decades, there have been a number of significant developments in the way science has been communicated to the wider public. The dominant focus on educational content with a one-way flow of information from scientists to members of the public has been criticised for not taking into account the social and cultural context of scientific knowledge (Irwin, 2009). In contrast, more recent approaches promote dialogue, participation and engagement between scientists, members of the public and other stakeholders.

However, there remains a significant question over these more recent arrangements: to what extent do members of the public desire educational content over dialogic approaches when they engage with the sciences? What do they value in an event where the sciences are involved? To explore this issue further, I investigated nine weekly public open evenings organised by the Institute of Astronomy (IOA) at the University of Cambridge, UK. Each event typically consisted of a lecture aimed at general audiences followed by questions and answers. Guided observations of the night sky with the local amateur astronomy group followed if the weather was clear. If it was cloudy, staff provided tea and coffee and had informal discussions with the attendees.

A mixed methods approach resulted in a combination of data being collected. Participant observation through field notes complemented the collection of both quantitative and qualitative data from questionnaires. Audience demographics were analysed and participants were asked a number of questions relating to their general attitudes towards science outreach events and whether they wished to see more opportunities for dialogue.

## **Who attends and Why?**

In total, there were 254 responses to the quantitative questionnaire over nine open evenings. Once collated, the data indicated that the audiences were composed of individuals of diverse ages with a higher ratio of males to females (a ratio of approximately 2:1). The latter feature is not surprising as astronomy has been traditionally male-dominated both in the academic sphere and within the amateur astronomy movement. The majority of those who attended were local (from within the city of Cambridge) yet a surprisingly large proportion (nearly 18%) had travelled over 20 miles to be there. This is a testimony to the appeal of the event and perhaps the prestige associated with the University of Cambridge. The overwhelming majority of those attending do so with others: only 15% attended alone. This clearly demonstrates that, like many science communication events, the open evenings are social events as well as educational and /or engaging ones. Many attendees were 'regulars' and only half of those surveyed were attending for the first time.

One feature of the audience that is quite notable is how well educated the majority of attendees were. Approximately 68% of all respondents had a university qualification.

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Of these, approximately half were qualified in a scientific subject, suggesting that this event was as appealing to those with a background in subjects other than the sciences. The high level of educational qualifications is perhaps not so surprising as the city of Cambridge has a higher than average percentage of the population with an undergraduate degree or equivalent (41% vs. 20% nationally). However, it does illustrate some of the challenges in engaging with citizens who have not studied academic subjects at degree level, or decide not to study science subjects beyond the age of 16.

When asked why they attended the event, approximately a third of respondents stated that it was due to a general curiosity about astronomy. Nearly 20% stated that they wanted to look through the telescopes, and 16% stated that the subject of the evening's lecture was one of the main draws. This could be interpreted as a desire on the part of these audiences to learn more about this scientific subject and to receive information from specialists in this field. To explore this issue in more detail, I conducted further research into the opinions of members of the audience.

## **Opinion Research**

Overall, there were 33 responses to the qualitative survey. The majority of the feedback to the format of this event was very positive, with high praise for the organisers. The results generally echoed those of the first questionnaire with regard to motivational factors and the importance placed upon learning. The majority of these respondents attended in order to learn something new, or to put new knowledge into practice while observing the night sky on their own. This was true of both the lectures and the observation portion of the event. The following quote is indicative of this:

"I want to be enlightened, I like being taught, I like to find out interesting facts (although remembering them is another matter), for me it widens my horizons and that can't be bad."

The importance of learning was reinforced on closer examination of the responses given to a question which asked respondents what they considered to be the purpose of a science communication event, and what would make them want to attend. Interestingly, many respondents felt that an event where some sort of lecture was involved, or an 'open day' or some other situation that primarily involved the one-way transfer of information would be the hallmark of a desirable event. Several respondents also went on to state that they were attracted to events where they could learn something new - ideally from working scientists.

"I want to learn. If an event or place makes me think I can learn something, I would like to be a part of it."

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One of my key interests in the opinion research was to explore views regarding the place for dialogic approaches to public astronomy events, and what kind of form such engagement may take. This was a difficult question for some of the respondents to answer and there were a number of people who responded with 'not sure' or 'don't know'. Most of the respondents however (24 out of 33) attempted to answer this question, and some suggested ways in which more dialogic approaches could be introduced. 11 respondents felt that more dialogue would be a good idea in theory.

"In principle it's a great idea, lots of your 'public' have knowledge and experience which would be good to share."

Interestingly, a number of respondents stated that some sort of learning would have to take place before any meaningful dialogue (or even a meaningful question and answer session) could occur. One of the respondents who suggested smaller seminar groups added the following caveat:

"It might work best if all concerned (especially the public) are asked to do 'homework' and prepare questions PRIOR to the workshop. Would involve much more commitment from public than just showing up."

The view that members of the public require some level of scientific literacy before dialogic approaches can be successful leads to questions about the nature of dialogue itself, and perceptions of expertise (Davies, McCallie, Simonsson, Lehr, & Duensing, 2009). What can dialogic approaches deliver, and can they be framed to allow scientists and members of the public to genuinely learn from each other? This has important implications for all dialogic events, including those that form the basis of a consultation to inform science policy, and where there are societal or ethical implications.

## **Conclusions**

The opinion data has revealed a number of insights about respondents' perception of public engagement and dialogic approaches within the context of an astronomy event. It could be argued that a desire for dialogue is not a pressing concern among those who responded to my questionnaire. There was little evidence in either of the questionnaires of attendees feeling excluded or disenfranchised from debates with these scientists at the IOA. The main appeal of this event according to respondents, was the opportunity to learn something new from the lectures and to be inspired by the observation of the night sky. The enthusiasm and the accessibility of the scientists involved in running the event were valued by those attending. Several of the sub-set of respondents to the second questionnaire argued that they were already having an informal dialogue with the IOA scientists through the question and answer sessions, and on cloudy evenings over a cup of tea.

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This is not to say that there is no need or opportunity to develop the idea of further dialogue. There is clearly an interest amongst some of those who responded to the questionnaires, despite the fact that this may not be fully informed by an adequate appreciation of what dialogue may actually mean and what kind of events may be available. However, given that a number of astronomy outreach programmes are making use of new communication technologies, there may be the potential for some innovative approaches that increase the opportunity for dialogue and active participation between professional and amateur astronomers, and other members of the public. The existence and prominence of the amateur astronomy community also adds another dimension to the debate, and another sphere through which dialogue and participation with these actors may be explored.

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