

## **Scientists as communicators Good intentions and undesirable effects**

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### *Introduction*

In the last ten years a great mobilization of scientists in the public scene took place to communicate their work in various ways and with different tools. It is a process of approaching various audiences using different formats which has largely opened up new levels of commitment and new methods of communication (Bauer & Jensen 2011).

This process has undermined a model of information transmission driven primarily by scientific institutions with the help of communicators, the so-called «deficit model», which is based on an asymmetrical relationship between scientists and different publics. This transmission system seeks to guarantee the quality of scientific information by using the editorial committees and the reputation of the institutions of reference.

Progressively, in contrast to the deficit model, a model of direct encounter with the public has been established through public meetings, Web tools and in particular with social media, activating very rapid forms of communication. However, this transmission model did not offer particular guarantees on the quality and reliability of scientific information, so as to normally produce unwanted phenomena such as that of fake news.

But how can scientists communicate effectively without transmitting the results of their work in an absolutely vertical and univocal way? In recent years there have been numerous communication activities that have allowed researchers to meet the public to discuss, to engage in scientific activities, to start decision-making processes on particular technological innovations.

One of the most relevant initiatives at European level is the European Researchers 'Night (ERN), a project that has been running since 2005 and is funded by the European Commission with the main objective of making researchers' work known in a fun way, creating opportunities for meeting and learning. The ERN involves more than 300 European cities, thousands of researchers and an audience of more than one million people each year at the end of September. It is a real communication context in which researchers and the public can meet in various ways and with various communication formats.

To analyze some aspects of the role of scientists in the field of public science communication, we present in this paper a study carried out as part of the impact assessment of the ERN in Italy during the period 2014-2017.

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## *Method*

The ERN 2014-2017 has been held in five Italian cities (Ancona, Cascina, L'Aquila, Palermo and Perugia) with the European project Sharper; a monitoring was carried out to evaluate the communicative modalities of the researchers involved. The monitoring was conducted through an ethnographic observation conducted by several social researchers who participated in the selected activities, gathering information on certain dimensions of interest: organization of time and space, management and communication of contents.

Using an evaluation form that allowed gathering information on contextual elements, the researchers identified the main factors that facilitated the effectiveness of the activities and possible obstacles. At the end of the activities short interviews were carried out with the aim of investigating the methods of preparation, the communicative styles adopted and the impressions of the public.

The Italian edition of ERN involved every year 100 scientists through a call for participation that included the proposal of topics and methods of implementation within a total of 58 activities divided into three thematic areas that collected activities of specific or general interest.

The activities were divided into three categories: formal, semi-formal and informal. The structured activities are those in which the scientists activate a frontal communication with a formal language without particular mediations and with the primary objective of transmitting scientific information usually highly specialized. These include lectures, conferences or round tables led by scientists.

The semi-structured activities are those in which the public is offered a mode of engaging communication using a popular language and encouraging the active participation of the public. Examples include scientific cafes and open labs.

Informal activities are proposed in places such as streets, squares or in public places through the storytelling of some scientific topics normally connected to everyday life experiences. Among these we can mention: A pynt of science, Science in the street and others.

The main objective of the evaluation of these three categories of activities was to verify the coherence of language and content proposed by the researchers in the various formats, trying to identify elements of distortion or situations of communicative incoherence. 25 observations and 50 interviews were carried out allowing us to highlight some critical issues that we present below.

### *Formal activities: Scientists and the Off-side effect*

On some occasions, when the activities had a formal character, as in the case of conferences or lessons, some researchers found themselves out of the game for a mode of communication that did not keep the recipients in mind. For example, two researchers have proposed a theme on predictive mathematical models of prevention of doping in sport using a slide cycle that presented formulas and a very formal language with various terms in English. The non-expert audience followed the presentation with difficulty and there were no spontaneous spaces for interaction between participants. No questions were asked at the end of the activity.

In the post-presentation interview, the researchers responded in this way talking about the interests of the public for science:

*R1. The fact that there is a real problem, because often mathematics [is seen] only as something that is in the clouds, for mad who are puzzling over formulas. Instead, we have brought something about everyday life.*

Talking on the possible difficulties of the public to approach the scientific activities and the role of researchers, the respondents propose the following elements:

*R1. The greatest difficulty is finding the right language*

*R2. Yes! To avoid technical terms.*

*R1. Find a balance: do not be too trivial and ... and ...*

*R2. Here it is.*

*R1. Do not be too technical.*

*R2. This is the risk. Because if you simplify too much, you risk, that is if it is a problem with a difficult solution, you make it seem trivial.*

The comparison between the observation of the activity and the interview highlighted a communication gap between researchers and the public. Although in a formal context that provided for a technical language, it was evident the difficulty of the scientists to find ways of transmitting content suitable for the audience of non-experts and the consequent difficulty in involving the participants.

#### *Semi-formal activities: old wine in new bottles*

In another case of semi-formal context, researchers at the first experience reflect on the limits and potentials of their communicative action. Their activity took place outdoors with a gazebo where they presented research and results of the medical area. The public involved was very heterogeneous and therefore the choice of materials and short explanations was not always been effective to meet the interests of the participants. Communicating to a very heterogeneous audience is one of the most difficult challenges to win and requires an appropriate effort to prepare communication. During the interview we collect elements of analysis on the public's expectations regarding scientific communication and on the modalities with which the contents are proposed.

*R: we are not used even by those of us who work at the university, probably to convey the meaning of the research we carry out in a sufficiently comprehensible way.*

*[...] some things we may have guessed, in others we would have to set up more material, to involve people during the visit, obviously the public is not interested in reading so much, much written material or even to take it away unless it is absolutely rich from the iconographic point of view, does not have simple, very clear and very direct messages*

In order to meet the public on a common communication ground, one must reconsider one's own activity by identifying the salient points to be offered in a flexible way in a welcoming context that allows an adequate exchange between researchers and participants. We cannot take for granted the motivations that drive research activity, nor the strategic choices of the institutions to which they belong.

If on the one hand a gazebo attracts curiosity and favours the meeting, this situation requires the activation of tools to achieve a short and essential communication in the contents.

The researchers, speaking of the critical issues concerning the public communication of science, expose a point of view often referred to as a deficit model, in which the difficulty of incorporating

the scientific contents is ascribed to a common ignorance of the public. This position also contains self-criticism about the ability to communicate effectively.

*R: Frankly speaking, in most cases I think this may relate to, may be the consequence of a fair level of ignorance of the population on scientific issues. This, perhaps happens a little more in Italy than in other countries because we are not used even we who work at the university probably to transmit in a sufficiently comprehensible way the meaning of the research we carry out.*

Semi-formal contexts therefore pose various pitfalls for researchers because they allow the use of communication materials and styles in part academics but require considerable flexibility in constructing presentation sequences.

#### *Informal activities: Scientists in the wrong place at the right time*

As part of a scientific dinner, a format, evocative and captivating from the title, organizers proposed a meeting between researchers and the public in an informal and convivial context with the possibility of immediate and spontaneous interaction.

The restaurant has welcomed around thirty participants in 6-person tables, one of which is occupied by researchers. The same ones remained on the same table during the dinner and at a certain point they presented in turn the research work with slides normally used for academic conferences. In this case we noticed the maximum dystonia between context, modality and contents of communication. The researchers have positioned themselves in a position of "out of the game" with respect to the public by proposing a frontal communication and an academic language. This type of situation represents the most critical experience of meeting between the public and researchers because on the one hand promises an approach but actually maintains a remarkable gap between experts and the public, preventing any form of interaction.

#### *Conclusions*

The undesirable effects described in the three categories of activities described above can be explained by the same number of approaches that scientists normally use when they want to communicate with the public. These approaches have been well described by Bucchi and Saracino in these terms: «I tell you with my words; look, test and learn; discuss it together» (Bucchi e Saracino 2016).

The first approach, «tell you in my own words», is a mode of communication that normally tends to transfer to the public, with the technical language of the discipline of belonging, contents of its work without making sufficient linguistic mediation in the contents and in the articulation of presentations. This type of approach generates, as we have seen from the examples presented, situations of displacement and lack of understanding among the public that can induce wonder and amazement but also disinterestedness if not real closure. The most problematic cases occur when academic modalities and narratives are proposed in formats that require flexibility, cultural mediation and public listening.

A second approach, called «Look, test and learn», offers the different types of public communication methods that use short presentations and aim to involve with activities from which an effective interaction can be born. Experiential communication is obviously not an activity that can be improvised and requires adequate preparation. However, the collected data allow us to state that in this case there have been rare incidents of inconsistency between the format, the methods and the contents proposed.

A third approach can be defined as «discussing together». Researchers who interpret scientific communication with this perspective intend to deconstruct their languages, presentation methods and priorities with which to choose content. In other words, by accepting to act in informal contexts and with formats very far from the typical rituals of the scientific communities, they are measured with new modes of communication for which they must be adequately prepared. This is perhaps the most demanding approach in terms of setting and content because it is difficult to acquire these skills in the training of a researcher. Finally, it should be emphasized that this type of approach presents many risks of communicative inconsistency and we frequently witness easy improvisations that obtain unwanted effects in the public.

When scientists communicate with the public inappropriately and in the wrong contexts using the three types of communication described above, real communication short-circuits occur. The undesirable effects produced increase the distance with the public and do not favour a real meeting between researchers and non-experts.

### *References*

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