WHO IS THIRSTY FOR SCIENCE IN HUNGARY AND FOR WHAT KIND OF SCIENCE?

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The above-titled study presents the social impact analysis of the Researchers' Night events organized in Hungary over three consecutive years between 2010–2012. The study not only describes the visitors to the events and the impact the presentations had on them, but also places this particular event in a broader theoretical and methodological context, that of the relation between *science* and *society.* Therefore, the following paper will concentrate mainly on the debates the abovementioned question raises and then describe the typical audience of the named events, with the possibility to draw conclusions on the impact-success of the Researchers' Night programs.

SCIENCE AND SOCIETY – ATTITUDES TOWARDS SCIENCE AND SCIENTISTS (IN THE 2010S)

Considering the relations between science and society, one of the first stereotypical associations is that science is not compatible with the general society (the lay people); therefore, science needs some popularizing or softening processes to be digestible for the public. Following this idea, the *public understanding of science,* the so called PUS model(s), is one possible way of approaching the world of science for the people, the lay-persons, to society. Thus, the incompatibility of the world of science with the general public recalls some kind of a mystery in the former. The need to bring these worlds closer has increased since the 1950s. However, articles having as their focus the popularization of science started by affirming the unbreakable barriers between these two worlds (Thistle 1958), while today we are closer to theories which treat popularization processes more like communication models or debates. There has been a *smooth*[2] transition from PUS models to PEST (*public engagement with science*) models, the latter referring both to science communication (typical of museums, universities and science organizations) and policy-oriented approaches and decision-making (Davies 2013:688). Geambașu et. al., in their presently reviewed study, also reach this conclusion, by noticing that *understanding* and *scientific literacy* today are being replaced by concepts which require a more collaborative approach, such as various forms of *participative democracy.* They also notice, citing Bensaude-Vincent (2001) that communicating knowledge and science has also undergone a democratic shift in the use of

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[2] Author's own italics.

vocabulary; formulating statements *in the name of science* has turned to new practices of interaction *in the name of democracy*.

Critiques of PUS models can be found from the early 1980s, but we have to be aware of the aims behind the several critiques. While the more recent critiques of the PUS models accentuate the deficiencies of the *deficit model,*[3] such as treating the public as being incapable of fully understanding science (and therefore, the science communicated to the masses has to be simplified), the early critiques question the function of a public understanding of science. Authors like Trachtman say that in most the cases it is not useful or beneficial for the lay public to be aware of actual scientific findings, as these would not affect their everyday lives (Trachtman 1981). For a layperson to become *scientifically literate*, the author continues, is a laudable fact but needs governments to spend huge amounts of public funds on promoting this kind of literacy among the wider public; this is something that needs more thorough argumentation. A more or less moderate critique of the PUS model is the paradigm that considers it to be a rhetorical approach of the communication of science without judging it for its preconceptions (Locke, 2002).

Seen from another angle, probably the most important starting points in the early literature in the difficulties of popularizing science are the language barriers – lay people do not understand scientific terminology – and the problem of *what gets in*, as many analysts have assumed that science is not understandable by ordinary people and no matter how hard they try at least half of the information or the essence will be lost (Thistle, 1958). However, theories like the one mentioned have been supplanted by critiques focusing on the idea that we must reflect on the heterogeneity and many-sided aspects both of the interpretation and communication of science and the notion of the public, as there is no such thing as *the* communication of science to *the* public (Silverstone, 1991: 106), as science is never communicated in a vacuum (ibid: 108). There are huge differences in the levels of interest and knowledge of the audience due to all kinds of socio-cultural or economic stratifications, and similarly, the ways in which particular information is communicated through whatever channel to one group or another will differ, in the same way that the complexity of one piece of scientific information differs from the other.

Similarly, the first attempt to identify the image of scientists among high school students[4] was conducted early in 1957 (Mead-Metraux, 1957 in Christidou, 2011:143), and the image the researchers found appeared to be quite consistent after several rounds of research, which we find similar to the findings of the present revised study. Thus, the relatively fixed portrait of the researcher/scientist is that of: *elderly or middle aged men, who have glasses and/or beards and work in laboratories surrounded by test tubes, Bunsen burners, flasks and bottles, taking notes and reading books. One day, the scientist may straighten up and shout: "I've found it!"* (Christidou 2011:143).

[3]PUS is also used as a deficit model.
[4] Among students in US high schools.

In Bauer's analyses (2013), *modern science* can be interpreted through its three stages: (1) its beginnings from the 17th century to the early 19th century; (2) the second era from the mid-19th century to the middle of the 20th century; and (3) the third era from the mid-20th century to the present day. Each stage has its own view on research and scientists, the first being characterized as "*amateurs seeking authentic knowledge as a matter of sheer and often worshipful curiosity"*; in the second era, science became an *attractive career* but not necessarily the most profitable financially; and lastly, in the third era, science writ large gained a superior and bureaucratic character. But, the singular cases of scientists are not that evidently a success story, as the larger the scientific society, the more difficult it is to find good research positions, grants, salaries, etc. (Bauer 2013). However, *"the first era of modem science has left its mark on the contemporary view, according to which scientists are self-driven by curiosity with their only interest being to discover what the truth is. That certainly remains accurate for some individual scientists, but it isn't accurate overall. Most researchers nowadays are employees doing what they're paid to do, and influenced by a variety of conflicts of interest whose consequences can be decisive"*, says Bauer; and probably this is why it is so difficult to draw conclusions about society's view of science and scientists without having to fear the prevalence of stereotypes**.**

AN OVERVIEW OF THE STUDY ON RESEARCHERS' NIGHT

The goal of the social impact analysis, the authors say, was twofold: first of all they intended to identify the popular and legitimate representations of science and scientists among the target group of the Researchers' Night program (mainly young people and students); secondly, they aimed to gather both the expectations and feedback and opinions concerning the event. However, the research design of the three years differed in some aspects; in each of the years there were conducted quantitative surveys with the help of online questionnaires, but quantitative methods were also used, like desk research and focus-group interviews.

According to the study, there can be identified three typical groups of Researchers' Night program visitors by their socio-demographic characteristics. The first significant group is constituted by young high school students with an average age of 16 years; the second group is composed of university students or young professionals (22 years old in average); and lastly, a group of young employed adults around 39 years old, often with small children. Most of the representatives of these groups live in Budapest or in its suburbs, and are relatively wealthy. The three abovementioned typical groups simultaneously have three typical and differing motivation sets. The high school students have as their main motivation to deepen and complete their knowledge in the preferred scientific areas, which could be their main subjects for their upcoming exams or potential directions in university-career choices; the university students, on the contrary, try to visit programs which are out of their scientific area to widen their knowledge and world-views. The young adults with small children most often look for quality family entertainment, through which they might cultivate an interest in science in their children.

Thus, concentrating on these three typical groups of visitors, the readers might observe that, although the Researchers' Night events have as their main goal the popularization of science and scientific careers and to

open access to science especially to younger generations (as all the programs are for free of access, only registration is required in some cases), they have an effect of forging and sustaining the already existing socio-economical differences in the accession of knowledge and science, and the available scientific career paths.

As concerning the visitors' attitudes towards researchers and/or scientists, a common view was, according to the authors, that being a researcher is not an ordinary occupation, researchers are not ordinary people. This finding recalls some early theoretical views mentioned few lines above. Similarly, as also predicted at the beginning, the gender stereotype that researchers are male still holds; however, through the deeper methods of focus-group interviews, these stereotypes could be softened, the researchers say. In contrast to the continuity of these stereotypical characteristics, the age-hypothesis loses its consistency, as researchers are considered to be highly active, therefore, (at least) not old. The further important and stereotypical topic in the portrayal of scientists is the issue of financial reward. As the scientific career is perceived from the second stage of modern science to be one which provides moderate wages, this view remains valid with an extended explanation: that in time, the financial benefits of being a researcher or scientist will grow – one just needs to be patient and consider the first years of research as an investment.

The career choices of the visitors – here the authors mostly refer to high school students, as this topic is most relevant for their situation – reflect high self-consciousness and determination; most of the students described their ideal job as being interesting, close to their field of interests, non-routine, highly paid and reputable. Despite the fact that being a scientist is appreciated among the young, even though it does not provide sufficient salaries and scientists turn out not to be well-known or famous, a scientific career is not yet one of the most popular among students in decision-making positions; in the rankings of professions, they only positioned it in ninth place. Thus, here again the text leaves the reader with the feeling that the answers provided are over-representative for the upper-middle class intellectual/managerial elite – more precisely, to their children.

Finally, we can deduce that visitors are interested in scientific knowledge. We can trace both PUS and PEST paradigms, as visitors are not always a passive public, but, as the interactive experiment-based or debate-oriented programs were also popular, it can be considered that people are willing to engage in scientific practices; they are interested in *real* science. Furthermore, the fact that non-scientific, mainly social events were not that popular, also underlines that visitors prefer at this kind of program to be introduced to an uncommon scientific *new* world. They also have the expectation that the *science* presented to them is understandable but not oversimplified, and also, as the potential new generation of scientists and researchers, they probably also expect to be treated as partners.

TOWARDS A CONCLUSION

Without repeating the main findings of the research, it has to be stated that the reviewed text is a theoretically and empirically well-grounded study which describes a very actual international question,

reflecting the position of science and their practitioners in society, at a particular scene: the case of a Central-European society, this time Hungary. As the popularization of science and scientific/research careers and opening the access to it is a large, European issue, the implementation of it in various small places will recall some specific characteristics. As for the present situation, in my opinion, it would be naïve to consider that open access to science and a scientific career, especially if it is one implemented from above, really means open access for the masses. The Researchers' Night program is a perfect example, as it is completely open; the majority who really benefit from it are already among the advantageous groups. Probably a more accurate question should be, instead of the one in the title: who could/might be thirsty for science in an East-Central European society?

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