The Social Construction of Scientific Culture

Forms of Romanian Popular Science

ANDREEA MOGOŞ

"All scientific research is made in specific spaces, moments and places. Nothing is predetermined."

WHAT IS the meaning of science for contemporary society? How is science constructed and represented in contemporary popular culture? How is popular science transmitted in Romania? Such an inquiry is stimulated by an in-depth assessment of both science's role in contemporary society and the role of society in building a social meaning of science.

From Culture to Scientific Culture

WILLIAMS (2006, 32) identified three types of culture. The current paper will use only the social definition, which refers "to a particular way of life that expresses certain meanings and values not only in art but also in institutions and ordinary behaviour." A similar definition is offered by Dumont (1981, 18): "The

This paper is the result of the research carried out within the framework of the SOPHRD/89/1.5/S/63663 project, "Trans-national network of integrated management for post-doctoral research in the field of Science Communication. Institutional construction (post-doctoral school) and fellowship Programme (CommScie)."

Andreea Mogoş
Lecturer at the Journalism Department, Faculty of Political, Administrative and Communication Sciences, Babeş-Bolyai University, Cluj-Napoca.

social meaning of culture refers to a complex tissue of ways of life, language, beliefs and institutions." The same author considers that individuals associate culture with any kind of intellectual achievement (artistic, scientific or technical).

Wittgenstein suggests that scientific culture could be considered "a form of life," because it changes during time. It "structures our understanding on the Universe, our actions, institutions and education" (Godin 1999, 123). One of the most pertinent insights on the specificity of scientific culture is presented by Vogt (2012, 5): "The set of factors, events and actions of mankind in the social processes dedicated to the production, the dissemination, the teaching and the publication of scientific knowledge." Along with the growing authority of science in society, the interest in clarifying implicit and explicit meanings and values residing in a particular culture has increased. Williams's (2006) general analytical benchmarks could be adapted to the specificity of scientific culture: beside the historical context, there is a set of elements that reflect social relationships and configurations (how laboratory work is organized, who are the formal and informal scientific knowledge producers, how research institutes and science museums are structured, how peers and the general public receive the messages).

There are two different approaches to how scientific culture spreads in society: for scientists, it is connected with the rationalistic thinking and it is transmitted through education (Bachelard 1934/1967); for those who are interested in popular science, scientific culture is an activity carried out outside the formal framework of traditional education. These two approaches could be explained using Bourdieu's (1975) field theory. This theory claims that there are two distinct fields: the scientific one and the popular science one. Each one configures itself using different education forms, interests and means. Consequently, the two fields develop their own representations of science and scientific culture (Baril 1996). Nonetheless, recent research shows that new media are reconfiguring the way in which science is communicated and the two abovementioned fields become a continuum. The dynamics of this new space of knowledge may be represented as a spiral of scientific culture (Vogt 2012). The author considers that the starting point is science production and dissemination among scientists. The next level implies knowledge transmission from professors and researchers to students, in order for it to become public through museums and science centers. Finally, journalists and other communicators make science popular. "The evolution of the spiral of scientific culture continues through time and space and still produces, through the concatenation of actions and through the natural expansion of social participation, organisms which regulate the functioning of the system of science, technology and innovation" (e.g. normative commissions and advisory boards in different spheres of public power) (ibid., 5). As it may easily be observed in the model of the spiral of science, the interest in scientific issues is not totally related to the researchers in the laboratories and the resources employed by society to make science meaningful. Science communication may be identified both inside and outside the scientific institutions, and communication means range from formal science communication instruments to unusual forms of popular science.

Thus, scientific communities make use of reviews, conferences, dedicated social networks, information management systems etc. The social sciences approach focuses both on the social construction of science and science history. Usually, untrained

people are not very familiar with the rules of formal scientific communication and they tend to consume diverse forms of popular science: science journalism, popular science books, docu-dramas, SF novels, science museums and multimedia products. These forms of science communication and scientific culture should be analyzed in order to explain the meaning of science, its purpose and why science is so important for contemporary society.

Constructivism and the Sociology of Science

SOCIAL CONSTRUCTIVISM is a relativist paradigm that states that knowledge is not sensorial, but it is the result of cognitive practical activity of the individual. Berger & Luckmann (1966, 65) consider that "theoretical knowledge is only a small and by no means the most important part of what passed for knowledge in a society . . . primary knowledge about the institutional order . . . is the sum total of 'what everybody knows' about a social world, an assemblage of maxims, morals, proverbial nuggets of wisdom, values and beliefs, myths, and so forth." Social constructivism may be used as an analytical framework in science and technology studies. The social constructivism approach emphasizes the fact that science and technology are *social*, that they are *active* and do not offer a direct pathway between nature and the ideas about nature, science and technology products *are not natural* (Sismondo 2008, 14).

Foltz considers that "facts and theories are not general discovered truths, but, at least partially, they are the products of the social medium" and scientific realities are constructed and thus science itself could be considered a political process, because "social construction undermines the scientific authority, proving that separation between science and values in the political arena is impossible" (1999, 121). Constructivist sociology proposes a general representation of science, which relies on three fundamental assumptions: scientific practice follows an "opportunistic" dynamics; scientific practice is "idiosyncratic" and scientific facts are generated by "accidents" in scientific practice (Dubois 1999). When discussing about scientific research, opportunism refers to the scientists' research strategy, which is similar to the one use by the bricoleurs (tinkerers), who do not know what they will produce, but they use all the things they have at hand. Researchers adjust/modify their strategies according to the available resources (certain equipment, a certain partner). Knorr-Cetina (1981, 34) considers that the bricoleurs are opportunists, because they use what they have at hand and determine what is feasible. Idiosyncrasy in scientists' behavior is considered to be a natural extension of the *bricolage* tendency: each laboratory has its own material life (its members develop particular interpretations of the methodological rules and have a local know-how that influences the experiments' setting and execution). All the abovementioned elements have an impact on scientific practice; they modify its sequence and make it idiosyncratic: "All scientific research is made in specific spaces, moments and places. Nothing is predetermined" (Clarke & Fujimura 1996, quoted in Dubois 1999, 280). Accidental details play a major role in the construction of scientific facts, for they are neither discovered nor pre-existent in scientific practice. Consequently, scientific facts are manufactured by scientists during their activities. In conclusion, one might say that constructivists develop

a unique interpretation of the inherent uncertainty of the scientific research processes. Thus, the possibility to transform a hypothetical assertion into a "scientific fact" resides in peoples' ability to create a *reality effect* (Latour 1999). This reality effect is a realistic illusion coming from the occultation of social, historical and material conditions of the scientific deed, a symbolic "wrapping" of the material objects.

There are several objections concerning the constructivist approach to science (Dubois 1999, 285). The main deficiencies revolve around focusing excessively on the laboratory, ignoring the time dimensions during which the research activity takes place and a much too tight preconception regarding scientific rationality. The constructive approach to science is embraced by the emerging interdisciplinary area: science and technology studies (STS). STS examine the appearance, development and consequences of science and technology in a cultural, historical and social context. STS start from the premise that technological artifacts and knowledge are *constructs*. In this respect, knowledge derives from different scientific contexts—laboratories, observatories, etc. Thus, technologies which result from scientific knowledge are constructed and contingent to the moment and the space in which they appeared and, therefore, scientific knowledge is not discovered or identified but it is actively constructed from the interaction of scientists who use the resources around them. STS outline that science and technology are social activities which reflect the social conditions in which they are produced, respectively of those involved in their production (Erickson 2005, 1). Still, STS concentrate more on the way in which scientists perceive research and innovation, on the structure and dynamics of the scientific community and also on the status and image of science in society.

Due to the fact that science in society is not a simple thing, but involves a complex social phenomenon in which multiple social contexts appear with different facets, there is a need for an approach that exceeds the physical limits of the laboratory even though the sociological studies in situ lead to relevant observations concerning work management in the laboratory, the dynamics of the research process, the structure of the research institutes and even the scientists' behavior.

Therefore, our society's science can be analyzed as a social construct elaborated by the whole society. No unitary and essential object results from the process of social construction of science, but a complex concept which is questionable and challengeable and which has different significations depending on where, when and by whom it is used. Science is a *multidimensional social object* (Erickson 2005, 24–25). There is no hard nucleus of what we call science in our contemporary society. Each dimension leads to the understanding of a different reality and each has certain validity, and the action of establishing a hierarchy of this reality is a social construct and not necessarily a trait of science itself.

Popular Scientific Culture

As we have established before, the scientific culture of a society can be divided into two. On the one hand, there is the *formal culture* which is characteristic to educational institutions and laboratories and, on the other hand, there is the *popular culture* which is acquired outside the educational environment.

Mass culture plays a central role in the construction of a certain scientific competence of the public by broadcasting many types of discourses: popular science books, anticipation literature and SF novels, movies, edutainment TV programs (especially documentaries), scientific journalism and various multimedia platforms.

Popular Science Books

ERICKSON (2005, 147) defines this type of science communication as being made of texts written for the public and produced by scientists or writers with a solid background in this field. The evolution of cultural consumerism in recent years encouraged the development of certain writings which are related to *pseudoscience*, produced by authors without sufficient training, who create scientific subjects that are superficially and often erroneously treated. They focus on exaggerations or they even exploit sensationalism. The same Erickson considers that, depending on the purpose, popular science books either look to familiarize the general public with science or to "save" the uninformed public from the dangers of pseudoscience, quackery and false scientific analysis. The purpose of these texts is to strengthen the dominant position that science holds as a form of knowledge in society. This helps people have a scientific vision on the world in order to be able to understand the rules that govern work, the natural laws, and give them the possibility to rationally analyze problems. Science is represented as one unit which, even though it has multiple branches, appears as a whole. Behind this approach lays the ideology called *scientism* which suggests that the explanations to the world should be based on scientific principles rather than on religion, superstitions and assumptions. According to Shermer (2002, 25), scientism is "a vision on the world that includes natural explanations of all phenomena, avoids supernatural or paranormal explanations and it is based on empiricism and rationality as two life philosophies adequate to the Scientific Era."

The public of the popular science books wants to be informed, but also seeks entertainment and thus the texts in this category take diverse forms. Depending on their theme and style, popular science books can be divided into three categories (Mellor 2003): *narrative* texts which make an account of an episode from the history of science or the life of a scientist; *expository* books that concentrate on presenting a certain discipline; *investigative* texts which are more journalistic-like and have specific or controversial topics.

A short historical overview on the evolution of scientific literature and, implicitly, of popular science books allows for a better understanding of the phenomenon. The popular science books did not appear simultaneously with the production of scientific books addressed to the educated audience. For example, the work of Isaac Newton, *Philosophiæ Naturalis Principia Mathematica* which appeared in 1687 was practically inaccessible, not because it was written in Latin, but because it was ultra-specialized in mathematics. After Newton's cult grew, in the next century, certain popular science texts appeared signed by other authors like Voltaire and Tom Telescope (the pseudonym of an author whose identity is not certain). The publication of Charles Darwin's *On the Origin of Species* (1885) which was still accessible to the general educated public represented a turning point in science communication (Turney 2008, 7). A major change took place as public literacy and the level of education grew after the Second World War. But the real explosion of popular science literature started in the 70s in the United

States. Carl Sagan, astronomer, astrophysicist and cosmologist was one of the most famous scientists of the 20th century. Sagan proposed a vision of science as organized skepticism which attracted a lot of attention on the increasing detrimental influence of pseudo-science, New Age mysticism and lack of respect for true science.

Popular Science Books in Romania

The dynamic of this type of literature in communist Romania differed from that in the Western countries. Censorship carefully selected foreign titles that were translated and also the Romanian content. Still, one can see that before 1989 the popularization of science took place in a pragmatic way, with dedicated editorial collections (e.g. "Ştiinţa pentru toţi," Eng. Science for all).

A number of scientists also became known for their popular science books: microbiologist/virologist Nicolae Cajal,[1] chemist Axente Sever Banciu,[2] and mathematician Solomon Marcus.[3] Encyclopedic personalities with writing skills and scientists succeeded to publish a series of texts that promoted microbiology, chemistry and mathematics. After 1989 the number of books aimed at popularizing science dramatically dropped due to the influence of many social, economic and sometimes even political factors. We can mention the impact of television and, afterwards, of the Internet, without ignoring the economic aspects which directed the publishing houses' policies towards other types of texts. Often, editorial policies embraced pseudo-science, proselytism and mysticism, discourses which replaced rational scientific explanations. Practically, we can talk about a *tabloidization* of the popular science books under the influence of the media.

An overview of this kind of literature after 2000 is symptomatic for the way in which the communication of science to the readership takes place in Romania. This research concentrates on the thematic distribution of the popular science books printed by the best known Romanian publishing houses, which appeared between 2005 and 2012. A first observation emerged from an inventory of the titles: quantitatively, this literature is poorly represented in relation to other editorial fields (fiction for adults and children, social sciences, personal development guidebooks, etc.). 84 titles that appeared at 13 publishing houses in Romania were identified. More than half of the studied sample (53%) appeared at Humanitas publishing house which has an entire dedicated collection called "Science." This collection proposes titles that focus on biology, cosmology, ecology, physics, history of science, mathematics and neurology. Without exception, the authors are all foreign. Amongst the best known international popular science books authors translated in Romanian and promoted by Humanitas, we can mention Stephen Hawking, Richard Feynman, George Gamow, Brian Greene and Simon Singh.

An interesting editorial policy is reflected by the existence of the following collections: "Ştiinţă şi religie" (Science and religion) and "Ştiinţă, Spiritualitate, Societate" (Science, Spirituality and Society) of Curtea Veche publishing house, which selects the titles which support the opposite of Hawking's position. The editorial policy that Curtea Veche follows can be easily noticed, just like it is easy to see lifestyle's preference for titles about extra-terrestrial civilizations, unknown flying objects (UFOs), unsolved mysteries or intelligence. In this case, the popularization of science becomes a kind of pseudo-science that produces a speculative literature on tabloid themes taken from the mass-media, which sells very well.

An overview on the areas covered by popular science books published in Romania during the last 8 years shows that physics and physical cosmology are the most popular fields (together they reach 29% of all analyzed titles), alongside biology and ecology (together, 18%) and mathematics (12%). At the same time, the history of science is a very popular area (15%).

Science-fiction Literature

SF IS a genre that appeared at the end of the 19th century and was strongly marked by the work of Jules Verne. The author's favorite ideological theme was the conquest of nature by technology, because "Verne belongs to the progressive line of the bourgeoisie: his work proclaims that man is capable of everything, that even the most distant world is an object within his reach" (Barthes 1973, 65). Man's domination over nature takes many forms in the novels of Jules Verne: *conquest* is expressed through travel, *dynamics* through scientific inventions and *transformation* through colonization. The three representations are equivalent because the scientist is a traveler and a colonizer (Macherey 2006, 319). Verne's novels of anticipation can be seen as an expression of the ideology of that time: the bourgeois ideal of progress.

Social sciences have ignored the construction of science in fictional texts and the role that it plays in the promotion of unified essential science; still cultural studies have been preoccupied by the major themes of SF novels.

The SF genre proved to be very attractive for a series of Romanian SF writers who were interested in the phenomenon: Felix Aderca, *Oraşele înecate* (Drowned cities) (1936); Ion Hobana, *Glasul mării* (The voice of the sea) (1955), *Ultimul văl* (The last veil) (1957), *Oameni şi stele* (Humans and stars) (1963), *Un fel de spaţiu* (Some kind of space) (1988), *Timp pentru dragoste* (Time for love) (2009); Vladimir Colin, *A zecea lume* (The tenth world) (1964), *Babel* (1978); Romulus Bărbulescu, *Catharsis* (1983), *Încotro curge liniştea?* (Whereto does silence flow?) (1991), *Golful ucigaşilor* (The bay of killers) (1993); George Anania (with Romulus Bărbulescu), *Constelaţia din ape* (The constellation under the sea) (1963), *Statuia şarpelui* (The statue of the snake) (1967), *Doando* (1969), *Ferma oamenilor de piatră* (The farm of the stone people) (1970), *Paralela-Enigmă* (Parallel-enigma) (1973), *Şarpele blând al infinitului* (Gentle serpent of infinity) (1977), *Cât de mic poate fi infernul?* (How small can the inferno be?) (1993), *Planeta fantomelor albastre* (The planet of blue ghosts) (1993), etc.

In contrast with popular science literature, the ideology behind the Romanian SF novels often challenges the role and status of science in society by presenting scenarios that use dystopian images of planetary crises caused by mad scientists or outlining future societies in which the individual has lost his freedom and should obey the machines.

Science Fiction Movies

KUHN (1990) analyzed the main themes that appear in SF cinema productions or on television: the change that occurs in the relationship between humans and non-humans, the way in which humanity is transformed by the use of technology, possible forms that our society could take. An analytical approach of an SF production can outline unconscious desires, can detect a latent Orientalism or it can illus-

trate these types of relationships. This is because our society is actively involved in building otherness and ordering social classes through cultural productions. Thus, science is socially constructed but also science representations are a consequence of the way in which science is seen by society.

Unfortunately, in Romania there are only timid attempts at SF cinema productions and the interest for SF movies is limited.[4]

Kirby (2008, 41–42) considers that exploring the communication of science in movies has to concentrate on four aspects: how the representations of science are constructed (*production*); how much and what type of science appears in the movie (*content analysis*); which are the cultural interpretations of science and technology in the movies (*cultural meanings*) and which are the effects—if any—of the fictional portrayal of science over the scientific culture of the individual and over the public attitude towards science (*media effects*). Cultural studies on movie productions with a scientific theme are amongst the most interesting because they not only reflect the ideas focused on science and technology but also construct both public and scientists' perceptions. For example, Haynes (1994) identified six recurrent stereotypes about scientists: *the mad scientist, the absent-minded professor, the inhuman rationalist, the heroic scientist, the helpless scientist and the social idealist*. These stereotypes often come up in movies because they have the narrative advantage of producing characters already clearly constructed: horror movies present mad scientists,[5] comedies include funny, absent-minded professors,[6] dramas prefer social idealists,[7] action movies include heroic scientists[8] and SF (and not only[9]) prefer inhuman rationalists and helpless scientists. The themes of the movies are also interesting for analysts because most of the time they reflect the interest for current scientific discoveries. If at the beginning of the 20th century the movies focused on scientific fields and technologies like electricity, radiology, biology (evolutionism/eugenics), during the interwar period, medicine was the favorite field alongside aerospace engineering and nuclear physics. In the 70s, the ecological theme appears and, starting with the 80s, informatics, genetic engineering and astronomy are added as favorite themes (Kirby 2008, 47). A special category are SF movies which kept their popular themes over time: future, technology, space and the success of the *Star Trek* series (11 movies in over 30 years) are a clear proof of the public's permanent interest in interstellar adventures. Disseminating science through fictional productions (books, movies) is an important resource in the social construction of ideas shared by science, but the representations of science are a consequence of the shared meanings and understanding of it in society.

Conclusion

Scientific culture is a multidimensional concept which includes not only the products of formal scientific communication (scientific articles and books) but also the forms of the popular science (books, feature films, press). It is extremely interesting to investigate the latter ones from a cultural perspective because they simultaneously show how the social representations of science are constructed, what their meanings are and how society relates to the scientific field. Present scientific themes (genetically

modified organisms, nanotechnology and excessive computerization) are included in popular productions and they are reflected in the popular culture discourse. People live with science: it surrounds them, it invades their lives and alters their perspective on the world.

❑

Notes

1. Nicolae Cajal, *Din istoria luptei cu microbii şi virusurile* (Bucharest: Ed. Ştiinţifică, 1964); Nicolae Cajal and Radu Iftimovici, *Din lumea virusurilor* (Bucharest: Ed. Ştiinţifică şi Enciclopedică, 1976).
2. Axente Sever Banciu, *Din istoria descoperirii elementelor chimice* (Bucharest: Albatros, 1981); id., *Spre chimia modernă: pe urmele alchimiei* (Bucharest: Albatros, 1987).
3. Solomon Marcus, *Din gândirea matematică românească* (Bucharest: Ed. Ştiinţifică şi Enciclopedică, 1975); id., *Provocarea ştiinţei* (Bucharest: Ed. Politică, 1988); id., *Invenţie şi descoperire: Eseuri* (Bucharest: Cartea Românească, 1989).
4. In the 60s–70s, Ion Popescu Gopo made a series of SF films: *Steps to the Moon* (1964), *Faust XX* (1966) and *Fantastic Comedy* (1975). After the fall of communism, there were other timid attempts, e.g. the feature film *Glow* (2006).
5. *Metropolis* (1926), *Frankenstein* (1931).
6. *The Absent-Minded Professor* (1961), *2001: A Space Odyssey* (1968).
7. *Insider* (1999).
8. *Jurassic Park* (1993), at the same time the theme of the cynical scientist appears.
9. *Spider Man 2* (2004), *Avatar* (2009), *Rise of the Planet of the Apes* (2011).

References

Bachelard, Gaston. 1967. *La Formation de l'esprit scientifique: Contribution à une psychanalyse de la connaissance objective*. 5th edition. Paris: Librairie philosophique J. Vrin.

Baril, Gérard. 1996. Représentations et stratégies fondatrices dans le champ de la vulgarisation scientifique québécoise. *Communications* 17 (1): 15–40.

Barthes, Roland. 1973. *Mythologies.* Trans. Anette Lavers. London: Jonathan Cape.

Berger, Peter and Thomas Luckmann. 1966. *The Social Construction of Reality: A Treatise in the Sociology of Knowledge.* Garden City, New York: Anchor Books.

Bucchi, Massimiano and Brian Trench (eds.). 2008. *Handbook of Public Communication of Science and Technology.* New York: Routledge.

Dubois, Michel. 1999. *Introduction à la sociologie des sciences.* Paris: PUF.

Dumont, Fernand. 1981. La Culture savante: reconnaissance de terrain. In *Questions de culture 1: Cette culture que l'on appelle savante*, ed. F. Dumont, 17–34. Montréal: Léméac.

Erickson, Mark. 2005. *Science, Culture and Society: Understanding Science in the Twenty-First Century.* Cambridge: Polity Press.

Foltz, Franz. 1999. Five arguments for increasing public participation in making science policy. *Bulletin of Science Technology & Society* 19, 2: 117–127.

Godin, Benoît. 1999. *Les Usages sociaux de la culture scientifique*. Québec: Les Presses de l'Université Laval.

Hackett, Edward J., Olga Amsterdamska, Michael P. Lynch, and Judy Wajcman (eds.). 2008. *The Handbook of Science and Technology Studies*. 3rd edition. Cambridge: MIT Press.

Haynes, Roslynn. 1994. *From Faust to Strangelove: Representations of the Scientist in Western Literature*. Baltimore: Johns Hopkins University Press.
Kirby, David. 2008. Cinematic Science. In *Journalism, Science and Society: Science Communication between News and Public Relations*, eds. Martin W. Bauer and Massimiano Bucchi, 41–56. New York: Routledge.
Knorr-Cetina, Karin. 1981. *The Manufacture of Knowledge: An Essay on the Constructivist and Contextual Nature of Science*. Oxford: Pergamon International Library of Science, Technology, Engineering & Social Studies.
Kuhn, Annette. 1990. *Alien Zone: Cultural Theory and Contemporary Science Fiction Cinema*. London: Verso.
Latour, Bruno. 1999. *Pandora's Hope: Essays on the Reality of Science Studies*. Cambridge: Harvard University Press.
Macherey, Pierre. 2006. Jules Verne: The Faulty Narrative. In *Cultural Theory and Popular Culture: A Reader*, ed. John Storey, 318–385. Harlow: Pearson-Prentice Hall.
Mellor, Felicity. 2003. Between Fact and Fiction: Demarcating Science from Non-science in Popular Physics Books. *Social Studies of Science* 33: 509–538.
Shermer, Michael. 2002. The Shamans of Scientism. *Scientific American* 286 (6): 25.
Sismondo, Sergio. 2008. Science and Technology Studies and an Engaged Program. In *The Handbook of Science and Technology Studies*. 3rd edition, eds. Edward J. Hackett, Olga Amsterdamska, Michael P. Lynch, and Judy Wajcman, 13–31. Cambridge: MIT Press.
Turney, Jon. 2008. Popular Science Books. In *Handbook of Public Communication of Science and Technology*, eds. Massimiano Bucchi and Brian Trench, 5–14. New York: Routledge.
Vogt, Carlos. 2012. The Spiral of Scientific Culture and Cultural Well-being: Brazil and Ibero-America. *Public Understanding of Science* 21 (1): 4–16.
Williams, Raymond. 2006. The Analysis of Culture. In *Cultural Theory and Popular Culture: A Reader*, ed. John Storey, 32–48. Harlow: Prentice Hall, Pearson.

Abstract

The Social Construction of Scientific Culture: Forms of Romanian Popular Science

Science and society are tightly bound together and influence one another. Formal science communication operates alongside popular science communication and each one is differently constructed and transmitted. This paper aims to explain what scientific culture is, how it is constructed and what are its most visible forms, at international and national level. Scientific culture is a multidimensional concept which includes not only the products of formal scientific communication (scientific articles and books) but also the forms of popular science (books, feature films, press). It is extremely interesting to investigate the latter ones from a cultural perspective because they simultaneously show how the social representations of science are constructed, what their meanings are and how society relates to the scientific field.

Keywords

scientific culture, science communication, popular science, science fiction