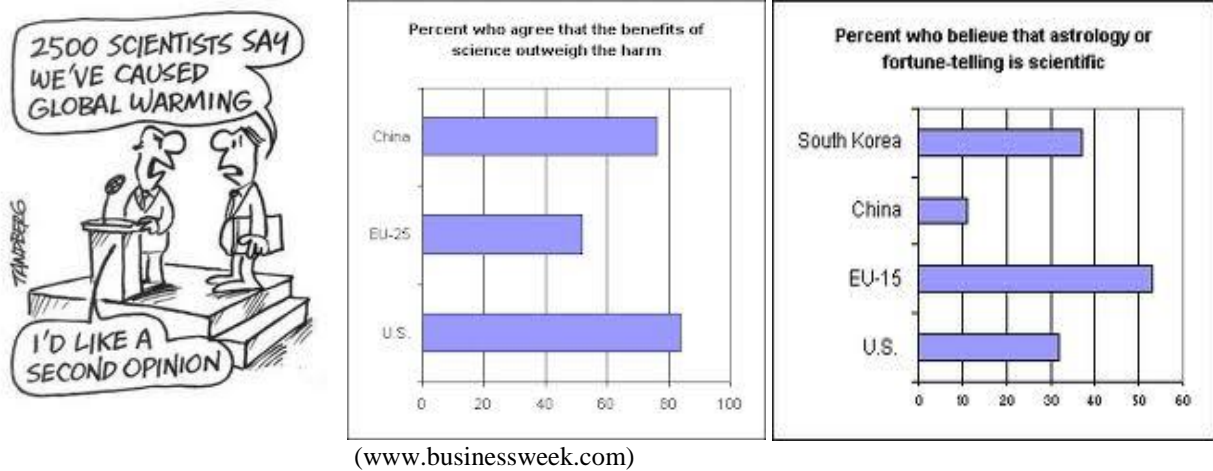


JAF04 Unit 7 Communicating science

Task 1 Discuss the message of each of the sources below:



Terzian, S.G.; Grunke, A.L. (2007) Scrambled eggheads: ambivalent representations of scientists in six Hollywood film comedies from 1961 to 1965. *Public Understanding of Science*, 16, 407-419.

These six Hollywood comedies from 1961 to 1965 project multiple images of the American scientist as an intellectual who is precariously stationed on the margins of acceptable cultural parameters, often socially inadequate and not practically intelligent. The scientists possess varying degrees of control over natural phenomena or even other people, but all are depicted as awkward.

A recent survey of public attitudes towards science in Britain uncovered:

A perception that scientists and engineers are 'not quite like us', that perhaps they operate according to a different moral code, being driven by the desire to discover and create while not necessarily pausing to think about the consequences. (Office of Science and Technology and the Wellcome Trust, 2000)

Task 2 The Big Bang – A Hot Issue in Science Communication

- What do you know about the Big Bang?
- Do you know any other theories about how the universe was created?
- Why do you think it is called a 'hot issue'?

Match the words from the article with their definition:

contentious pseudo-science misconception account for contradictory insight

- an understanding of what sth. is like
- likely to cause disagreement
- conflicting
- to explain
- claiming to be science even though it is not
- a belief that is not based on correct information

Read the extract below and answer the questions, support your answers with evidence from the text.

Introduction

The Big Bang theory has been extremely successful in correlating the observable properties of our Universe with the known underlying physical laws. However, there are some difficulties associated with the Big Bang theory. These difficulties are not so much errors as mathematical assumptions that are necessary to make some progress, but that do not have, as yet, a fundamental justification. Nevertheless, the Big Bang, taken as a whole, is the most complete and evidence-based explanation that astronomers currently have to account for the origin and evolution of the Universe.

However, the public understanding of this theory appears to be a somewhat hit-and-miss affair, a situation that is exacerbated not only by the public, but also by journalists and scientists. Most of the issues surrounding the Big Bang can only be understood and resolved with some training in the field. To the outside observer, it would appear that the discipline is riven with dissent. Is this just a case of public misunderstanding and failing to grasp the connections between disciplines or is this misperception due to confusing and contradictory statements issued by the press and scientists alike?

The Big Bang as a scientific theory

The Big Bang was named by its strongest critic, Sir Fred Hoyle, during an interview broadcast on the BBC Radio in March 1949. As used by cosmologists, the term 'Big Bang' generally refers to the idea that the Universe has expanded from a primordial hot and dense initial condition at some finite time in the past, and continues to expand to this day. It is a cosmological model describing the initial conditions and subsequent development of our universe, and is supported by comprehensive and accurate explanations based on current scientific evidence and observation, engaging such fields as astronomy, cosmology, chemistry and quantum physics.

From the above, we can already pinpoint a few misconceptions. First of all, contrary to popular belief, a scientific theory is not limited to one area of science; the Big Bang theory is grounded in several scientific disciplines. In addition, a scientific theory continues to be tested repeatedly and the results create a body of evidence supporting the theory.

Furthermore, part of the problem with scientific understanding is scientific education itself. It usually presents 'the facts', as if everything was already known. Science is taught as something complete, but it can never be complete as it is constantly being modified and extended by new observations or measurements, which in turn lead to new insights and predictions; and it is this flexibility that makes the 'scientific method' so successful in explaining the world. Finally, any gaps in our understanding of a scientific theory do not always bring the overall theory into question – just because we don't fully understand gravity, it doesn't mean that we can't predict what will happen when we jump from the top of a building.

What now for communication?

How can the communication of science answer, or, at least, successfully compete with alternative ideas from pseudo-science and religion? The Big Bang theory strikes at the heart of human philosophical and cultural meaning, uprooting a secure humanity from a known place in the Universe to one of unimaginable smallness. This is the core of its contentious state for those who seek a more comforting and meaningful alternative. It is also a reflection of the place of science in our society – where does science fit in our culture? It is up to scientists to ensure that we replace one set of meaningful values with one of equal meaning that is deeply rooted in a new culture that addresses an understanding of our place in the cosmos.

(adapted from Griffiths, M.; Oliveira, C.F. (2010). The Big Bang – a Hot Issue in Science Communication. *Communicating Astronomy with the Public Journal*, 10, 7-11)

Questions

1. Do the authors of the article support the Big Bang theory?
2. Do they think the public fully understand it?
3. According to the authors, how might journalists and scientists have contributed to public misunderstanding of the theory?
4. Did Fred Hoyle support the Big Bang theory?
5. What natural phenomenon does the Big Bang attempt to explain?
6. How many misconceptions do the authors give?
7. Do they say these are misconceptions of the Big Bang theory, or scientific theory more generally?
8. Why do they say the theory may be unsettling for some people?

Summarise the main arguments of the authors. Discuss how far you agree with them.

Task 3 Writing up research: the Abstract

An abstract (sometimes referred to as a synopsis) is a brief summary of a thesis or journal article. It typically includes some or all of the following elements. What is their most likely order?

Purpose Conclusion Results Introduction Methods

Complete the abstract below with the given phrases:

analysis also demonstrated *purpose of this work was to*
results showed *these results it may be stated*
was conducted *a significant role*

The _____(1) determine if public communication of science and technology (PCST) has any influence on people's decision to become dedicated to scientific research.

For this reason, a national survey involving 852 researchers from all disciplines _____ (2) in Argentina.

The _____(3) that the factors affecting scientific vocation are many, and that, regardless of differences in gender, age or discipline, the greatest influence on the decision to go into scientific research is exerted by teachers. The _____ (4) that different manifestations of PCST (science books, press articles and activities such as visits to science museums) play _____ (5) in awakening the vocation for science.

From _____ (6) that PCST – in addition to its function of informing and forming citizens – exerts a significant influence in fostering scientific vocation.

Match the parts of an abstract from above with the individual paragraphs of this abstract.

(Hewings, M; Thaine, C. *Cambridge Academic English Advanced*. CUP, 2012)