

## **Parallel Session 13: Lessons on PCST history**

### **AN APPROACH TO THE HISTORY OF THE MAIN TRADITIONS OF SCIENCE POPULARISATION**

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#### **Abstract**

This paper puts forward a model for the study of the popularisation of science history. The model, based on qualitative methodologies, distinguishes four schools each with their own fundamental characteristics, their authors and their seminal works. The first of these is the school born out of the Italian Renaissance, whose greatest figure was Galileo. The second school is the French one which reached its apogee in the 18th century; authors like Fontenelle, Buffon, Diderot and, already in the 19th, Flammarion comprise its best known representatives. The third school is the Germano-Prussian one. Its most important figure was Albert Einstein, a nonpareil writer and lecturer. The fourth and last school is the powerful Anglo-Saxon one. This school, the latest and most preponderant, counts popularisers like Darwin, Gamow, Asimov, Sagan and Gould among its numbers.

**Key words:** Science popularisation, populariser

#### **Text**

##### Introduction

Science popularisation has a long and distinguished history. This paper tries to separate this history into four traditions. They are, in chronological order: the Italian Renaissance, the French tradition, the Germano-Prussian and the Anglo-Saxon.

##### The Italian Renaissance

The Italian Renaissance tradition begins with Galileo Galilei (1564-1642). Although interest in science was lively before his contribution, he is the first science populariser in a totally modern sense. In many respects he represents the delayed culmination of the ideals and forces at work during the Renaissance. One of these ideals is the liberation of language: Galileo chose to write in Italian rather than Latin. In the *Dialogue* (1632) he presents his ideas in the form of a dialogue with all the concomitant benefits of charm, lucidity and irony. This tradition allows the union of the sciences and the humanities and will become the model all other schools try to reproduce.

##### The French School

The Enlightenment represents the second great moment in the popularisation of science. In the French school special attention is paid to its literary aspects.

Moreover, it is the first time that a completely conscious attitude is taken to science popularisation.

The fundamental texts of this tradition are *Entretiens sur la pluralité des mondes* (1686) by Fontenelle, *Histoire naturelle* (1749-1788) by Buffon, *Encyclopédie* (1751-1780) by Diderot and *Astronomie populaire* (1879) by Flammarion.

Bernard le Bovier de Fontenelle (1657-1757) was the first luminary of this tradition when he presented the astronomical discoveries of the 16th and 17th centuries in a popular text, written in an easy, flowing style. His example was followed by the Comte de Buffon (1707-1788) who directed his attention to the natural sciences (Domínguez, 2001). The next writer of importance was Denis Diderot (1713-1784). He undertook the massive task of collating and compiling all the knowledge then available in a single work. After him Nicolas Camille Flammarion (1842-1925) popularised astronomy and was read avidly in the 19th century. Although these writers are the best known, many others also deserve mention such as the Marquise of Châtelet, Voltaire, Verne, Moigno, Figuier and Tissandier. Although greatly admired throughout these two centuries their influence visibly declined during the 20th century (Raichvarg and Jacques, 1991).

#### The Germano-Prussian School

The Germano-Prussian school rose to prominence between the last decades of the 19th century and the Second World War. Headed by physicists of the calibre of Einstein, Schrödinger, Heisenberg and Planck, it was characterised by cutting edge science by professional scientists who were also excellent popularisers. An example of this great scientific exposition was Albert Einstein (1879-1955). In his book *On the Theory of Relativity* (1917) he outlined and explained in unparalleled clarity his physical ideas and some of the wider implications that could be drawn from them. Another example of the type of writing prevalent in this tradition was Schrödinger's *What is Life?* (1944) that drew public attention to the burgeoning importance of biology.

The Germano-Prussian tradition is characterised by a strong consubstantial philosophical and ethical component. It also marked the move away from the individual to the university as the centre of research and popularisation.

#### The Anglo-Saxon School

Despite a period of significant overlap with both the French and German traditions, this movement achieved hegemony during the 20th century, largely through the influence of the United States as a world power in scientific research (Laszlo, 1993). During the Victorian age Charles Darwin (1809-1882) was the greatest exponent of this tradition and Michael Faraday (1791-1867), author of *The Chemical History of a Candle* (1860), its greatest lecturer. Darwin's *On the Origin of Species* (1859) was probably the last scientific treatise that could be read by someone who had no previous, specialised knowledge.

The geographical centre of this tradition shifted in the 20th century to the United States. The increasing scientific dominance of the US after the First World War led to an efflorescence of popular writing. The most important contributors were George Gamow (1904-1968), author of *One, Two, Three ...*

*Infinity*; Isaac Asimov (1920-1992) a prolific populariser and author of science fiction; Stephen Jay Gould (1941-2002), author of *The Panda's Thumb* (1980); James Watson (1928), author of *The Double Helix* (1968) which revealed the crudity and ambition in scientific research; and Carl Sagan (1934-1996) who captured the imagination of millions through his ground-breaking series and book 'Cosmos' (Guerrero, 1997).

This tradition is characterised by the multifarious means of popularisation used by its exponents<sup>iii</sup>. It is also characterised by its use of English, a functional and versatile language. Just as English has become the language of science, so equally it has become the *lingua franca* of scientific dissemination (Calsamiglia, 1997). The style that has evolved to meet this need is clear, precise and down-to-earth.

## Notes

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<sup>i</sup> This paper is a summary of a part of my doctoral thesis on popularisation of science, still in course, directed by Dr. Josep Maria Casasús (UPF).

<sup>ii</sup> Goethe was, in a sense, the main precursor of this tradition

<sup>iii</sup> The Anglo-Saxons have operated through books, even the poetry, young literature, conferences and, mainly, the mass media -newspapers and magazines, radio and television programs. "Science Times", the excellent weekly section of *The New York Times*, was created in 1978 by John Noble Wilford

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