

## Comment

# The knowledge society

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In 2007, global investments in R&D have increased by 7% on the previous year and have reached an absolute historical peak, exceeding for the first time the threshold of 1,100 billion dollars (calculated in the hypothesis of a purchasing power parity between the currencies). The world invests in scientific research and technological development 2.1% of the wealth it produces. At the same time, there has been an increase in the exchange of high added-knowledge value goods and high tech represents now the most dynamic sector of the world economy.

In 2006 China – which for years has seen R&D expenses rising at a rate higher than 20% per year – outdid Japan and now ranks second, following United States, in the list of the biggest investors in R&D. India has overtook Great Britain and ranks sixth on that list. R&D investments in Brazil are higher than in Italy or in Spain. South Korea is investing more than Italy and Spain altogether.

In 2006 Asia outdid North America for the first time and has become, among the continents, the biggest spender in scientific research and technological development.<sup>1</sup>

These are not occasional performances. It is rather a true polar wander, totally an overturning of opposing poles. In the past century, the scientific axis of the planet – for over three centuries permanently fixed on Europe – firstly moved to North America and now has been quickly migrating in between Japan and Chindia: the geo-cultural area that includes China, India and an array of countries on continental Asia apparently willing to take over the protagonist's role in the global economy and culture. According to estimates, in twenty or even ten years 90% of the researchers in the world will live on the Asian coasts of the Indian-Pacific ocean.

The world is changing. We are entering a multi-polar society of knowledge, characterised by an extraordinary acceleration in the integration of all the world's economies – a phenomenon commonly called globalisation – and by an unprecedented season of culture and economy founded on science and on the type of technology that – as Luciano Gallino writes on these pages – «increasingly incorporates endless quantities of scientific knowledge».

Science and high technology are, without any doubt, the main driving forces to the society and the economy of knowledge. Indeed, it will suffice to take a look at the economic indicators to find out that continental Asia is precisely the area where wealth is currently increasing at the fastest pace. That continent is already the top exporter of high technology in the world and China has become the first commercial partner of Europe and Australia.

In this fast-running world, Europe can barely keep up the pace. Its R&D investments do not exceed 1.9% of the GDP and, probably for the first time in centuries, they are lower than the world average. This was enough to drive Sir Christopher Patten, [Chancellor of the Newcastle University](#) and of the [University of Oxford](#), to state that Europe is in a decline.<sup>2</sup>

Despite Europe's delay, the economy of knowledge, founded on science and technology, announces great promises. And many of these promises have already been kept. Never has the world been so wealthy. Never have so many people participated in the production of global wealth.

The economy suggests – through the brute force of its figures – how important the relation with knowledge, and science in particular, is to present-day human society. Nonetheless, the mere production of new knowledge is not enough. Too many, as Joseph Stiglitz maintain, are the *promises broken* by globalisation, including the globalisation of knowledge.<sup>3</sup> Too often are science and technology used as new factors of social exclusion. Never has the world been so wealthy, never has the world been so unequal.

Never has the world been closer to a global environmental crisis caused by humankind.

The economy founded on science and technology needs to be redesigned. What is needed is a democratic knowledge society, ecologically and socially sustainable.

The papers by some Italian scholars – Luciano Gallino, Cristiano Castelfranchi, Andrea Cerroni, Giancarlo Quaranta – featured in this issue are JCOM's critical and open way to take part in this debate. Firstly, because it is in the knowledge society that public science communication plays a new role. Secondly, because public science communication is a coessential part in the building process of a knowledge democracy.

*Translated by Massimo Caregnato*

### **Notes and references**

<sup>1</sup> *Global R&D Report 2008*, R&D Magazine, September (2007).

<sup>2</sup> C. Patten, *Europe Pays the Price for Spending Less*, *Nature* **441** (2006) 691, 8 June 2006.

<sup>3</sup> J. Stiglitz, *La globalizzazione e i suoi oppositori*, Einaudi (2002).