

## The BBVA Foundation Frontiers of Knowledge Awards ceremony points up the power of knowledge to mold our worldviews

- For Francisco González, President of the BBVA Foundation, "science is, in essence, culture. Its core concepts and ideas are part of citizens' mental software, and shape our identities and how we see the world"
- The awards, spanning eight categories, address two of the great global challenges of our times: climate change and the development of large areas of the planet
- Laureates coincide in the need to promote basic knowledge for the advancement of society

**Madrid, June 17, 2014.-** Science and creativity are the most powerful tools at our command to pursue the improvement of human well-being without destroying the natural environment. But science is also at the root of many of the ideas that shape our worldviews and identities, and, in this sense, is also culture. It was with this message as backdrop that the laureates in the sixth edition of the Frontiers of Knowledge Awards collected their prizes in the Marqués de Salamanca Palace, Madrid headquarters of the BBVA Foundation, at a ceremony where climate change and extreme inequality were singled out as the foremost challenges facing society.

In the words of Foundation President Francisco González, "science and culture matter not only for their external consequences in areas like health, growth and wellbeing, but because they are at the very heart of what we are. Science is, in essence, culture. Its core concepts and ideas are part of the mental software of informed citizens. They have escaped the bounds of specialist jargon to infiltrate our daily conversations, and help mould our identities and how we see the world."

The event welcomed scientists, artists and other leading figures from the worlds of business and culture. The BBVA Foundation Frontiers of Knowledge Awards, established in 2008, are judged in January and February of each year and

presented at a ceremony the following June. They stand out for the close involvement of the international scientific community in both the nomination stage and the final decision process, entrusted to eight prize juries formed by reputed experts in each subject area.

"The Frontiers Awards represent the convictions, principles and values of our identity, anchored on the conviction that science, technology, innovation and creativity are the most powerful, versatile tools we have to enlarge opportunities for all world citizens," González continued, "increasing and extending human well-being in a way that is simultaneously respectful of the life-sustaining natural environment."

The awards, in their eight categories, distinguish contributions that significantly enlarge the stock of scientific knowledge and artistic creation, and offer solutions to two of the global challenges of these times: climate change and the development of large areas of our planet.

At the same time, the Frontiers of Knowledge Awards seek to recognize "the values and conducts", González adds, that underlie the achievements being honored: "Tenacious individual or collaborative working, boundless curiosity and the determination to take a step beyond the inherited models and strike out for new, uncharted domains. Using as instrument one of the quintessentially human activities: symbolic creation and the ideation of new models, theories and formal constructs."

The President of the BBVA Foundation talked in his speech about the positive values represented by the scientific community at a time when many institutions face a crisis of confidence. Yet these same scientists lack a degree of social visibility commensurate with their contributions: "It is paradoxical that numerous surveys depict the general public as appreciative and trusting of science, yet few know the names of even a handful of scientists, in contrast to the recognition accorded to other professions far less central to our culture and quality of life." Part of the mission of the Frontiers of Knowledge Awards is to do away with this incongruence.

#### **"WE NEED TO STOP USING THE ATMOSPHERE AS A WASTE DUMP"**

**Christopher Field**, winner in the Climate Change category for revealing the value of ecosystems and their management as powerful weapons in the fight against climate change, remarked in his acceptance speech that "the late 20th and early 21st century are surely a global inflection point" (...) "The needed inflection is clear. We need to stop using the atmosphere as a waste dump, and we need to craft a new partnership with nature, building long-term wealth based on understanding and respecting the Earth's functions, possibilities, and limits."

**Marvin Minsky**, in turn, stressed the importance of basic research: "It is a profound honor to be acknowledged by an organization whose first principle is to recognize the importance of basic knowledge. The research still needed to create smarter computers will help us understand our own brains, and will teach us how we learn to think and feel. In the 1940's, a few scientists around the world realized that computing power would have no limit, and the new field of artificial intelligence enabled computers to support innumerable applications. But computers are still unable to learn in all the ways that humans and other animals do. That is why I am encouraging this generation to pursue basic long-term research and theories of 'common sense' that will help us to finally solve the increasingly hard problems our societies will face."

**Adrian Bird**, honored in the Biomedicine category for his pioneering contributions in epigenetics, talked about the origins of his vocation: "Since my schooldays I have been fascinated by DNA and it was therefore somewhat disappointing to be told at university that all the key experiments had already been done (...). Fortunately this assessment turned out to be incorrect. As a result, my colleagues and I have been able study the functional significance of DNA methylation, which involves the selective addition of a chemical mark to regions of the genome."

His research brought to light an unanticipated connection with an autism spectrum disorder known as Rett syndrome, which, Bird said, "gave added impetus and urgency to our work (...). What we are now trying to do is use this information to find an effective therapy. Our dream is to make Rett syndrome the first curable disorder of its kind."

## **GROWTH AND INEQUALITY**

**Elhanan Helpman**, laureate in Economics, Finance and Management, explained that the fields occupying his research interest, foreign trade, political economy and economic growth, "have been truly revolutionized (...). Just to witness these developments has been an intellectual feast, while actively contributing to their molding has been a tremendous privilege indeed (...). We live at a time in which economic growth has lifted hundreds of millions of people out of extreme poverty, yet inequality has widened in many countries. To understand these outcomes, and the role played by trade integration in their shaping, is a major challenge to the economics profession."

**Harald Rose, Max Haider and Knut Urban**, joint winners in Basic Sciences for inventing a microscope with subatomic resolution, reflected on the journey to their breakthrough: "All attempts to improve the resolution of the electron microscope were in vain for almost 50 years (...), but nowadays many researchers are benefitting from these tools in their search to find answers to key questions encountered in materials science, nanotechnology, biology, and medicine (...). The history of the aberration-corrected electron microscope is a story of seemingly fruitless efforts to succeed in a 'mission impossible'. Its final success provides a

lesson by demonstrating that real advancement in science requires new ideas, endurance, devotion, and team work."

Ecology and Conservation Biology laureate **Paul R. Ehrlich** expressed his gratitude for the award at a time when "at least in the United States, science is under severe attack – just when more science input to public policy is desperately needed (...). The BBVA Foundation awards indicate that business and science can (and must) cooperate in solving humanity's most serious problems. In response to the need to avoid a collapse of civilization, the boundaries of scientific disciplines are increasingly dissolving."

Madhav Chavan, CEO of **Pratham**, thanked the award juries "for telling the world that basic education is also a frontier of knowledge." His organization received the accolade for improving the learning levels of millions of disadvantaged children in India: "Our formula is straightforward: simplify assessment (...); set step-wise achievable and measurable goals (...); raise the motivation, and therefore energy, of large numbers of people. And along the way evaluate rigorously and honestly what works and what does not. Today we can say with confidence that the goal of 'all children reading fluently with comprehension and solving math problems' is not only achievable, it is also possible within a short period of time and with cost efficiency in resource-poor countries."

**Steve Reich**, awardee in the Contemporary Music category, noted that "to be honored as part of the whole international development of human knowledge is a privilege indeed." For the U.S. composer, the fact that his work shared the stage at the previous evening's concert with Stravinsky's *The Rite of Spring*, was "an additional honor and challenge. To hold one's own preceding what is generally conceded to be the greatest musical masterpiece of the 20th century is no small challenge!"

#### **AWARDS CONGRUENT WITH THE KNOWLEDGE MAP OF THE 21ST CENTURY**

The BBVA Foundation established its Frontiers of Knowledge Awards in 2008 to recognize the authors of outstanding contributions and radical advances in a broad range of scientific and technological areas characteristic of our times. It is supported in this enterprise by the Spanish National Research Council (CSIC), Spain's premiere public organization for multidisciplinary research.

The awards' eight categories respond to the knowledge map of the early 21st century, including some of the key global challenges of our times: Ecology and Conservation Biology, Climate Change, Information and Communication Technologies and Development Cooperation. These stand alongside the classic categories of Basic Sciences, Biomedicine and Economics, Finance and Management. Finally, the award family is completed by Contemporary Music, an art at the leading edge of cultural innovation, where Spain is home to a wide and talented community of authors, conductors and performers.

## FRONTIERS ARTWORK

All awardees were presented with an artwork by sculptor Blanca Muñoz (Madrid, 1963), based on a series of spirals that represent the progress and interrelation of scientific disciplines. The spiral, in the words of the author, "is the optimal solution for growth in a limited space as well as the best way to represent continuity."

Fundación **BBVA**

---

For more information, contact the BBVA Foundation Communications Department (+34 91 374 5210/91 537 3769/91 374 8173), [comunicacion@bbva.es](mailto:comunicacion@bbva.es) or visit [www.fbbva.es](http://www.fbbva.es)