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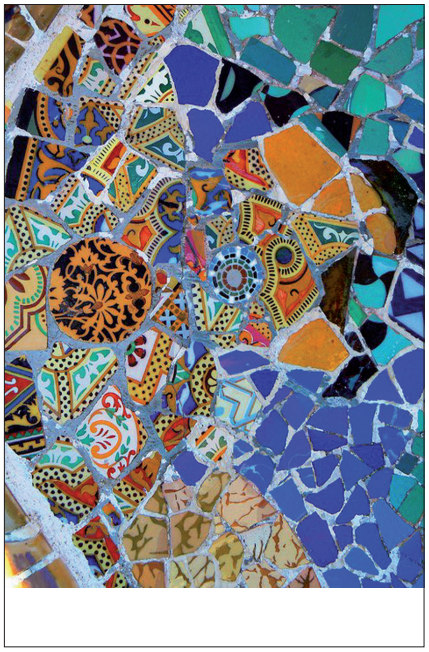
The AE-BKH *Disputatio of Barcelona*, 2013–2016

Genoveva Martí,[1] Mara Dierssen,[2] Thomas Pogge[3]

[1]Professor ICREA, Department of Philosophy, University of Barcelona, Barcelona.
[2]Systems Biology Program, Center for Genomic Regulation, University Pompeu Fabra, Barcelona.
[3]Department of Philosophy, Yale University, New Haven, CT, USA



Trencadís ("broken tiles") by Antoni Gaudí

Summary. The Barcelona Knowledge Hub of the Academia Europaea (AE-BKH)was set up in Barcelona in 2013 as the office for the Southern European region and the Mediterranean. The Academia Europaea is a pan-European, nongovernmental, not-for-profit association of over 4000 individual scientists and scholars who are recognized as experts and leaders in their own fields. It is committed to identifying topics of trans-European importance to science and scholarship, and provides, where appropriate, its expertise and its independent and impartial advice to European institutions, governments and international agencies concerning matters affecting science, scholarship and academic life in Europe. The AE-BKH organizes multidisciplinary activities that consider the perspective of the social sciences and the humanities, with scholarly aims as well as the goal of promoting the dissemination of science. One of the very special activities of the AE-BKH is the celebration of the present-day *Disputatio of Barcelona* as a remembrance of the original *Disputatio of Barcelona* held in 1263.Until present, four moder-day *Disputationes* have been held, from 2013 until 2016 [**Contrib Sci** 12(2):83-91 (2016)]

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Correspondence:
Genoveva Martí
E-mail: genoveva.marti@gmail.com

The Academia Europaea, promoting learning, education and research

The Academia Europaea (AE), founded in 1988, is a pan-European, nongovernmental, not-for-profit association of individual scientists and scholars who are elected by nomination and recognized by their peers as experts and leaders in their fields. The AE is independent of national governments and government-controlled sources of finance. Its main object is to support the culture of European research through dialogue and collaboration.

In its mission statement, the AE is committed to identifying topics of trans-European importance to science and scholarship, and to proposing appropriate action to ensure

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Fig. 1. The AE-BKH is housed on the the Institute for Catalan Studies (IEC).

that these topics are adequately addressed. It promotes a wider appreciation of the value of European scholarship and of research and encourages interdisciplinary and international scholarship in all areas of learning of relevance to Europe. In addition, where appropriate to its expertise, it provides independent and impartial advice to European institutions, governments and international agencies concerning matters affecting science, scholarship and academic life in Europe.

The AE-Barcelona Knowledge Hub: the Southern European and Mediterranean Office

In 2013, the AE-BKH was established in Barcelona as the office for the Southern European region and the Mediterranean. Barcelona has a strong academic and scientific environment, with important centres for biomedicine and photonics. In addition, the city is one of the main Euro-Mediterranean centres and the capital of the Union for the Mediterranean. Thus, the AE-BKH contributes towards the consolidation of the city's international position. This explains the decision by the Catalan Government (Ministry of Economy and Knowledge), the Barcelona City Council and the "la Caixa" Foundation to join efforts to launch an AE hub in Barcelona. The AE-BKH is housed on the premises of the Institute for Catalan Studies (IEC) (Fig.1).

One of its main objectives is to organize multidisciplinary activities that include the perspective of the social sciences and the humanities in the southern European region, with scholarly aims and for the dissemination of science.

The *Disputationes* of Barcelona

The BKH's inaugural event was celebrated in November 2013 as a commemoration of the 750th anniversary of the *Disputatio of Barcelona*, by holding its own, present-day *Disputatio of Barcelona* (Fig. 2). The first *Disputatio of Barcelona* was held in 1263 before King James I of Aragon; it was one of the inter-faith debates that took place between Christian and Jewish theologians. On that occasion, the debaters were Pau Cristià, a convert from Judaism and a Dominican friar, and Rabbi Moses ben Nahman (also known as Nahmanides; his Catalan name was Bonastruc ça Porta), a Catalan Sephardic rabbi, physician, philosopher, kabbalist and biblical commentator. In the scholastic system of education of the Middle Ages, the *Disputationes* offered a formalized method of debate designed to uncover and establish truths in theology and the sciences. Fixed rules governed the process: they demanded dependence on traditional written authorities and a thorough understanding of the argument made by each side.

The 2013 *Disputatio of Barcelona*, with the title "Social and State-of-the-Art Medicine," took place on November 28th in the historical Main Hall (Saló de Cent) of the Barcelona City Hall, before over two hundred members of the local scientific, intellectual community. The event was hosted by

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Fig. 2. Panoramic view of the *Disputatio of Barcelona 2013*, held in the *Saló de Cent* of the Barcelona City Hall.

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Fig. 3. From left to right: Genoveva Martí (Academic Director of the Barcelona Knoledge Hub), Lars Walløe (President of the Academia Europaea), Xavier Trias (Mayor of Barcelona), Mara Dierssen and Thomas Pogge (*disputantes*), Anne Buttimer (Vice-President of the Academia Europaea) and Andreu Mas-Colell (Minister of Economy and Knowledge of the Government of Catalonia), at the *Disputatio of Barcelona 2013*.

Xavier Trias (at that time Mayor of Barcelona), who was joined at the presidential table by Lars Walloe and Anne Buttimer (former President and Vice-President of the AE, respectively), Andreu Mas-Colell (at that time Minister of Economy and Knowledge of the Catalan Government) and the by Genoveva Martí (at that time the academic director of the AE-BKH). Two speakers with expertise in different areas were invited to share their views on the access to medical resources and their distribution (Fig. 3).

In keeping with the AE-BKH's intent to approach issues from a multidisciplinary perspective, the invited *disputantes* were Mara Dierssen, a neuroscientist, group leader of Cellular and Systems Neurobiology of the Systems Biology Programme at the Centre for Genomic Regulation in Barcelona, and president of the Spanish Society for Neuroscience, and Thomas Pogge, a philosopher, president of the Health Impact Fund, Leitner Professor of Philosophy and International Affairs at Yale University, director of the Global Justice Program and Board Member of Academics Stand Against Poverty.

The success of the event inspired the advisory board of the BKH to continue holding *Disputationes* as the main annual event of the BKH.

The 2014 *Disputatio of Barcelona* was organized in conjunction with the United Nations University. It was held in November 2014, on the premises of the Hospital de Sant Pau of Barcelona, declared a World Heritage Site by UNESCO in 1997, under the title "The Mediterranean, bridge of cultures". The 2014 *disputantes* were Maria Paradiso, Full Professor of Geography and Planning at the University of Sannio, Italy, and Enric Banda, at that time Director of Science and Environment at the "la Caixa" Foundation

The 2015 *Disputatio of Barcelona* was held on December 2015 at the Gothic Royal Chapel of St. Agatha, viewing the famous Epiphany altarpiece by Jaume Huguet (1412–1492) with the title of "Natural vs. Artificial Intelligence". The *disputantes*, again a woman and a man, were Núria Sebastián, vicepresident of the Scientific Council of the European Research Council and leader of the SAP Research Group (Speech Acquisition and Perception) at the Universitat Pompeu Fabra, and Ulises Cortés, Full Professor and researcher of the Technical University of Catalonia (UPC).

The 2016 *Disputatio of Barcelona* has been the last one. It was held on November 2016 at the premises of the Generalitat de Catalunya (a Gothic building from the 14th century) after a protocolary reception with Mr. Carles Puigdemont, President of the Catalan Government. The topic for

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Genoveva Martí

Genoveva Martí graduated from the University of Barcelona and obtained her PhD from Stanford University. She is Research Professor of ICREA (Catalan Institute for Research and Advanced Studies) at the Department of Philosophy of the University of Barcelona. Before moving to Barcelona she was Reader at the London School of Economics. She taught also at the University of Washington, Seattle and the University of California, Riverside. In 2014–15 she was Professor of Philosophy at Western University in Canada. Since 2009 she is a member of the Philosophy, Theology and Religious Studies Section of the AE and was elected to the section committee in 2015. She is a member of the LOGOS research group. Her research interests include the theory of reference, the semantics of singular and general terms, and the role of experimental data in semantics. She was awarded the Narcís Monturiol Medal by the Government of Catalonia in 2012.

the *Disputatio* was "Natural Life vs. Synthetic Life", and the *disputantes*, as always, a man and a woman, were Anna Veiga (UPF), former director of In Vitro Fertilization Laboratory of the Department of Obstetrics, Gynecology and Reproduction Service Reproductive Medicine at the Dexeus University Institute and former Chair of the Special Interest Group on Stem Cell, and Ricard Solé, ICREA research professor and head of the Complex Systems Lab, located at the PRBB (Biomedical Research Park).

The *Disputatio of Barcelona* 2013: Social and State-of-the-Art Medicine

Human progress has two interlinked components: innovation (i.e., creation, invention, and discovery), and diffusion (i.e., the dissemination and uptake of knowledge). In the realm of human healthcare and drug discovery, innovative products can be defined as those that cure or prevent a disease or condition, decrease mortality or morbidity, decrease the cost of care, improve the quality of life, are safer or easier to use, or improve patient compliance and persistence.

Presentation by Mara Dierssen: Producing Progress? Issues to consider

Pharmaceutical innovation

In recent years, there has been a decrease in the number of molecular entities or biological license applications that have been approved. Why is this? In the USA, one important reason is that the FDA's approval process, driven by extreme caution, is extremely long (10–15 years from the discovery to the final approval).

The January 2013 issue of *The Economist* contained an article with the title "Has the ideas machine broke down?" The argument was that entrepreneurs are not leading new, fundamental discoveries, but are simply profiting from knowledge coming from academia, from publicly funded research: "Almost no entrepreneurs discover things fundamentally new, at least while working on their own nickel. Rather, in the words of Isaac Newton, they stood on the shoulders of giants. In this case, the giants were those scientists and engineers funded by society, through taxpayer largess, that created the building blocks that led to many of the technological breakthroughs we have today."

The new science of personalized medicine and the genomic era

Publicly funded research has powered a completely new field of medicine, with a completely new landscape. This knowledge has radically changed the strategies for targeting diseases. Some examples of this new landscape are genomic medicine, the ENCODE project, synthetic biology, and robotics.

Genomic medicine

Genomic medicine has provided an abundance of information about the genetic basis of disease, thus providing insight into the physiopathology of disease and identifying new therapeutic targets.

This knowledge is driving a major change in how medicine is perceived; a revolution is under way, based on personalized genomics and direct-to-consumer genomic services. Genomic medicine is driving a new approach to therapy, based on a new medical model, personalized medicine. This model proposes customizing healthcare via decisions and practices tailored to the individual patient, by exploiting genetic and other relevant information. Consider that, for a single patient group with the same diagnosis and treated with the same medication, there will be responders, non-responders, and those who exhibit signs of increased drug toxicity. Personalized medicine, by tailoring medications based on genetic information, will greatly contribute to optimizing treatment.

The ENCODE project

The Encyclopedia of DNA Elements (ENCODE) project is a public research consortium that was launched in September 2003 by the US National Human Genome Research Institute (NHGRI) to identify all functional elements in the human genome. An achievement of ENCODE has been the recognition that most of the non-coding DNA is involved in the regulation of the expressions of coding DNA, with important effects on health.

Synthetic biology

Another major discovery that is driving and will drive a change in productivity is the capability of creating new life from inert chemicals. In 2010, Craig Venter and his team at the J. Craig Venter Institute reported the creation of a bacterial chromosome which they used to successfully replace the DNA of a bacterium. Similar new entities will probably be capable of replicating and of evolving into new forms. We must think about the potential uses of future new living organisms. They could be used, for example, for producing new drugs.

Robotics

Brain-computer and body-computer interfaces that help people with disabilities to be more independent are already available. Computer science has contributed to improving not only the health, but also the social inclusion of the disabled, decreasing the cost of dependency.

Center for Genomic Regulation

Mara Dierssen

Mara Dierssen received her degree in medicine (1985) from the University of Cantabria and her PhD (1989) from that university Department of Physiology and Pharmacology. She did her postdoctoral work at the Autonomous University of Barcelona (1990–1993). She was assistant professor at the University of Cantabria (1993–1997), professor of psychophysiology and neurosciences at Ramon Llull University (1997–2006), and senior researcher at the Medical and Molecular Genetics Centre of the Cancer Research Institute (IRO) in Barcelona (1997–2001). Since 2005, she has been the director of the Associated Unit for Behavioral Research (National Biotechnology Centre-CSIC) and, since 2007, investigator of the Centre for Biomedical Research on Rare Diseases (CIBERER). She belongs to several academic societies and is a member of the executive committee of the Federation of European Neuroscience Societies (FENS). Dierssen has received numerous awards, including the National Culture Award for Science (2008), the Sisley Lejeune Award (2010), the Alicia Koplowitz Award (2011), the Ramón Trías Fargas Award (2013), and the David and Hillie Mahoney Award (2014). She has published over 100 articles in peer-reviewed journals. Currently, she is group leader of the Cellular and Systems Neurobiology of the Systems Biology Program at the Centre for Genomic Regulation (2007–) and past-president of the Spanish Society for Neuroscience (2013–2015).

Genetics, the environment, and medicine

One of the most important discoveries of recent years is that we can shape ourselves, both our brains and our bodies, and that these changes can be passed on to the next generation. This discovery is based on the recognition that there are changes in gene activity and expression that are not dependent on gene sequence; moreover, they are heritable—but not necessarily. The study of those changes is called epigenetics, and the global analysis of epigenetic changes across the entire genome, epigenomics. Epigenomics is one of the fastest emerging scientific fields, promising a huge growth potential by revolutionizing the therapeutics and diagnostics industries in healthcare. The US NIH Roadmap Epigenomics Mapping Consortium was launched as a public resource of human epigenetic data to facilitate disease-oriented research.

The study of heritable changes in genome function and gene expression has opened a new gateway in biology, allowing us to understand the basis of diseases, and presents incredible opportunities for disease diagnosis and drug discovery. The epigenomic therapeutic market is expected to explode in the coming years.

The problem, however, is that this basic research is lost in translation when it comes to converting findings into real therapeutic advances. The substantial increase in investment in pharmaceutical research has yielded only slight progress, since the new compounds are only marginally better, but much more expensive, than existing ones. Moreover, it has increased the gap between treatment available to the rich vs. the poor.

The pharmaceutical industry cannot be the ultimate answer. In fact, the effects of the environment must be taken into account. The environment is a strong determinant of how we develop and function. Genetic susceptibility factors are responsive to environmental ones. Gene-environment interactions make people different, and the consequences of these interactions are in many cases decisive.

Given the complexity of how phenotype is determined, how powerful or useful will the delineation of an individual's genome be in predicting disease and in choosing therapy? Our understanding is far from complete; we need more basic science research and knowledge. Investment in science is below what it should be, and we must work to improve this situation.

Regarding research in medicine, there are other problems. Consider the aims of EU Horizon 2020—the eighth phase of the Framework Programs of Research and Technological Development, the main targets of which are aging and obesity. In other words, funding from public agencies is mostly devoted to the diseases of developed countries.

Innovation distorting economical inequalities

Focused innovation is distorted by huge economic inequalities, which steer innovators away from seeking treatment of those diseases predominantly affecting the poor. The map of some disorders, such as malaria, coincides with the map of poverty, and is in direct opposition with the map of drug and pharmaceutical investment. We could appeal to ethical values, to morality. However, from neuroscience we know that power (of any kind) equals reduced morality. Policy proposals with ethical implications or that aim to achieve the egalitarian distribution of benefits and costs may fail.

You could argue that we live in a democracy, but from neuroscience we also know that there are no rational voters. The political brain is an emotional brain and people are driven by emotions. Politicians use marketing techniques aimed at holding their traditional voters as well as widening their appeal. However, in designing their campaigns they should take into account voters' attitudes, by studying how voters' electoral memory, sense of responsibility, and emotional state are associated with their votes. What do citizens think about when they stand in the polling booths? What is the impact of electoral arrangements on voting and voters' perceptions of elections? How do voters evaluate government performance? Answers to these questions would help the generation of more coherent systems.

Concluding remarks

The health systems of most countries perform very poorly in terms of cost-effectiveness, which reduces their societal value. Overall efficiency is greatly diminished by lobbying and deal-making, the patent application process, litigation, wasteful marketing, counterfeiting, and deadweight losses. Adverse disturbances of drug development by the scientific or regulatory environment have detrimental effects on social value. Disruptions in the flow of funding from sales to R&D lead to lower social returns. We need to address not only the drivers of investment in innovation, but also how innovation is done.

We need to change the model. The outcome of treatment should be included in an assessment of its value. In other words, payment for pharmaceuticals should be based on performance. We should also improve science funding. And finally, academic knowledge, both theoretical and methodological, should be applied to policy making.

Presentation by Thomas Pogge: The Health Impact Fund, a new paradigm in pharmaceutical innovation

Universal access to pharmaceutical drugs is seriously undermined during the time the product is under patent by large mark-ups. This period has been established after the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) in 20 years. During this long period generic companies cannot work with the active molecule or active principle, so they cannot make the so-named generic drugs which are much more accessible to people because its much lower price.

These difficulties for accessing new and cheaper drugs are accompanied by other characteristic of the production of pharmaceutical drugs by large companies—always looking for the higher benefit from the market—, this is the positive bias towards the "rich patient", i.e. patient with a sufficient economic power to pay the high price of drugs. Pharmaceutical innovators can make the most money by producing drugs against diseases that affect the rich, affluent or well-insured people; they cannot make a lot of money from diseases that are concentrated among the world's poorest populations. And for that reason, research and development of new med icines focuses away from large and important diseases that affect the poor, such as malaria, tuberculosis, schistosomiasis, and leishmaniasis.

An additonal problem with the current system is that most of the money that the world spends on pharmaceuticals (about one trillion US$ every year), does not go back into the manufacture or the research and development of new drugs. Most of the money actually goes to lobbying and gaming, patenting and litigating, wasteful marketing and counterfeiting, as well as to huge deadweight losses, all of which greatly diminishing overall efficiency.

The Health Impact Fund (HIF)

The solution on which we work involves the creation of the Health Impact Fund (HIF), which is a complement to the existing TRIPS which would offer to innovators the opportunity to voluntarily register any new medicine. For all of these drugs, the HIF would measure the health gains that they produce in the world, and would then divide the reward pool accordingly (about 6 billion US$ every year). Registrants would be free to keep intellectual property rights, but would be required to sell the new medicine at the lowest feasible average cost of manufacture and distribution

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Thomas Pogge

Thomas Pogge received his PhD from Harvard University (1983). He is the Director of the Health Impact Fund, Leitner Professor of Philosophy and International Affairs and Director of the Global Justice Program at Yale. Broadly devoted to moral and political philosophy, and Immanuel Kant, his work has increasingly focused on real-world issues related to justice, poverty and health. On these topics, he has led several major research collaborations (funded by the European Commission, the Australian Research Council and the BUPA Foundation). Pogge's recent publications include Politics as Usual (Polity 2010), World Poverty and Human Rights (Polity 2008), John Rawls: His Life and Theory of Justice (Oxford 2007), and Freedom from Poverty as a Human Right (Oxford & UNESCO 2007). Pogge holds secondary appointments at King's College London and at the universities of Oslo, Sydney and Central Lancashire. He has held visiting appointments at Harvard, Oslo and Princeton Universities as well as at the Princeton Center for Advanced Studies, All Souls College Oxford and the National Institutes of Health. Pogge is also an editor for social and political philosophy for the Stanford Encyclopedia of Philosophy. In 2013 he won the American Philosophical Association Gregory Kavka Prize in political philosophy. He has received honorary doctorates from the universities of Turku, Bucharest and Connecticut and is a member of the Norwegian Academy of Science.

and to grant cost-free licenses after the reward period.

Pharmaceutical innovators will be able to choose which market to enter: they will be free to stay in the existing system and get rewarded through the high mark-ups they can charge, protected by a patent; or they can give up that reward opportunity, agree to sell their product at cost and then be rewarded on the basis of the health gains. Obviously, different products will choose different tracks. A product that is mainly directed at rich people, such as a hair-loss product with little health gain, would stay on the patent-track, whereas a product that addresses a need of poor people, such as a malaria drug, would surely choose the HIF-track, be rewarded according to health impact and sold everywhere at a low price determined by cost.

The HIF can solve the three big problems of the status quo:

- HIF prevents high prices. All HIF-registered drugs are available at its real cost or even below cost from day one. Poor people can gain access to important new medicines either through their own funds or through governments, NGOs, or international agencies.
- HIF also ends the neglect of the diseases of poverty. The HIF adds powerful targeting incentives to develop new drugs with the greatest health impact—regardless of the socioeconomic composition of patient population.
- HIF boosts cost-effectiveness. It would reduce costs and losses due to patenting because innovators would not need to patent their drugs in many jurisdictions because nobody would care to compete with them if they offered their products at very low prices. There would be much less litigation and much less need for competitive marketing.

As a bonus, also for rich populations, the HIF would focus the attention of innovators on the health of patients because only if you actually promote the health of patients, do you make money. Under the current system, by contrast, the innovator is rewarded for every prescription of its medicine, regardless of whether it is beneficial to the patient or not.

Financing the HIF. The HIF would be funded through governments that are willing to participate in the scheme. Each of them would contribute a sum around 0.03 % of their gross national income (GNI). The investment could be done through long-maturity or perpetual bonds with interest pegged to inflation or GNI per capita. Alternatively, the HIF could be funded through a dedicated international tax, for instance a tax on financial transactions or a tax on pollution, whose future revenue stream could be scrutinized. Such taxes would also moderate speculative excesses in financial markets or slow climate change.

Ultimately, the idea is to create a diversified endowment, managed to generate a stable income stream that would cover a substantial and growing portion of the annual reward pools. The endowment could accept contributions also from international and non-governmental organizations, foundations, corporations, individuals and states—following the example of private universities. And would thereby give everyone an opportunity personally to contribute to the long-term improvement of human health.

During 2013, the HIF team received €2 million from the European Union, which will help establish the baseline against which health gains will be measured. The HIF also received a US$ 2 million commitment from Janssen Pharmaceutica, part of Johnson & Johnson (J&J) Pharmaceutical Research and Development, involving their new drug against multi-drug-resistant tuberculosis—and the first anti-tuberculosis drug developed in over forty years—Sirturo® (Bedaquiline). J&J will contribute the drug at zero cost, so this pilot will only refine the measurement of health gains and of the preservation of the drug's efficacy. The drug was approved by the US Food and Drug Administration in December 2012, and once it is approved in India, the pilot in Mumbai will start.

Different fields, but the same problem

The same idea that can potentially work really well in pharmaceuticals could be applied in other fields, such as the agricultural and environmental innovation.

Agriculture and food production face the same dilemma between innovation and access. Agricultural innovators should have at least the option to agree to the cost-free use of their innovation in exchange for payments from public funds that are based on the measured total impact of their innovation in terms of nutrients produced with given inputs, on methane emissions averted, and on reduction in the use of pesticides, fertilizers, and antibiotics.

Environmental innovation could also benefit from this strategy. It is of great importance to protect the environment because it allows the production of electricity and other goods at much lower cost to the environment. However, many green technologies—such as efficient solar panels or hybrid cars—are patented, and because of high licensing fees, they do not diffuse among poorer populations. Once again, we are wrongly rewarding innovation in a social issue by giving innovators the right to charge high prices, by granting them a temporary monopoly. Green innovators should be

given at least the option to agree to the cost-free use of their innovations, in exchange for payments from public funds based on the measured total environmental impact of their innovations, assessed according to a pre-announced metric.

A final thought

Rewarding innovation in the wrong way in the areas of pharmaceuticals, food production, and environmental innovation has especially serious effects on the poor. Poor fall ill more often and more severely, they die earlier, they suffer hunger and malnutrition, and they also suffer more from the effects of climate change, as could be seen in the Philippines with Typhoon Haiyan in 2013. And so, incentivizing innovation in these social areas in the wrong way perpetuates poverty, and poverty, in turn is a key driver of human population growth.

The crucial variable for the ecological sustainability of our planet is the number of human beings who will share its limited resources over the coming millennium. Fertility is the main indicator for what the human population will be like in 2100. Depending on what policies our generation will initiate, the United Nations estimates that there will be between 6 billion and 16 billion people by the end of the century (there are 7.2 billion today). Of course, for ecological reasons, it would be much better if, in 2100, the world's population was closer to 6 billion than to 16 billion.

The best way of achieving that is by overcoming poverty, and one way to do that is by changing the way in which we reward medical, agricultural and environmental innovation.

Competing interests. None declared.

About the images on the first page of the articles in this issue. Articles of this thematic issue of CONTRIBUTIONS TO SCIENCE, devoted to the activities of the Barcelona Knowledge Hub of the Academia Europaea (AE-BKH), show in their first page a reproduction of a *trencadís*, a type of mosaic used in Catalan Modernism, made from broken pieces of ceramics, like tiles and dinnerware. Those nine "broken tiles," designed by the architect from Reus Antoni Gaudí, show multiple angles and views, reflecting the ever-changing reality around us. The AE-BKH believes that those images, created more than a century ago, represent appropriately the multiple aspects of the present academic world, both in science and humanities, which constitute one of the main objectives of the activities of the Barcelona hub. See also the article "Antoni Gaudí (1852–1926): The Manuscript of Reus," by R. Gomis and K. Katte, on pages 145-149 of this issue. This issue can be downloaded in ISSUU format and individual articles can be found at the journals' repository of the Institute for Catalan Studies [www.cat-science.cat; http://revistes.iec.cat/contributions].