

02/2012

Science, economics and communication with Ellis Rubinstein



“It is ridiculous to cut back on science and technology”

The scientific communication model changed with the implementation of new technologies in social networks, while the crisis and its cutbacks are affecting the development of science and technology. Ellis Rubinstein, editor of the renowned journal *Science* for nine years, member of the World Economic Forum and advisor to various governments visited UAB, invited by BIOclusterUAB. During his visit he spoke on the pros and cons of such a quick and unfiltered scientific communication, about its future and the need, despite the current economic downturn, to continue investing in science by correctly managing the balance between basic and applied research and small investments in young talent, thus setting the goal on an economy based on science and technology as an alternative to the current obsolete economic system and as the way of overcoming this crisis.

Ellis Rubinstein, English Literature graduate from the University of California, is president of the New York Academy of Sciences. He was managing editor of journals such as *Newsweek*, *Science* 86, *IEEE Spectrum* and *The Scientist*. As editor in chief at *Science* from 1993 to 2002, he internationalised news coverage and pioneered the online version of the journal. His work as a journalist won him the *National Magazine Award*, the Pulitzer Prize of the magazine industry. He was member of the World Economic Forum and is consultant to several government agencies, who rely on him for his views on science in general and his ability to promote and disseminate scientific knowledge. Rubinstein visited UAB as a guest at the BIOclusterUAB, where he spoke on his views of our science and technology system.

Journalism is evolving into social networks, twitter, YouTube... How does this tendency affect scientific communication?

As with many areas of science and technology, usually there are good things that happen with changing, and there are things that one would worry about. I think there is an interesting editorial in the last issue of *Science* magazine, by the current editor in chief, where he worries about what I was worrying about when I used to be the editor. That was that, when you have people reading journals online, the danger to me is that the young people use social networking and also a kind of algorithm to deliver to them what they want to see, to such a degree that they only see information in their own field that they already know, that would be of interest for them. And we are very worried that if you don't have the experience of paging through a magazine, you won't see things just outside your field that could be really breathtaking and give you new insights. That's a good example of one of the dangers, opportunities that are too personalised. Of course, the other side is that if people can interact with each other in novel ways and don't have to wait for publications, science can move faster and ideas can proliferate around the world more rapidly than if they are rigidly controlled by a set of publications. So as in many cases, there is a plus and a minus. The question is how do you guard against the minuses and improve the pluses.

Under this context, towards where do you think the academic publishing industry is going? Towards open access models or will traditional models live on?

Again, I feel that because I spent so many years in publications that were really proud not to make profits but to disseminate information, and yet believed that they needed to have a good business model, during my period as editor of a major journal, it worried me a lot that if open access really became the norm and institutions such as scientific societies that publish the journals couldn't make serious amounts of money if they were unable to adapt to new things when the time came, they would need to have reserve funds to do different things. I worried about that quite a lot. Now, I was told quite recently that PLOS journals are surviving well without any financial grants, philanthropy. And if that's true, then maybe it's possible that the new form of open access publishing can survive after all. But I always worry that if you become too limited in the opportunities to do things in different ways, then you are in danger when the next wave comes. I think it is good for the world that open access drove people to open information more, but I'm a little bit sceptical about whether it's the only model for the future.

Because of the economic crisis, the Spanish government has reduced the budget in

science and development by 600M?. What is your opinion on these cutbacks?

First of all I'm not a macroeconomist, but I personally am in favour of macroeconomists like Jeffrey Sachs, or the Nobel Prize winner from Princeton, or Joseph Stiglitz from Columbia, who argued from the beginning that in this type of financial crisis it is important actually to invest more money even if it increases the debt in short term, because if you don't, basically you create a spiral that leads to even deeper recession. I guess, on a personal level without expertise, I worry about the kind of obsession of cutting things. That is the number one danger. On the scientific side, I think you can make an argument that science and technology are really the ways forward in economic development for most developed countries. We can never recreate the manufacturing economies that made us strong, and the financial collapse proved right away to big cities like New York and London that if they were over dependent on financial economies they would be in deep trouble. And what is the alternative? It's a knowledge economy based on science and technology. So, to me, it's very backward to actually cut the science and technology budgets. The only thing I would say I'm sympathetic to, is that it is true that we need to make sure that the science and technology communities are really creating jobs and not just doing work that may be having a pay-off twenty or thirty years down the road. And that requires a very innovative leadership. And we don't usually see that leadership so some of the money could be wasted. I would say they should be increasing the amount of money but they should be very clever on how they spend it.

Is there any country that could be a model to follow?

Right now, if I had to choose a country that is doing a lot of things in a clever way I would pick China. Because I think China has one advantage that people overly look at, their very top down approach as intelligent engineers by and large to try to engineer the economy. But actually, what I am more impressed with is the fact that underneath that leadership or that top-down model actually there's a huge amount of competition between institutions that include not just merely individual universities but the city governments, the provincial governments, the actual Chinese academies, and even the military, all looking for ways to drive innovation forward and use science and technology in clever ways. And I would appoint one example, something that surprised me quite a lot, and should be interesting here, in Catalonia. I learned fairly recently that the Chinese Academy of Sciences has actually created incubators and accelerators, where they invest in young people, they give them a chance to build businesses, they give them the kind of support for legal services, for marketing, for management. And if the young people meet more problems they will actually go in and help with the management of these companies. The idea that an Academy of Sciences would do that is pretty novel. Usually the academies are thinking about things in old ways. So that is my best example right now.

What criteria would you apply when prioritising investments in research?

Of course, I think there needs to be a balance between applied and basic. There's no question about that. But I think that there are two things that are overlooked the most. One is the idea of incentivising multilateral alliances, so that you have the opportunity for synergisms. The grand challenges that we all face, that include economic development, but also climate and health sciences in many areas, poverty reduction, and so forth. These things require really complex solutions, and what happens too often is that the funding is going to narrow silos, with people that actually don't come together, between institutions and universities specially, and between

academia and industry. To me, one really big issue is incentivising with your funding new alliances that can address those kinds of problems. The second one is helping the young people, the future leaders. And that is really almost always completely lost. People invest in these big buildings, in biotech centres, and the tiny investments that would make the difference in mentoring the young talent of the future are not made. To me, that is one of the most crucial mistakes governments make.

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