

Five minutes with Nikolas Rose: “The brain has become a fascinating object for public debate”

Nikolas Rose is a Professor of Sociology and Head of the Department of Social Science, Health and Medicine at King's College London. In this interview, he discusses his work on the Human Brain Project with USApp's Managing Editor, Chris Gilson, and talks about its relationship with the US BRAIN initiative, and the interplay between this kind of research and policy.



1. Can you tell us a little bit about the Human Brain project and your role in it?

The Human Brain project, which is funded by the European Commission, is one of the Commission's future emerging technologies projects, with the principle objective of creating a computer based 'virtual' model of the human brain. But it's rather more than that; it's a kind of data integration project. Its aim is to try and bring together the huge amount of data that there is in published research papers and elsewhere into a single 'platform', and also to integrate the huge amount of clinical data that there is in hospitals' records and other sources: to bring that all together, and to integrate it, and input it into a developing simulation which can then be used to model the human brain at the neuronal level, and as that scales up into greater levels of complexity. And perhaps then to be able to simulate brain diseases, and even to use the simulation to work out the likely effects of different kinds of therapeutic intervention.

Since its inception, those who were developing the human brain project have been aware that there are major social and ethical, and also legal, implications of these developing understandings of the human brain. So it was agreed right at the very beginning that a certain proportion, about 3-5 percent of the funding for the Human Brain Project, should be set aside to look at these social and ethical issues. I am part of that social and ethical division of the project; I'm on its steering committee. Our particular role here at King's is to set up what we call the Foresight Lab, which is to begin to begin to think through over a 5, 10, 15, 25 year timescale, what kinds of implications might be of the developments that are promised by the human brain project.



Credit: Geraint Rowland (Creative Commons BY)

2. How important is EU funding to scientific research such as the Human Brain Project? Could it have happened without EU support?

This is a big science project – it involves dozens of institutions and hundreds of scientists across Europe. I think that for projects of this sort, large and continued guaranteed funding over a sustained period is absolutely essential. The whole impetus of the Human Brain Project is to say that there is no shortage of scientific research on the human brain, in fact there are probably 100,000 papers published every year in the general area of neuroscience. What we lack is some way of bringing together all that data, all those research findings, into one platform, because at the moment, it's impossible for any one scientist or researcher to grasp that amount of data. The idea is to try and integrate that data, and that's where the big project funding is required.

But there are many issues that are raised if you have a project that is attracting as much as the Human Brain Project (HBP) is— €1.3 billion (approximately \$1.7 trillion) over ten years—it's a massive scientific investment, it's a hugely complicated program; it involves the coordination of the activities of very large numbers of scientists, and of course it diverts a large amount of funding both from European and national government sources, into this one project. To try and balance the needs of a large project like this, with the requirements for funding of all of those individual scientists and scientific groups, that's a real challenge. The HBP certainly has as part of its ethos, not focusing all of the money on a small group of individuals, but beginning to bring together those many groups of scientists across Europe into some kind of coherent integration. It's not an endeavor to monopolize the funding, but really to make the funding – and the findings from all that funding – more coherent.

3. What links does the Human Brain Project have with the US BRAIN initiative? Are they working in competition, or are collaboratively?

At the moment, the relationship between the two projects is at a very early stage. The HBP kicked off in October, and the US BRAIN initiative is really just getting off the ground. I think it's fair to say that the scientists and researchers that are involved in both projects see collaboration as essential to what they're doing—they have slightly different approaches—but the form that that collaboration will take isn't clear at the moment. There is also an emerging discussion between those who are working on the social and ethical questions of the HBP and those who are working on the social and ethical questions in the US project. Unlike the European project, the US project does not have dedicated funding for exploring its social and ethical issues, and that work is being done by President Obama's Bioethics Commission, headed by Amy Gutmann. We've had one discussion about a month or so ago, which I was involved in, and which I very much hope will be taken forward.

I think it would be a mistake for these to turn into competitive projects. At least intellectually, and in terms of scientific research, it's crucial that they collaborate, not least because if you look at the distribution of neuro-scientific research, you will see that the majority, is undertaken in the United States. On the other hand it would be naive to believe that government funding for such projects wasn't linked to the desire for economic competitiveness, the search for advantage in a knowledge based economy, the hope that one region should become 'world leading' not just in understanding the brain, but also in the development of diagnostic and therapeutic technologies – for instance for brain disorders such as dementia. So there are clearly competitive as well as collaborative dimensions to what's going on here.

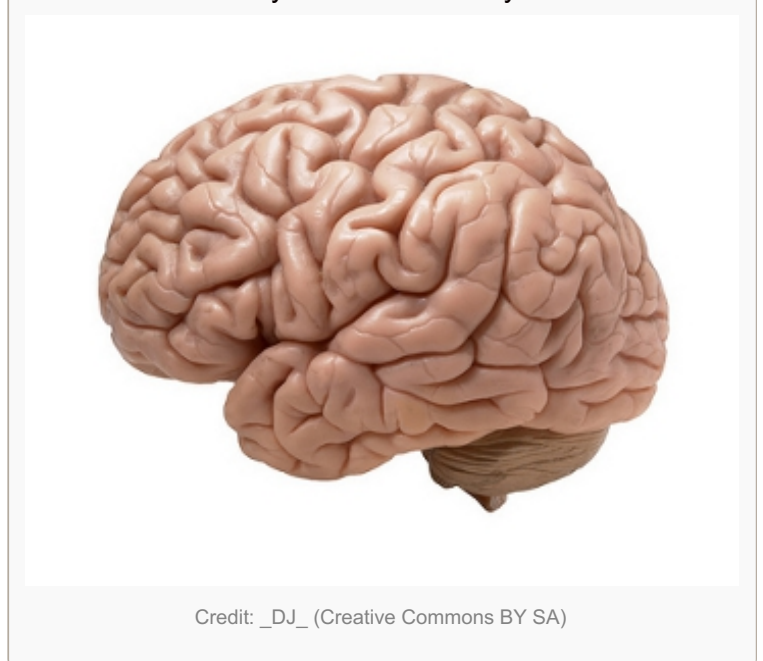
4. What are some of the implications of your bioethics work on public policy? Given the significant funding and interest from the European Commission and the White House, why do you think this is an issue of particular political salience at the moment?

If you take investment in the brain project, at least part of the reason for the investment, both Europe and the United States, is the perception by the funders that research and development in the brain sciences will help them address some fundamental challenges that they are about to face – indeed that they are already facing: the challenges of mental disorders, the challenges of neurodegenerative diseases, the challenges of an aging population and so on. So clearly, those who are funding the research believe that the outcomes of that research will have, should have, could have, major social and, indeed, economic implications. Hence the constant references to the costs of brain disorders and the projections of the increasing costs of neurodegenerative diseases in an aging society. So clearly that is one reason why there should be an interest in the policy implications of this work.

The risk that one faces in this field is that, unfortunately, some of those who are involved in raising funds for these new technologies will be tempted to make exaggerated promises about the timescale and level of impact that their research is going to have on these fundamental questions. They may feel the need to promise that our understanding of the brain will have major implications for our education system, for our child rearing system, as well as for psychiatry and for brain disorders, and they may give the impression that that is going to happen quite quickly. The imperative to make promises about translation is deeply inbuilt into contemporary scientific funding, into the very structure of grant applications and so on, and that often leads to over promising and to over claiming. In my view this is really quite damaging to those who want to support this work in the sciences, because what we know is that, with a few exceptions, it takes 10, 15, 20, 25 years for fundamental biological research to move from

the laboratory to develop into applications. And we also know from history that often the ways in which it does this are surprising and really quite difficult to predict.

It is not just a question of ‘applying’ the research, or ‘translating’ it as the cliché goes today: to move from the seclusion of the lab to the wild world of everyday life is quite complicated, and translation is never straightforward – the pathways are shaped by a lot of other things going on in the world outside. The danger of over-promising is that it can rapidly lead to disappointment. You give the impression that the revolution is going to be just around the corner, the researcher is interviewed on the radio and asked “when is this going to be in the clinic?” and more or less has to say “3-5 years: in 3-5 years this is going to revolutionize our understanding and treatment of Alzheimer’s disease.” But the problem is that all too often, 3-5 years later, the revolution is still 3-5 years down the road. So its better to be honest, to admit uncertainty, to restrain the impulse to promise, and to recognize that crucial changes mostly happen not in a sudden revolution but in modest steps involving many different scientific and technical developments over a timescale that’s often decades. A more difficult picture to sell, but a more realistic one. And I think a better one for the science and the scientists, as well as for those who fund them. That is one key ethical message, in my view.



But undoubtedly you do find that many people in the policy field are very attracted by those scientists who are popularizers, who are over-promising, who say “brain stimulation is going to transform our education system” or “our understanding of genomics is going to allow us to identify susceptibility to serious diseases and prevent them by intervening when the child is 3 years old” or whatever. So, on the one hand overpromising is a problem for serious researchers, and on the other hand, it leads to exaggerated and premature beliefs about what the policy implications might be. We see this especially in relation to neuroscience today. My own view is that it is actually damaging to the science itself—I’m a huge supporter of the work that is being done in neuroscience and I don’t think it helps it at all to make these very exaggerated promises about the speed and implications of neuro-scientific research for policy.

5. How have you found the reception of the Human Brain Project by the general public? Is the human brain a particularly concept that just captures the public imagination particularly well and was this considered in the early stages of the project?

I think it’s difficult to talk about the way in which the Human Brain Project in and of itself has captured the popular imagination. It’s in early stages, it’s not clear how many people are aware of what it is doing and when people are aware of what it’s doing they tend to misunderstand. The Human Brain project is largely a data integration project, it’s largely trying to pull together data from a whole range of different sources, it is doing much more than just creating a computer model of the brain. People have concerns about modelling the human brain in a machine, worries about free will and worries about creating conscious computers and so forth, which are probably not the key of issues that are going to be raised by the HBP. More generally though, it’s undoubtedly the case that at the moment, at least in Europe and America and similar developed societies, the brain has become a fascinating object for public debate. Brain-based explanations of everything are becoming increasingly prominent in the media and also in the commercial field— you should buy brain gyms to train your children, brain foods, you should do Sudoku or brain exercises to ward off dementia etc. I don’t want to say this is just a facile fascination with the brain, which I think would be a trite conclusion: I think we are seeing the beginnings of a different way of thinking of the role of the brain in individual and collective life. When I started my 10 years of research on the social implications of neuroscience – for the book called *Neuro* that was published a little while ago— I hypothesized that that psychological explanations of human behavior might soon be completely displaced by brain based explanations of human behavior. My research didn’t find this, but it did show a growing belief in so many fields

that our mental states are underpinned in some fundamental ways by our brains, by our neuro-biology. The nature of our brains is now considered to have huge implications for who we are, individually and collectively, and on our conduct and our capacities. This is becoming rather a pervasive way of thinking, and I think it's the emergence of that way of thinking, rather than the implications of any one piece of research or any one project like the Human Brain Project, that is important. That is really the phenomenon – the change in the kinds of creatures we think we are, and all the implications of that change – that one has to try to understand.

On January 20th Professor Nikolas Rose spoke at the LSE Event, “The Ethics of the Cognitive Sciences: What can the brain tell us about the mind?”. [Click here to listen to the event's podcast.](#)

Professor Nikolas Rose's new book (with Joelle Abi-Rached), is [Neuro: the new brain sciences and the management of the mind](#), Princeton University Press, 2013.

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Nikolas Rose is a Professor of Sociology and Head of the Department of Social Science, Health and Medicine at King's College London. His work explores how scientific developments have changed conceptions of human identity and governance and what this means for our political, socio-economic and legal futures. From 2002 to 2011, Professor Rose was Professor of Sociology at the LSE, and founding director of the BIOS Centre for the Study of Bioscience, Biomedicine, Biotechnology and Society.



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