

Neurosocieties: the rise and impact of the new brain sciences

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The following report is a condensed version of a Working Paper written by Dr. Joëlle Abi Rached, BIOS Centre, LSE.¹

In November, 2007, 100 participants gathered in London to launch the inauguration of the European Neuroscience and Society Network (ENSN), a networking project funded by the European Science Foundation and convened by researchers at the BIOS Centre, London School of Economics.

The November meeting was the first in a series of international workshops and conferences bringing together leading neuroscientists, philosophers and social scientists for sustained discussions and cross-disciplinary dialogue on the following themes:

- Neuroscience and society: framing the agenda in Europe
- Public health and the politics of the neurosciences
- Neuroeconomies: markets, choice and the distribution of neurotechnologies
- Sources of the neurochemical self: consciousness, personhood and difference

The meeting featured four Plenary sessions, four workshop sessions, and a conference dinner on Monday evening. Each of the plenary sessions, three of which took place on Monday, and one on Tuesday afternoon, focused on one of the key themes above, allowing participants to discuss the main theoretical and practical goals of the network. The meeting was attended by 100 participants from across Europe and the UK, with a small number of participants traveling from North America.

Summary of the Scientific content and discussion at the event

Nikolas Rose's introductory lecture on "Neurosocieties: the rise and impact of the new brain sciences" set the stage for the two-day conference. As Rose argued, there has been many debates over the implications of what could be referred to, at least over the past decade, as 'the new brain sciences' with only *social neuroscience* and *neuroethics* as the two main fields at the forefront of the debate. However, few of them have been grounded 'in a sound empirical knowledge' of what is *actually* happening in those fields and what are the *actual* implications when they move 'from the laboratory to the field'. Neuroethics and social neuroscience have been largely speculative- though the former has been more wary and the latter more optimistic as to the possible implications of the neuroscientific advances on human behaviour and 'human nature'. Hence, the need to try to transform those hypothetical implications into a more substantive and informed debate.

¹ The full version of Dr. Joëlle Abi Rached's working paper, "Neuroscience and Society: a multidendritic neuron", is available upon request from j.m.abi-rached@lse.ac.uk

Session 1: Public Health and the Politics of the Neurosciences

The first plenary presentation was given by Simon Gregor, Director of Communications at the UK's Medicines and Healthcare Regulation Agency (MHRA). Gregor focused on the recent controversy over the safety of selective serotonin reuptake inhibitor (SSRI) antidepressant drugs in order to highlight some of the key demands facing drugs regulator, such as the need to balance the importance of careful scrutiny of a drug's risk / benefit profile before it is licensed, with the need to expedite licensing procedures so that patients are not denied access to potentially lifesaving therapies and treatments.

The second plenary lecture under the same theme was by Matilde Leonardi. Her lecture entitled, 'Neurosciences and Neuropolitics: the challenge of brain disorders' was largely an argument in favour of the World Health Organization's (WHO) methodological change in its appraisal of brain disorders by changing the epidemiological indicators of assessment. She argued in favour of shifting from the 'old indicators' to the 'new indicators'² that she believed more accurately illuminated the reality of the global burden of brain disorders. She argued that such a shift would more visibly show the new priorities associated with the disease burden, for the following reasons:

- The inadequate coverage of mental health burden by the investment of governments.
- The phenomenon of the 'compression of morbidities' associated with brain disorders.
- The limitations of statistical tools and data: 'different questions capture different answers, and mere statistics are not sufficient'.

The 'neuropolitics' theme underlining her presentation centred around three main axes:

- (i) **The power of knowledge:**
As Leonardi stated, 'Information is power, if you are not counted, you simply don't count'. Thus the need to shift, albeit radically, to the new epidemiological indicators for the assessment of the burden of brain disorders.
- (ii) **The power of semantics:**
Brain disorders are an issue of 'semantics' by which she meant that politicians and authorities in each country set the threshold of what is to count as disability or sickness.
- (iii) **The power of the psychosocial model and the limits of the strictly medical model:**
The former model adopted by the WHO should also be adopted by local governments. As Leonardi put it, politics should go beyond mere diagnoses. This should be the case simply because clinical symptoms are different from the impact of the disease on the function; the clinical and functional recoveries.

A number of themes arose in the following Q&A, such as:

- Scepticism about the assessment of the Global Burden of Disease (GBD) and the data claiming such a global burden: While the idea of the 'burden' of brain disorders holds powerful rhetorical appeal, the term 'burden' had also been contested because of its pejorative connotations and its historical resonances (to arguments that certain sectors of a population should be limited or eliminated as they are a burden on the fit).
- Questions concerning controversies around certain drugs such as Merck's Vioxx, and the MHRA's ability to police the pharmaceutical industry's timely submission of clinical trial data.

² Such as QALYs and DALYs (Quality Adjusted Life Years, and Disability Adjusted Life Years).

Session 2: ‘Sources of the Neurochemical Self: consciousness, personhood and difference.’

This session opened with a talk by Professor Alexandre Mauron from the University of Geneva. Mauron’s main argument was to argue for a new framework of neuroethics – a new synthesis from different disciplines under the aegis of neuroethics where ‘stress’, in particular, constitutes the kernel. This would be so for at least two reasons. First, stress has social causes. Second, the steeper ‘the social gradient’ (say, in terms of class divisions) the worse off the society.

Mauron hence proposed to take ‘stress’ as a paradigm moving from the fields of physiopathology, to neuro-endocrinology, primate studies, evolutionary studies and neuroscience cognitive psychology. He argued that the neuroscientific evidence in animal models demonstrated the ways in which the experience of environmental stress, which in humans arose from poor social conditions associated with social inequality, led to clear differences at the neuronal level.

Mauron argued that this new vision of a ‘neuroscience of stress’ has ‘*biopolitical consequences*’ as it provided a clear neuroscientific basis for the link between *health inequality* and *social inequality*. This ‘new face of neuroethics’ rests on a tripod: (1) The ethics of neuroscience, (2) A neuroscience of ethics, and (3) A neuroscience of equity - that is to say, of how social structures impinge on our health.

The second presentation in this session was by Dr. Iliana Singh from the BIOS Centre at LSE, on theories of personhood in relation to Attention Deficit and Hyperactivity Disorder (ADHD). The focus of her talk was (1) to shed the light on some bioethical concerns about the use of psychotropic drugs with children and (2) to introduce children as *active* participants giving them a public voice in psychiatric diagnoses and treatment.

One of Singh’s aim was to elucidate conceptions of the relation of the brain to the self. The preliminary evidence from her research suggested that these conceptions concern fantasy versus ideal life, for instance, a fear of replacing one’s brain if one had the opportunity to do so. Singh suggested, on the basis of her interviews, that at the basis of all these latent fears and phantasmagorias lies the idea of *memory* (and not behaviour) as what fundamentally makes us who we are.

Sessions 3: ‘Neuroeconomies: Markets, Choice and the Distribution of Neurotechnologies’

The session that drew some of the most provocative dialogue of the meeting was the third, entitled, ‘Neuroeconomies: markets, choice and the distribution of neurotechnologies.’ The first plenary speaker was Zack Lynch, executive director of the Neurotechnology Industry Organization, and founding manager of NeuroInsights, a US-based market research firm. His presentation on ‘The Global Neurotechnology Industry in 2007 and Beyond’ shed light on the recent neuromarket trends, both in terms of patent trends and in neuro-investment (mainly in the USA but also across the globe). He mapped the nascent neuro-emerging markets from China to San Francisco, including Stockholm and Germany, and analyzed the sector’s overall trend and performance in terms of its increasing investment in neuro-devices and neuro-technologies (e.g., brain-chips, brain imaging, deep brain stimulation, neuro-stimulation for obesity etc). Lynch added that currently a quarter of the venture capital dollars invested in life sciences are being spent on neurotech companies.

Lynch’s talk was followed by a lecture on the “the birth of neuroeconomy” by Dr Philippe Pignarre, a historian and publisher who has worked for pharmaceutical companies as head of communication until 2001. Dr. Pignarre’s work has often taken a critical approach to the commercial development of new technologies, and his talk thus offered a measured counterargument to the focus of Mr. Lynch. Dr. Pignarre argued that an understanding of current developments in the neurosciences can not be grasped without a sensitivity to the historical factors that spread psychiatry beyond the limits of those confined in asylums or mental hospitals. He pointed in particular to the birth of

psychoanalysis in the early 20th-centure, and to the birth of psychopharmacology in the 1950s, leading to the creation of a new “neuroeconomy.” The talks in this session led to a productive and heated dialogue in the Q & A, with sociologists in the audience reflecting on the ways that both hype and hope are playing a productive role in fostering consumer expectations about the therapeutic benefit of new neurotechnologies.

Day 2: Thematic workshops

On the second day, participants gathered into focused workshops, chaired by members of the ENSN’s steering committee and focused on the main four themes of the ENSN. Participants offered constructive and provocative comments about the social, ethical and political implications of new development in the neurosciences, and about Europe’s role in helping to frame an international agenda for the discussion of social impacts.

Workshop 1:

The first workshop on ‘Neuroeconomies’ was led by Paul Martin, University of Nottingham and Ilpo Helén, the University of Helsinki. Some of the points raised were as follows:

- ‘Mobilizing the future in the present’: according to Pignarre, our current corpus of knowledge (and consequently our market) is built on ‘imperfect models’. He argued that one example of such an “imperfect model” is the Randomized Control Trial (RCTs), which, because of its compressed time period, is unable to reveal the effects of psychotropic drugs over entire life-spans.
- ‘Temporality’ and the neuromarket: A neuroeconomy would be ‘ephemeral,’ according to Pignarre, because each of its components evolves independently and has its own dynamics. In other words, there is no cohesiveness and thus no potential sustainability of such a market. A neuroeconomy is a ‘co-production of promising fields [and] cultural change’. It is ‘in action’ as Latour (2007) says about science.

Workshop 2:

The second workshop on ‘The Sources of the Neurochemical Self’ was led by Kenneth Hugdahl, University of Bergen, Norway and Cordula Nitsch, University of Basel. Participants touched on a wide range of issues, such as:

- Questions of brain *specificity*: should we speak of the different functions of the brain in terms of specific functions, say, attention, morality, greed and so on and so forth or in terms of general activation patterns? In the latter case, how should we interpret brain activation? Should we establish a relation/correlation with different specific mental processes?
- The issue of enhancement: Psycho-pharmacologist Jaanus Harro gave two interesting examples. First, adequate sleep can be seen as a kind of enhancement. On the other hand, caffeine, a chemical ‘enhancer,’ actually inhibits one’s inhibition (physiologically speaking). In other words, enhancement is not necessarily bad. Second, one should define what enhancement means before proceeding further. Enhancement to what? To the memory? the performance? What is enhancement? Is it a mere physiological process or is it the overall effect on the targeted mental activity? Or is it both?
- The issue of self-perception and psychotropic addiction.
- The dynamics between neurotechnologies and neurosocieties: whether technological advancement defines population groups or conversely it is the people themselves that use technologies to define and fit themselves into groups.

Workshop 3:

The third workshop on ‘Public Health and Policies of Neuroscience’ was led by anthropologist and neuroscientist, Andreas Roepstorff, from the University of Aarhus and João Arriscado Nunes, a sociologist from the University of Coimbra. The discussion centred on 3 main axes:

- Intervention and regulation.
- The political groups or forums that are ‘supposed’ to rally around brain-related policy issues.
- Categorization and categorical diagnosis: ‘dimension vs. continuous categories’, and what sustains these categories.

Workshop 4:

The final workshop, ‘Neuroscience and Society: future directions of Europe’ was led by professor of theory and history of psychology, Trudy Dehue, University of Groningen, and professor of clinical psychology, Ilse Kryspin-Exner, from the University of Vienna. The debate evolved along the following questions:

- Is there a European drive to neuroscience? Is there a difference with its American counterpart?
- Who are the people who are setting the agenda in discussions of neuroscience and society? Is it a democratic forum or is it shaped by upstream consultancy ahead of the new technologies?
- Is there a need for public consultation? Is there a difference between ‘collective’ versus ‘private’ concerns? Technology, for instance, was agreed up to be a social concern and thus affecting the ‘collective.’

Session 4: Neuroscience and Society: Future Directions in Europe

The Thematic workshops on the morning of Day 2 were followed by the last plenary lecture of the two-day workshop: ‘Brain, mind and Society: the Threefold Cord’ by Alain Ehrenberg from the Centre National de la Recherche Scientifique (CNRS). In this intricate lecture, Ehrenberg sought to elucidate the relationships between the neuroscientific and the social in a way that did not reduce social phenomena to biological underpinnings, but instead viewed their relationship in a reciprocal manner. To quote from Ehrenberg’s paper, “The key of the relationships between neuroscience, social life and treatment must not be conceived of as synthetic mechanism connecting “the biological”, “the psychological” and “the sociological”, but in terms of systematic relationships, in terms of structures.”

Future Directions for the ENSN

The inaugural meeting of the ENSN proved a stimulating meeting of participants from a wide variety of disciplinary backgrounds. At times the disciplinary variety itself proved a challenge as participants struggled to grasp the ontological and practical positions of their colleagues. A second challenge was the theoretical and political positions of some participants. Some, such as Philippe Pignarre, have taken a critical perspective on the practices of the industries that are set, as Zack Lynch detailed in his plenary lecture, to capitalize from the production and marketing of new neuro technologies. Many participants were also outspoken in their skepticism of the ability of regulators such as the MHRA to effectively scrutinize the safety of new treatments. The differences among people’s theoretical positions, however, did not prevent productive dialogues, but was a stimulus for provocative exchanges that are certain to be debated again at future ENSN events.

The workshop also raised new challenges, two of which are as follows:

- Much of the discussion at the workshop was speculative in nature. As the neurosciences are an emergent field, detailed sociological analyses of their social and economic implications are still nascent. How can ENSN researchers help to develop links between emergent empirical studies? Should the ENSN seek to act as a catalyst in ensuring policy-makers and ethicists include such studies in their deliberations?
- What is the relationship between the ethical and the economic in discussion of the neurosciences? Very few previous ethical analyses have engaged with industry representatives in order to assess how the neurotech industry is addressing neuroethical questions such as the so-called distinction between treatment and enhancement, the admissibility of scanning technologies in judicial procedures, or the expanding scope of psychiatric diagnoses. Should the ENSN seek to encourage more dialogues between industry players and ethicists?

These questions, and many more, will be debated at upcoming ENSN events, three of which are as follows.

- 1) “Our Brains, Our Selves?” Invitational Workshop co-hosted by the ENSN and the Department for the History and Philosophy of Science, Harvard University. May 1-3, 2008.
- 2) “ENSN First Interdisciplinary Neuroschool” September 28-October 5, 2008. European Molecular Biology Laboratory (EMBL). Rome, Italy. Call for applications available shortly on www.neurosocieties.eu.
- 3) “Neurosocieties II: Second ENSN General Conference” Portugal, Spring 2009. Date TBA.

We invite all ENSN participants to share their comments on this report, the November workshop or on the Network in general by emailing the Programme Coordinator, contact details available on the ENSN website. Thanks again to all Speakers and Participants at the Inaugural ENSN event in November, 2007.