NERRI: Neuroenhancement, Responsible Research and Innovation

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Responsible Research and Innovation

“Responsible Research and Innovation (RRI) is a transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view to the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products (in order to allow a proper embedding of scientific and technological advances in our)” (von Schomberg 2013, p. 19).

There are at least four key dimension to RRI, anticipation, inclusion, reflexivity, and responsiveness (Stilgoe et al. 2013).
The NERRI project

Was a 39 months project funded by DG Research in the European Commission, the NERRI consortium comprising institutions in eleven European countries and the US was established to explore means to promote a broad societal debate, leading to proposals for Responsible Research and Innovation in NE.

NERRI built on the concept of Mutual Learning Exercises (MLEs): experts and lay audiences discussing and learning from each other, as opposed to experts simply informing lay people about ‘facts’.

Inspired by the ideas of decentralization and mutuality, project partners conducted more than sixty events, bringing together a wide range of stakeholders and members of the public to discuss the feasibility, ethical acceptability and social desirability of NE.

A variety of formats were used, from small discussion groups with a dozen selected participants to large open fora with hundreds of attendees, from Science Cafés to activities in major exhibitions, from theatre plays to hands-on ‘hackathons’, where enthusiasts engaged in NE design and development. Participants were always encouraged to contribute their own moral judgements and view points.
Mutural Learning Exercises
NERRI Partners

- **Austria:** Johannes-Kepler University Linz, Department of Social and Economic Psychology, Austrian Academy of Sciences, Institute of Technology Assessment, Vienna
- **Belgium:** The European Brain Council, Brussels
- **Denmark:** Experimentarium – Science Communication Center, Copenhagen
- **Germany:** Gutenberg University Mainz, Research Group Neuroethics and Neurophilosophy, Stuttgart University, Research Center for Interdisciplinary Risk and Innovation Studies
- **Hungary:** Central European University Budapest, Center for Ethics and Law
- **Iceland:** University of Iceland, Center for Ethics, Reykjavik
- **Italy:** Foundation Toscana Life Sciences, Siena, Interdisciplinary Laboratory for Advanced Studies, Trieste
- **Netherlands:** Catholic University Brabant, Tilburg Law School, Radboud University Nijmegen, Institute for Science, Information and Society
- **Portugal:** Ciencia Viva – National Agency for Scientific and Technological Culture, Lisbon, Institute of Molecular and Cell Biology, Porto
- **Spain:** University Pompeu Fabra Barcelona, Center on Science, Communication and Society
- **UK:** Genetic Alliance Ltd., London, London School of Economics and Political Science, Methodology Institute, University of Oxford, Department of Psychiatry
What is Neuroenhancement?

Neuroenhancement, or the enhancement of cognitive and other psychological capacities, can potentially be achieved using a variety of means such as

- Pharmacological
- Brain stimulation
- Gene modification
- Others means?
Why is Neuroenhancement controversial?

Neuroenhancement raises a range intellectual and ethical concerns, including concerns about possible dual use of research. That said, many of the issues raised by these technical development are still «under the radar» for policy makers world wide. Although the idea is as old as humanity, only recently have technical means advanced to a stage where the actual enhancement of cognitive and psychological capacities becomes reality.

In the scholarly literature, views are highly polarised:

- On the one hand, authors strongly Neuroenhancement, as threats to human dignity and the natural and socio-political order.
- On the other hand, authors argue that we have a duty to improve and enhance humans.
How did NERRI approach Neuroenhancement?

A distinction was made between Neuroenhancement for *medical or therapeutic purposes* on the one hand and techniques aimed at *enhancing the cognitive capacities of otherwise healthy adults* on the other hand, although such a distinction is blurred and fluid. The focus of NERRI was exclusively on the latter. There are clear and important implications for dual use of research in the latter area.

The NERRI project explored Neuroenhancement in two different contexts:
*Employment vs Education* in all participating countries
Neuroenhancement in military context

A smaller case study: Neuroenhancement in military settings in the UK & Italy, within the context of Employment of the NERRI project.

This was organised in collaboration with David Whetham of the Department of Defense at King’s College London and author of *Ethics, Law and Military Operations*; Jonathan D. Moreno, University of Pennsylvania and author of *Mind Wars: Brain Science and the Military in the 21° Century* and Gian Maria Galeazzi of the University of Modena.

In 2013 the Italian National Bioethics Committee published *Human rights, medical ethics and enhancement technologies in military contexts* and that frames the Italian interest in this topic.
Neuroenhancement in military context

Approach:
The workshop reported in this presentation was carried out in the Spring of 2015, with enlisted military personnel was held at a high-level military training and education centre of the Defence Academy of the United Kingdom.

Officers at the Centre represent all nations; they are selected on the basis of merit to spend approximately one year at the Centre to develop leadership and education skills and knowledge.

The aim was to capture their views and reasoning about Neuroenhancement in military settings based on their own professional experience and outlook.
Neuroenhancement in military context

Methods:
The discussion were organized around a series of vignettes. The highly novel and innovative method termed Contrastive Vignettes Technique was applied in many research settings under the NERRI project.

In the military context part four vignettes were presented. The vignettes were designed by the team, based both on prior discussions and experiences and the relevant literature, in order to facilitate discussions and debate around a set of concrete issues that could arise in a military context.
Vignettes used in group discussions – Military context

- **Pharmacological stimulation**: Protagonist a pilot about to be deployed on a high stakes mission who gets a pill.
- **Neuroprosthetics**: A soldier gets a «better» arm following an accident in order for him to return to combat
- **Moral enhancement**: Use of empathy enhancing drugs in interrogations of terrorist suspects and gathering of intelligence
- **Neural implants**: Futuristics settings, to allow military personnel to become more efficient and effective in combat.
Neuroenhancement in military context

Lessons learned:

Using vignettes as a tool to facilitate thoughtful discussions was highly successful and resulted in a productive reasoned debate among all the participants.

Neuroenhancement in military setting was clearly an issue for the participants in the military setting discussion although as a topic is it still somewhat «under the radar» and does not get much consideration.
General lessons from NERRI

• Hype rather than reality – still
• Neuroenhancement is not a single technology
• Research on neuroenhancement is unrewarding for the medical sector– but not for others
• The distinction between restoration and enhancement is blurred yet important
• Public engagement is enlightening and necessary
• The wider public’s points of view diverge
• Established medical regulation is insufficient
• A novel governance framework is needed
• A fundamental rights approach might be considered
• Resilient governance should involve citizens and social science
Thanks a lot for your kind attention and patience