Neuroethics: Neuroscience and Neurotechnology on the 21st Century World Stage

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Overview, Scope, and Structure of the Course:

Overview and Current Relevance

Neuroscience is forging new directions and capabilities in the ability to engineer materials and apply discoveries to the brain that enable access and control of thought, emotion and behavior at a rate and level of profundity that has been heretofore unprecedented. The use of these technologies as tools has allowed equivalently impressive progress in several other disciplines of research, as well as medicine, bioengineering, and even the daily conduct of society. While such progress might be construed as beneficial, the discovery and development and use(s) of new devices, information and knowledge could incur profound ethical, legal and social issues – both arising in the research itself, and stemming from misuse and/or purloined application of these technologies in ways that negatively impact public health and security.

Neuroscience and neurotechnology have become powerful socio-economic forces. The newly announced US governmental Brain Research through Advancing Innovative Neurotechnologies (BRAIN) initiative conjoins over $1.2 billion (USD) to the European’s Union’s multi-billion Euro investment in the Human Brain Project, to infuse fiscal support and provide momentum to brain science and its varied applications. Occupying a greater than $150 billion market share, neurotechnology has been classified as one of the fastest – and most influential – fields of the 21st century. As well, current estimates predict a 60-70% growth in neuroscientific enterprise in Asian and Pacific Rim nations, such that by 2020, Asian presence in the neuroscience and technology market will supersede that of the United States and Europe. Thus, the neuroethical, legal and social issues spawned by the use – and potential misuse – of neuroscience and neurotechnology will be subject to cultural effects and contextualizations, and will need to be addressed and dealt with in ways that are internationally sensitive and responsive.
Scope

This course begins with a view of how and why neuroscience has ‘evolved’ to become a dynamic force in society. Lectures will depict how key areas of neuroscience and neurotechnology have developed to become potent forces that enable assessment, access and manipulation of brain function (in individuals, groups and perhaps even communities at-large). From this, the field – and practice(s) – of neuroethics will be addressed and discussed, with relevance to the ways that progress in neuroscience compels and sustains both the issues and dilemmas that arise in and from neuroscientific and neurotechnological research and its applications, and the importance of acknowledging and addressing the ethical basis and resolutions of such issues.

Next an overview of specific frontier areas of neuroscience and technology will be presented, with emphasis upon (a) the extent and scope of new knowledge and capability that such developments afford to impact the human condition; and (b) key ethical concerns that are incurred by such neuroscientific and neurotechnological progress on the 21st century world stage. Finally, paradigms for neuroethical, legal, and social probity, safety and surety, and a putative “preparatory process” for international neuroethics and neuro-policy will be discussed.

Structure

The course is structured such that the first part is didactic – lectures and readings provide a sound foundation of knowledge of the field and practices of neuroethics, as based on, derived from, and reflective upon advances in neuroscientific and neurotechnological research and use (and possible misuse) in various domains of the social sphere (inclusive of healthcare, economics, public life and safety, and politics).

The second part of the course will be more discursive. Once “armed” with fundamental knowledge of, and insights to neuroethics’ canon and approaches, topics will be presented with the aim of fostering discussion, debate and dialectic, as students become increasingly more versed in the foundational issues and tenets of the field and its practices, and thus are more capable of developing factually-informed discussions and arguments relating to issues of their own particular interest.

Required Text:


Recommended (Optional) Text:

Suggested Supplement(s):

Many of our hopes and fears are expressed in fiction, and current film has certainly been a venue to communicate our expectations and anticipations about the utopian and/or dystopian potentials of neuroscience and neurotechnology, and the ethical, legal and social manifestations of such future trajectories. In light of this, certain films will be suggested as “supplements” to the academic readings to foster insight – and discussion – about colloquial conceptualizations and apprehensions fostered by the advancing tide of neuroscientific advancement. (These are available closed captioned)

Course Requirements

1. Class Contribution including regular participation in classroom discussion. (20%)

2. One Short Paper (1800-2500 words, fully referenced) upon a topic of students’ choice that addresses and elucidates an ethico-legal and/or social issue, question, or problem in arising in/from some aspect of neuroscience and technology in current and/or future culture(s), or the influence of social variables upon that brain science and/or neurotechnology. The paper topic should be vetted and approved by the professor no later than the fourth week of class. (20%). The first paper provides the basis from which the second, final paper should be developed and written, as an iterative undertaking.

3. Final Paper; (3500-5000 words fully referenced) Expands upon the short paper to explore the topic in greater detail. The paper should be written in an accepted scholarly style (eg.- MLS, Vancouver or Chicago style), and should seek to synthesize and assimilate information gained throughout the course (lectures and readings) together with the students’ unique individual interests and readings into a working knowledge, analysis, critique and/or review. (60%)
Tentative Class Schedule


Week 1:
The historicity of neuroscience and technology
Neuroscience as a 21st century global force: Economic, social and political leverage
Rdg: Ch. 2 (SPPN)
Giordano, 2012; Giordano, 2013. Brindley, Giordano

Week 2:
The discipline and practice(s) of neuroethics: Two “traditions” in reciprocity. What makes “neuro” important?
Rdg: Preface; Introduction: “Neuroethics- Coming of age...” (SPPN)
Giordano. AJOB-Neurosci 2011

Week 3:
Manipulating the neural basis of free will and morality: Whose “good”, what rationality?
Rdg: Ch 6, 7. (SPPN)

Week 4:
The uses and utility of neurotechnology: Potential and problematic
Rdg: Ch. 1 (SPPN)
Ch. 1, 2 (NT:PPP)*

Assessment neurotechnologies: Neuroimaging, neurogenetics: Detailing the science and technology defining consciousness, “reading” the mind.
Rdg: Ch. 11, 12 (SPPN)
Ch.4 (NT:PPP)*
Giordano, AJOB-Neurosci (2012)

Week 5:
Interventional techniques and technologies: Changing the brain...changing the self: Possibilities, expectations and anxieties
Rdg: Ch. 9, 10, 13, 14 (SPPN)
Ch 10, 11, 12 (NT:PPP)
Film: Gattica; Terminal Man or Eternal Sunshine of the Spotless Mind
MIDTERM SHORT PAPER DUE

Part II: Dealing with the possibilities and problems: Neuroethics - practice and policy.

Week 6:
Neuroscience, public safety and the law: Predicting crime, assessing guilt, preventing violence (?)


Film: *Minority Report*

Online event: Podcast: Neuroscience and the Law

Week 7
Neuroscience and technology in national security, defense and international relations: Neuroweapons and the brain as the 21st century battlescape.


Week 8:
Neuroscientific and neurotechnologically defining constructs of personhood, the self: Implications for ethico-legal regard, bio-power and bio-politics

Rdg: Ch. 4, 5 (SPPN)
Ch. 8, 13 (NT:PPP)*


Film: *Blade Runner* and/or *I Robot* and/or *Ex Machina*

Week 9:
Strivings to flourish: Treatment, enablement, enhancement and neurocentric constructs of ‘normality’ on a pluralist world stage.

Rdg: Ch. 17. (SPPN)
Ch. 3, 5, 16 (NT:PPP)*

Films: *Limitless* or *Charly*

Week 10:

Rdgs: Ch. 14, 15 (NT:PPP)
Ch. 17 (NT:PPP)*

Week 11:
Toward a stance of preparedness and ethic of responsible action, and the process and role of “Neuro-Policy”: Are rules sufficient?

Rdgs: Ch. 18, Afterword (SPPP)

Week 12:
Open discussion and Q/A

FINAL PAPER DUE

Academic Standards: MALS and DLS students are responsible for upholding the Georgetown University Honor System and adhering to the academic standards included in the Honor Code Pledge stated below:

In the pursuit of the high ideals and rigorous standards of academic life, I commit myself to respect and uphold the Georgetown University Honor System: To be honest in any academic endeavor; and to conduct myself honorably, as a responsible member of the Georgetown community, as we live and work together.

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