Bölüm 2

Nöroetik Kavramı

Nöroetik tanımı üzerine vurgulananlar

Neuroethics konusunda internet kanalı ile sağlanan bazı bilgiler sunulmaktadır.

Nöroetik kavramı açısından bazı yorumların yapıldığı görülmektedir. Bu konudaki alıntılardan söz edilerek konu hakkında irdeleme yapılması öngörülmektedir.

İnsanların iletişimde bazı tanımlamalar konusunda aynı düzeyde algılama boyutununoluşturulması gerekir. Türkçede "dayı" ve "amca" kavramları farklı iken, bu İngilizcede aynı kelimede bütünleşir. Bu açıdan bir yabancıya dayı ve amca kelimelerinin kültürel olarak yüklediği anlamlar beliritlmelidir. Dolayısıyla tek kelimelik tercümenin "uncle" yeterli olmadığı ortadadır. Bu anlaşmanın zeminini oluşturması açısından önemlidir.

> Nöroetik kavramının daha net anlaşılması açısından internetten ve diğer yayınlardan konu üzerinden bilgi alındıktan sonra, konu üzerinde irdeleme yapılması düşünülmektedir.
>
> Özellikle DANA Vakfının çalışmaları dikkatlice değerlendirilmelidir. "Brain awareness" haftası bu kuruluşun destekleri ile Üniversitemiz bünyesinde yapılmaktadır. (http://www.dana.org/default.aspx)

Etik Nedir?

Felsefe Biliminden temel alan ve onun bir alt dalı olan bu bilim dalı, "*doğru nedir*" ve "*ne yapmalıyım*" sorularını irdelemektedir. Etik hukuksal gerekçelendirmenin ötesinde, bilimsel sorgulamayı gerekli kılmakta ve kalıplara dayalı olmayıp, çeşitli yol gösterici ilkeleşme temelli yaklaşımını öngörmektedir. Etik, ahlak kalıbı olmayıp, ahlak felsefesi şeklinde algılanmalıdır.

Nöroetik teriminin internet üzerinden tanımlanması ve yapılan açıklamalar aşağıda sunulmaya çalışılacaktır.

İNTERNETTEN DERLEMELER

MIT World

HUMAN RİGHTS and JUSTICE (PHRJ)

Neuroethics (Stephan Chorover, Mriganka Sur, November 15, 2004)

About the Lecture

Philosophers have long sought to answer questions about who we are, where we come from and where we're going. Stephan Chorover frets that a widening circle of contemporary scientists embrace Sigmund Freud's approach to these questions, which is to say, "Biology is destiny." Neuroscientists are promoting an even narrower dogma, says Chorover, where "everything we are trying to understand can be understood in terms of underlying brain mechanisms, neurons and molecules." How can we cultivate individual ethical acts, and how can society hope to respond to such challenges as violent conflict, or social and economic inequity, if all human behavior reduces to a set of neurological inevitabilities? Chorover describes and discredits the long history of biological reductionism, from phrenology (inferring faculties or traits from the shape of the skull), to Freud. He says that "chaotic interactions" derail determined behaviors. Says Chorover, "Complexity, contingency and context dependency argue against reductionism." Mriganka Sur asks Chorover to go easy on neuroscience, pointing out that the discipline does take into account contingency and uncertainty, studying the impact of internal and external states on the complex system of the brain. He says, "we may never know everything about how our brains work but that does not mean we should not try to find out something." He adds, "every scientific measurement involves reduction and possibility. You measure what you can with the tools you have….We measure to dig deeper to seek explanations that may well be part of the cognitive architecture." Sur acknowledges that science "is hugely influenced by the values of the age" and can be used "to justify prevailing beliefs." Yet he wonders if there are "universals in human behavior that might drive the quest for justice."

NOTES:

Kennedy (2003) concerned that as the neurosiciences "mature", our pictures of humanity and nature are becoming more narrowly and linearly causal: more conceptually and materially reducted; more mechanistically and reductionistically DETERMINISTIC. "…

DETERMINISM: (genetically determined)

SET OF IDEAS: Who are we? Where do we come from? Where are we going?

What is "justice"? What are "human rights"? What are "our brains"? Who is "ourselves"? What is "our common future"? What I aim to main for?

REDUCTIONISM (e.g. lookin to the sky with telescope): Narrow and deep orientation, looking very closely and deeply.

FUNDAMENTALISM (aşırı tutuculuk) goes to EXTREMİSM (totalitarian approach)

NOTE: You-we, in fact no more than the behavior of a vast asssembly of nevre cells and their associated molecules.

BIOLOGICAL DETERMINISM: Crick 2004: "You" your joys and your memories and your ambitions, your sense of personal identity and free will, are in fact no more than the behaviour of a vast assembly of nevre cells and their associated molecules…" What is "fundamentalism"? What is "extremism"? (Totalitarian aproach) Einstein (1947-48) A new way of thinking. What does that mean? Kuhn 1962,

SCIENTIFIC PARADIGM: What is a "scientific paradigm?" (Chorover 1986, 1991)

Cognitive	Epistemological	Beliefs
Affective	Axiological	Values
Behavioral	Methodological	Pratices

Mechanistic reductinistic analysis aspect of pendelum.

Freud (1930) "Biology is destiny". Churchland (1988) What would "a mature neuroscience" look like if we had it? Where can we look?

The Ownership society (Bush)?

The ethics is changed? Not the ownership society. Who are we?

1. REDUCTIONISM (İndirgeme)
2. DETERMINISM (Kaçınılmaz sona inanma)
3. UNCERTAINTY (Belirsizlik)

Yorum

Nereden gelip, nereye gittiğimiz konusu felsefe bilimi açısından sorulan ve sorgulanan bir sorudur. Freud'un tanımlanmasına göre biyoloji bir kader midir? Her algıladığımız veya hissettiklerimiz beyinsel mekanizma, nöronlar ve moleküller le açıklanması ne kadar geçerlidir? Toplumsal ve kültürel boyuttakileri ne kadar nörolojik olgu olarak tanımlayabiliriz? Aza indirgeme bu karmaşık ve kapsamlı olan alan karşıtı olmaktadır. Beynimizin nasıl çalıştığını bilmememiz, bir şeyler bulmamamız anlamına alınmamalıdır. Her bilimsel çalışmanın bir sınırlama ve olasılık içinde olduğunu anlamalıyız.

Nöroetik Alanının Şekillendirilmesi

Nöroetik kavramı birer konu olması yanında bunun birer oalan olarak tanımlanması doğrudur. Sistematik olarak algılandığında, belirli bir kuramsal çerçeve içine alınıp, bir bakıma hapsedilmesine olanak sağlayacaktır. Alan şeklindeki yorumlarda ise daha geniş görüşlere yol açabilecektir.

Bu sahanın netleştirilmesi yerine, irdelnerek genişletilmesi öngörülmelidir.

Neuroethics: Mapping the Field

> *Editor's note:* This issue of BrainWork is devoted to special coverage of the conference Neuroethics: Mapping the Field, that took place May 13-14, 2002, in San Francisco, California. Organized by Stanford University and University of California, San Francisco, and underwritten by The Dana Foundation, the two-day event gathered neuroscientists, bioethicists, doctors of psychiatry and psychology, philosophers, and professors of law and public policy together to discuss this emerging field.
>
> "Neuroethics" may be defined as the study of the moral and ethical questions involved in applying new brain-related scientific findings, such as genetics, brain imaging, disease diagnosis and prediction, and how the medical, insurance, and governmental leaders will face them. Embracing their daunting task, the participants took part in lively discussions in the first of what is sure to be many such meetings.
>
> The conference saw the emerging themes of enhancement, free will and the promise and peril of technology. What you are about to read are portions of actual transcripts from the meeting, allowing you to see what the participants discussed, in their own words.

Yorum

Bu alan konusunda 2002 yılındaki Dana Vakfının düzenlediği konferansa atıfta bulunulmaktadır. Bu konferansta sunulanlar geniş olarak 3üncü Bölümde irdelenecektir.

Nöroetik kavramının tanımlaması yapılırken, "*beyin ile ilintili genetik, beyin görüntülenmesi, tanı, tedavi ve önerilerle alakalı tıp, sigorta ve yönetsel açıdan, bilimsel bulgular, ahlaki ve etik sorular üzerine çalışmalar*" şeklinde sunulmaktadır.

Ahlak temelde güzel ve çirkin gibi yargısal bir kalıp ile olaya bakarken, etik ise bilimsel sorgu içinde, iyi, güzel nedir ve ne değildir şeklinde irdeleme yaparlar.

Haklar kavramı da soyut kavramlar şeklinde olup, bunların içinin olgu bazında doldurulması gereklidir.

Beyin insanı insan yapan sıfatları oluşturan bir organ olma niteliğinin ötesinde, kültürel ve sosyal boyuttaki gelişmeler doğrudan beyin ile alakalı olmasa bile, beyinsel işlevlerin sonucunda oluşan bir süreçtir.

Normatif etik yapısında belirli normların oluşturulması, olaya bakış açısından yararlı olmaktadır. Nöroetik kavramında da bu boyutun irdelenmesi ile bir sonuca ulaşma olanaklıdır.

Neuroethics

From Wikipedia, the free encyclopedia

ÖNEMLİ UYARI: Wikipedia ansiklopedisinden alıntılardan yararlanılarak konu irdelenecektir. Burada bu ansiklopedinin açık bir düzenleme ile oluştuğu ve bireysel görüşlerin temelinde olması nedeniyle tam bilimsel yaklaşımda olmadığı kabul görmektedir. Bilimsellikte belirli bir sistematik temelinde yapılmasını zorunlu kılar. Bireylerin görüşleri söz konusu olunca, bazı kişisel faktörlerden etkilenme olabileceği kabul edilmelidir. Bu açıdan bu ansiklopedinin yaklaşımında dikkatlice durmak gereklidir. Bu nedenlerden dolayı, birçok bilim adamı tarafından bu ansiklopedinin görüşü kabul görmemektedir.

> **Neuroethics** is most commonly understood to be the subcategory of bioethics concerned with neuroscience and neurotechnology. However, some philosophers, ethicists, and scientists have increasingly stressed the possibility that neuroscience can shed light on wider ethical questions.
>
> The origin of the term "neuroethics" has occupied some writers. Rees and Rose (as cited in "References" on page 9) claim *neuroethics* is a neologism that emerged only at the beginning of the 21st century, largely through the oral and written communications of ethicists and philosophers. They state that neuroethics addresses concerns about the effects neuroscience and neurotechnology will have on other aspects of human life: namely "personal responsibility", law, and justice. Further, they claim that neuroethical problems will become real by the 2020s.
>
> Adina Roskies (Roskies, 2002) identified two major divisions in neuroethics: the ethics of neuroscience and the neuroscience of ethics. Research falling under the first area, the ethics of neuroscience, is focused on the ethics of practice of neuroscience and "the implications of our mechanistic understanding of brain function for society... integrating neuroscientific knowledge with ethical and social thought". The neuroscience of ethics borrows from the field of neurophilosophy and examines the neurological

foundations of moral cognition[1]. **Roskies, A. Neuroethics for the New Millenium. *Neuron* 2002; 35:21-23.**

Yorum

Nöroetiğin, biyoetiğin bir alt dalı olduğu ve nörolojik bilimler ile nörolojik teknoloji ile ilgili olduğu belirtilmektedir.

Kişisel sorumluluk temelinde insan yaşamı, hukuk ve adalet kavramı çerçevesinde norlojik bilimler ve nörolojik teknolojinin oluşturduğu problemler açısından durumlara atıfta bulunacağı ve bunun 2020 yıllarında oluşacağı görüşü ileri sürülmektedir. Neologism (yenilikçilik) temelinde 21inci yüzyılda ileri sürülen bir tanımlama olduğu belirtilmektedir.

Roskies nöroetiğin iki bölümde irdelemektedir. A) nörolojik bilimlerde etik ve B) etiğin nörolojik bilimidir. Nörolojik bilimleri etik ve sosyal düşünce ile irdelenmesi öngörülmektedir. Nörolojik bulgularla ahlaki kavrama ile ilgili (cognition) nörofizyolojinin etiksel boyutu açısından ele alındığı belirtilmektedir.

Definitions (Tanımlamalar)

Nöroetiğin alanı nedir? (What is the scope of neuroethics?)

Unsurprisingly, no specific definition of *neuroethics* is universally accepted.

According to the Web of Science, the term was probably coined by A.A. Pontius in a 1993 Psychological Reports paper on moral development.

There are earlier uses, dating back as far as 1978. Illes (2003) records uses, from the scientific literature, from 1989 and 1991.

Current definitions of neuroethics emphasize the ethical, legal and social implications of neuroscience. Writer William Safire defined it as "the examination of what is right and wrong, good and bad about the treatment of, perfection of, or unwelcome invasion of and worrisome manipulation of the human brain.[2]"

If neuroethics is understood in this way, a typical question investigated by the field might be: What is the difference between treating a human neurological disease and simply enhancing the human brain? Another such question might be: Is it fair for the wealthy to have access to neurotechnology, while the poor do not? Neuroethical problems could complement or compound ethical issues raised by genomics, genetics, and human genetic engineering (see *Gattaca* argument).

Üniversal olarak kabul gören bir nöroetik tanımı olmadığı belirtilmektedir.

Nörolojik bilimin etiksel, hukuksal ve sosyal yaptırımları olarak belirtilmektedir. İnsan beyni ile ilgili konularda; tedavi, mükemmeliyet ve iyi olmama gibi noktalarda doğru, yanlış, iyi ve kötü noktalardaki irdeleme olarak ele alınmaktadır.

Eğer nöroetik bu türde anlaşılırsa, tedaviden beklentiler, nöroteknolojiden yaralanılan ve yaralanılmamayan durumlar, genetiksel durumlardaki etiksel boyutlar tartışmaya açılmaktadır.

fMRI data

However, Dartmouth College Center for Cognitive Neuroscience Director Michael Gazzaniga argues that definitions such as Safire's are inadequate, since knowledge of brain mechanisms can illuminate a broad range of ethical questions. Gazzaniga states that "neuroethics is more than just bioethics for the brain." In his book The Ethical Brain (see References), he defines the field as: "the examination of how we want to deal with the social issues of disease, normality, mortality, lifestyle, and the philosophy of living *informed by our understanding of underlying brain mechanisms*" (Gazzaniga's emphasis).

Neuroscientist Michael Gazzaniga puts this view succinctly by stating that "It is—or should be—an effort to come up with a brain-based philosophy of life."

Yorum

Nöroetiğin, beynin biyoetiğinden daha farklı olduğu vurgulanmaktadır. Yaşamımızda felsefesinde beyin temelli olarak oluşanlar noktasına ulaştırğı belirtilmektedir.

Sorunların iki sınıflanması (Two categories of problems)

Neuroethics encompasses the myriad ways in which developments in basic and clinical neuroscience intersect with social and ethical issues. The field is so young that any attempt to define its scope and limits now will undoubtedly be proved wrong in the future, as neuroscience develops and its implications continue to be revealed. At present, however, we can discern two general categories of neuroethical issue: those emerging from what we can do and those emerging from what we know.

In the first category are the ethical problems raised by advances in functional neuroimaging, psychopharmacology, brain implants and brain-machine interfaces. In the second category are the ethical

> problems raised by our growing understanding of the neural bases of behavior, personality, consciousness, and states of spiritual transcendence.

Yorum

Nöroetiğin sınıflandırılmasındaki a) ilk aşamada; nörolojik görüntüleme, psikofarmakoloji ve beyin implantları gibi beyni mekanik olarak ilgilendiren konuları kapsamaktadır.

b) ikinci aşamada; beyin temelli davranışlar, kişlik, bilinç, duygusal durum, deney üstü (insan aklını aşan) durumlar için etiksel değerlendirmeleri kapsamaktadır.

Nöroetiğin tarihçesi (Important activity in 2002 and 2003: The History of Neuroethics)

> There is no doubt that people were thinking and writing about the ethical implications of neuroscience for many years before the field adopted the label "neuroethics," and some of this work remains of great relevance and value. However, the early 21st century saw a tremendous upsurge in interest in the ethics of neuroscience, as evidenced by numerous meetings, publications and organizations dedicated to this topic.

Yorum

Nörolojik bilimlerde etiksel boyut "nöroetik" kavramından çok önceleri yapılmıştır. 21 yüzyılda aha geniş çalışmalar nedeniyle ilgi çekecek ve bu konuda çalışmalar artacaktır.

> In 2002 there were several meetings that drew together neuroscientists and ethicists to discuss neuroethics: the American Association for the Advancement of Science with the journal Neuron, University of Pennsylvania Center for Bioethics with the Center for Cognitive Neuroscience, the Royal Society of London, and Stanford University and the Dana Foundation. This last meeting was the largest, and resulted in a book, Neuroethics: Mapping the Field, edited by Steven J. Marcus and published by Dana Press. That same year the Economist ran a cover story entitled "---" and articles on neuroethics began to appear in neuroscience journals, specifically in Nature Neuroscience, Neuron and a special issue of Brain and Cognition.

Yorum

2002 yılında yapılan konferans bu konuda en geniş değerlendirme olması açısından, ayrı bölümde incelenecektir.

From 2003-2005 the number of neuroethics meetings, symposia and publications continued to grow. The 38,000 plus members of the Society for Neuroscience recognized the importance of neuroethics by inaugurating an annual "special lecture" on the topic, first given by Donald Kennedy, editor-in-chief of Science Magazine. Several overlapping networks of scientists and scholars began to coalesce around neuroethics-related projects and themes. For example, the American Society for Bioethics and Humanities established a Neuroethics Affinity Group, students at the London School of Economics established the Neuroscience and Society Network linking scholars from several different institutions, and a group of scientists and funders from around the world began discussing ways to support international collaboration in neuroethics through what came to be called the International Neuroethics Network. Stanford began publishing the monthly Stanford Neuroethics Newsletter, Penn developed the informational website, neuroethics.upenn.edu, and the Neuroethics and Law Blog was launched.

Several relevant books were published during this time as well: Sandra Ackerman's Hard Science, Hard Choices: Facts, Ethics and Policies Guiding Brain Science Today (Dana Press), Michael Gazzaniga's The Ethical Brain (Dana Press), Judy Illes' edited volume, Neuroethics: Defining the Issues in Theory, Practice and Policy (both Oxford University Press), Dai Rees and Steven Rose's edited volume "The New Brain Sciences: Perils and Prospects (Cambridge University Press) and Steven Rose's The Future of the Brain Oxford University Press).

2006 marked the founding of the Neuroethics Society, an international group of scientists, scholars and students whose mission statement explains that "in classrooms, courtrooms, offices and homes around the world, neuroscience is giving us powerful new tools for achieving our goals and prompting a new understanding of ourselves as social, moral and spiritual beings. The mission of the Neuroethics Society is to promote the development and responsible application of neuroscience through better understanding of its capabilities and consequences." Steven Hyman agreed to be the first President of the Neuroethics Society.

Yorum

Nörolojik bilimlerdeki çalışmalar sonucunda 2006 yılında nöroetik derneği şeklinde bir yapılanma oluşturulmuştur.

Nöroetik hakkındaki bilgiler (Sources of information on neuroethics)

The books, articles and websites mentioned above are by no means a complete list of good neuroethics information sources. For example, readings and websites that focus on specific aspects of neuroethics, such as brain imaging or enhancement, are not included. Nor are more recent sources, such as Walter Glannon's book Bioethics and the Brain (Oxford University Press) and his reader, entitled Defining Right and Wrong in Brain Science (Dana Press). We should also here mention a book that was in many ways ahead of its time, Robert Blank's Brain Policy (published in 1999 by Georgetown University Press). The scholarly literature on neuroethics has grown so quickly that one cannot easily list all of the worthwhile articles, and several journals are now soliciting neuroethics submissions for publication, including the American Journal of Bioethics – Neuroscience, Biosocities, the Journal of Cognitive Neuroscience, and the forthcoming Neuroethics. The web now has many sites, blogs and portals offering information about neuroethics. A list can be found at the end of this entry.

Yorum

Nöroetik konusunda geniş yayınlar olduğu görülmektedir. Bu konuda daha geniş irdeleme açısından gereklidir. Ancak, bu çalışmada, değerlendirmede kaba olarak nöroetik konusunun anlamsal veya termonolojik yapısı üzerinde durulacağı için bunların değerlendirilmesi gerekli görülmemiştir.

Nöroetikte anahta konular (Key issues in neuroethics)

Neuroethics encompasses a wide range of issues, which can only be sampled here. Some have close ties to traditional biomedical ethics, in that different versions of these issues can arise in connection with organ systems other than the brain. For example, how should incidental findings be handled when a presumed healthy research subject is scanned for neuroscience research and the scan reveals an abnormality? How safe are the drugs used to enhance normal brain function? These are neuroethical issues with clear precedents in traditional bioethics. They are important issues, and luckily we can call upon society's experience with the relevant precedents to help determine the best courses of action in the present cases. In contrast, many neuroethical issues are at least partly novel, and this accounts for some of the intellectual fascination of neuroethics. These relatively newer issues force us to think about the relation between mind and brain and its ethical implications.

Yorum

Nöroetik konusunda birçok konu değerlendirilebilir. İnsan ve beyni kapsamında birçok konu ele alınabilir. Bu açıdan kapsamı oldukça geniş olduğu dikkate alınmalıdır.

Beyinin değerlendirilmesi/girişimler (Brain interventions)

The ethics of neurocognitive enhancement, that is the use of drugs and other brain interventions to make normal people "better than well," is an example of a neuroethical issue with both familiar and novel aspects. On the one hand, we can be informed by previous bioethical work on physical enhancements such as doping for strength in sports and the use of human growth hormone for normal boys of short stature. On the other hand, there are also some arguably novel ethical issues that arise in connection with brain enhancement, because these enhancements affect how people think and feel, thus raising the relatively new issues of "cognitive liberty." The growing role of psychopharmacology in everyday life raises a number of ethical issues, for example the influence of drug marketing on our conceptions of mental health and normalcy, and the increasingly malleable sense of personal identity that results from what Peter Kramer called "cosmetic psychopharmacology."

Nonpharmacologic methods of altering brain function are currently enjoying a period of rapid development, with a resurgence of psychosurgery for the treatment of medication refractory mental illnesses and promising new therapies for neurological and psychiatric illnesses based on deep brain stimulation as well as relatively noninvasive transcranial stimulation methods. Research on brain-machine interfaces is primarily in a preclinical phase but promises to enable thought-based control of computers and robots by paralyzed patients. As the tragic history of frontal lobotomy reminds us, permanent alteration of the brain cannot be undertaken lightly. Although nonpharmacologic brain interventions are exclusively aimed at therapeutic goals, the US military sponsors research in this general area that is presumably aimed at enhancing the capabilities of soldiers.

Yorum

Bir insanın normal yapısı ve performansını arttırarak, iyiden öteye olmasını sağlayan "doping" maddelerinin kullanımı, bireyin tercihinin ötesinde olmalıdır. Davranışsal özerklik ötesinde olmalıdır. Ancak kozmetik psikofarmakoloji üzerinde etiksel tartışmalar devam etmektedir.

Farmakolojik olmayan yöntemlerin kullanıldığı, lobektomi gibi cerrahi işlemlerin yapıldığı bilinmektedir. Özellikle askerlerin kapasitesinin arttırıcı yaklaşımların kullanıldığı sanılmaktadır.

Öngörülen değişikliklerin bireyin temel yapısını bozucu, onun işlevsel olarak zararına olduğu temelinden bakılmasını gerekli kılar. Bu açıdan, değişimin bir gelişim şeklinde olmasını zorunlu kılar.

Brain imaging

In addition to the important issues of safety and incidental findings, mentioned above, some arise from the unprecedented and rapidly developing ability to correlate brain activation with psychological states and traits. One of the most widely discussed new applications of imaging is based on correlations between brain activity and intentional deception. A number of different research groups have identified fMRI correlates of intentional deception in laboratory tasks, and despite the skepticism of many experts, the technique has already been commercialized. A more feasible application of brain imaging is "neuromarketing," whereby people's conscious or unconscious desire for certain products can purportedly be measured.

Researchers are also finding brain imaging correlates of a myriad of different psychological traits, including personality, intelligence, mental health vulnerabilities, attitudes toward particular ethnic groups, and predilection for violent crime. Unconscious racial attitudes are manifest in brain activation. These capabilities of brain imaging, actual and potential, raise a number of ethical issues. The most obvious concern involves privacy. For example, employers, marketers, and the government all have a strong interest in knowing the abilities, personality, truthfulness and other mental contents of certain people. This raises the question of whether, when, and how to ensure the privacy of our own minds.

Another ethical problem is that brain scans are often viewed as more accurate and objective than in fact they are. Many layers of signal processing, statistical analysis and interpretation separate imaged brain activity from the psychological traits and states inferred from it. There is a danger that the public (including judges and juries, employers, insurers, etc.) will ignore these complexities and treat brain images as a kind of indisputable truth.

Yorum

Temelde beyin incelemelerinin çok eskiden beri, bedensel veri yerine kişlik sorgulamaları olarak kullanıldığı görülmektedir. Tüm bunlar etik kapsamında kabul edilemez.

Yapılan tetkikler ile sadece bulgu vermektedir. Temel olan hekimlikte hasta veya insanin bireyidir. Hastalık yok, hasta vardır. Bulgular mutlaka hekimsel yaklaşımlarla değerlendirilmeli ve Madrid Bildirgesinde de belirtildiği gibi, hekimler kişilik ve bazı sosyal (etnik, iş görebilirlik gibi) kavramların ölçülmesi veya raporlanmasında alet olarak kullanılamaz. Etik dışı elde edilen veriler geçerli kabul görmediği gibi, bunu yağanlar veya bunu temel alarak bireylerin kişiliklerini irdeleyenler hukuksal açıdan sorgulanmaları ve hatta yargılanmaları gerekir.

Pharmacological enhancement

Cosmetic neuro-pharmacology, the use of drugs to improve cognition in normal healthy individuals, is highly controversial. Some case reports with the antidepressant Prozac indicated that patients seemed "better than well," and authors hypothesized that this effect might be observed in individuals not afflicted with psychiatric disorders. Following these case reports much controversy arose over the veracity and ethics of the cosmetic use of these antidepressants. Opponents of cosmetic pharmacology believe that such drug usage is unethical and that the concept of cosmetic pharmacology is a manifestation of naive consumerism. Proponents, such as philosopher Arthur Caplan, state that it is an individual's (rather than government's, or physician's) right to determine whether to use a drug for cosmetic purposes.[3] Anjan Chatterjee, a neurologist at the University of Pennsylvania, has argued that western medicine stands on the brink of a neuro-enhancement revolution in which people will be able to improve their memory and attention through pharamacological means. Jacob Appel, a Brown University bioethicist, has raised concerns about the possibility of employers mandating such enhancement for their workers. [4] [5]

Yorum

Antidepresanların tıp dışında kozmetik amaçlarla kullanılması etik olarak değerlendirilemez.

Kozmetik kullanımlar, bireyin tercihine bırakılabilmesi öngörülse bile, buradaki amaç sadece görüntü ötesine çıktığı ve ruhsal olarak değişimlere neden olduğu için tartışmalıdır. Etik açıdan tartışmalı konulardan kaçınılması daha uygun olarak nitelendirilmektedir.

The neuroscience worldview

Neuroethics also encompasses the ethical issues raised by neuroscience as it affects our understanding of the world and of ourselves in the world. For example, if everything we do is physically caused by our brains, which are in turn a product of our genes and our life experiences, how can we be held responsible for our actions? The question of whether and how personal responsibility is compatible with neuroscience is a central one for neuroethics. As neuroscience teaches us more about the way the brain instantiates personality, love and moral values, some in the field have argued that there is less and less reason to hypothesize any immaterial component of a person.

Yorum

Beynin maddesel veya yapısal durumunun, ruhsal ve bireyin toplumsal tutum ve davranışlarını yönlendirdiği bilinmektedir. Ancak, somut ile soyut kavramı birbirleri ile karıştırılmamalıdır. Nöroloji ve Psikiyatrinin ayrı bilim dalları olduğu dikkatlerden kaçmamalıdır.

Akademik Dergiler (Academic journals

- **Neuroethics**
  Main Editor: **Neil Levy**, CAPPE, Melbourne; University of Oxford
  Neuroethics is an international peer-reviewed journal dedicated to academic articles on the ethical, legal, political, social and philosophical issues provoked by research in the contemporary sciences of the mind, especially, but not only, neuroscience, psychiatry and psychology. The journal publishes high-quality reflections on questions raised by the sciences of the mind, and on the ways in which the sciences of the mind illuminate longstanding debates in ethics.

Nöroetik konusunda yayın yapan dergiler olarak bilgi amaçlı sunulmaktadır.

What is Neuroethics?

Q&A With Stephen Hyman
By Aalok Mehta, October 07, 2008
Ahead of the inaugural meeting of the Neuroethics Society, on Nov. 13 and 14 in Washington, D.C., Dana Press writer Aalok Mehta quizzed some of the experts in the field about the implications of neuroscience and its relevance to everyday life. Steven Hyman is provost of Harvard University and a neurobiologist at Harvard Medical School. Hyman, the

society's president, will speak at the meeting on how to treat mental illness in children.

Yorum

Nörolojik bilimler ve mental hastalıkların tedavisi konusunda etiksel yaklaşımların vurgulandığı toplantının yayını olarak dikkatleri çekmektedir. Bu yayına ulaşılamamıştır.

What is neuroethics?

It's a field that studies the implications of neuroscience for human self-understanding, ethics and policy.

Yorum

Nöroetiğin, biyoetiğin bir alt dalı olduğu ve nörolojik bilimler ile nörolojik teknoloji ile ilgili olduğu belirtilmektedir.

What are some of the differences between neuroethics and traditional bioethics?

There are a lot of general issues related to research in the nervous system that are contained within bioethics—informed consent and people with cognitive impairments are traditional kinds of bioethical issues.

But if instead you want to ask about the essence of personal responsibility and how we should think about personal responsibility in light of neuroscience, and in light of our criminal justice system, that is something that is well beyond bioethics. It involves neuroscience, philosophy and the law.

If you want to ask about brain privacy—since we have more sophisticated imaging devices that can in a crude way begin to give clues to observers about what you're thinking or feeling—some of that might be dealt with in legal or philosophical writings about privacy, but again you want to incorporate with it a deep understanding of the technologies.

It applies even if you want to talk about the fundamental basis of ethical thought itself. Traditionally, people have appealed to principles that might be transcendent or outside of the human brain, but at the same time increasingly we're aware that the way our brains have been shaped by evolution and the way they function has an enormous impact on our own moral understanding and how we think about ethics.

How do we think about interventions, drugs or devices that change cognition or change personality? If your spouse only really likes you when you're on antidepressants, well, which person did they marry? These kinds of issues are not really core issues for existing bioethics and seem to require a new kind of forum.

Yorum

GELENEKSEL BİYOETİK İLE NÖRAETİĞİN FARKLILIĞI

Bilinç durumu ile aydınlatma ve onam ile yakın ilişki olduğu ortadadır ve biyoetik ile ortak noktaları vardır

Kişilik sorumluluk ve yasal mevzuat ile birlikte nörolojik bilimler yakın ilişki içindedir. Sorumluluk ancak bilinci yerinde, bir başka yaklaşımla psikoz olamayan hastalar için söz konusudur.

Beynin özgüllüğü yanında, yapılan tetkikler konusunda daha geniş bilgimizin olmasını gerekli kılmaktadır.

Geleneksel olarak etik beyin dışı durumlar için belirtilmiş ise de, ahlak sorgulanmasında öne çıkmaktadır. Etiğin ahlak felsefesi şeklinde yorumlanacağı unutulmamalıdır.

İnsanın kişiliğini etkileyen ve değiştiren araştırmaların yorumlanmasında, biyoetik kapsamında ele alınmasa bile, etiğin geniş tanımlanmasında yer bulmaktadır.

SONUÇ olarak; Nöroetik kavramı geniş etiksel irdelemeyi gerekli kılmaktadır.

What do you think are some of the most interesting topics in neuroscience right now?

I think issues of cognitive enhancement, drugs and interventions that affect a person's identity; brain privacy; and the neural basis of morality, or what's called moral cognition, are among the really interesting areas. Another is understanding the neurobiology of decision making; that itself is not *per se* neuroethics, but as it gets applied to areas such as marketing, it begins to touch on ethical concerns.

Yorum

Bilinç üzerinde yapılabilecek değişimler ve etkileşimler, uyuşturucu kullanımı yapısında etiksel olmadığı gibi, hukuksal olarak ele alınması düşüncesindeyiz. Ayrıca bunların sadece hayvan araştırmaları gibi, insanlar üzerine olmayan çalışmalar kapsamında olması ve kullanımlarının yasaklanması gerektiği inancındayız.

To what extent would you say neuroethics is relevant to the daily life of most people?

> It is quite relevant, in areas from the widespread use of psychopharmacology to treat children to our sense of responsibility and justice in the courtroom to the moral status we confer on people with mental illnesses or addictive disorders. Much that we have not been reflective about or have handled with pop psychology can be thought about more deeply in the context of advances in neuroscience.

Yorum

Nöroetiği tüm insanları ilgilendiren tüm konuları kapsadığı temelinde ele alacak olursanız, nöroetik ile humanizmi (insancılığı) bütünleştirmiş olursunuz. Bu açıdan bu yaklaşım, kavramın genişletilmesi anlamında olacaktır.

Why form a neuroethics society?

> A group of neuroscientists, psychologists, philosophers, bioethicists and lawyers—who knew each other and who had all been involved in the Dana Foundation–sponsored Neuroethics: Mapping the Field conference that was held [in 2002] in San Francisco—got together a second time at a seminar and discussed whether this would make sense.
>
> We decided to form a society because we feel that there are issues related to the nervous system that are not neatly contained within traditional bioethics. In particular, there are issues that relate to the functioning of the brain—after all, the brain, being the seat of thought and emotion and behavioral control, has a special resonance for, among other things, being itself the seat of ethics.
>
> We wanted to create bridges between advances in neuroscience and the world of policy and ethics.

Yorum

Felsefenin gelişmesi için, bireylerin konuları ortaya getirerek görüşlerini sunmaları ve irdelemeler yapmaları gerekir. Bilimin gelişmesi, yargılarla veya kalıplarla olmaz. Değerlendirmeler ve sorgularla olabilir. Bu açıdan 2004 yılında Etik Kurul olarak Üniversitemizdeki değerlendirmeler bir örnek teşkil edebilir.

Görüşler ortaya konuldukça ve irdelendikçe gelişecektir. Ancak, temel alınması gereken nokta, bilimsel irdelemedir, ön argı ve zevk ve hislerden, kişisel ve inanışsal yargılamalardan kaçınmak ilke edinilmelidir.

What do you hope to achieve as president of the Neuroethics Society? What do you hope to achieve specifically at **this meeting**?

At the meeting, there are two sets of goals. One is to create—and this the program committee has done—an exciting and engaging meeting that brings people from neuroscience and other diverse disciplines together in a process of mutual learning and exploration.

But at the same time—and that's why things have to be interesting—we want to institutionalize a basis for interaction, so that we facilitate these discussions again with neuroscientists, psychologists, philosophers, lawyers and other people in other disciplines who are interested.

Yorum

Bir bilimsel toplantıda sonuca varmak amaçlanmamalıdır. Sadece prensipler ve ilkeler ortaya konulabilir. Belirli konularda görüşler ortaya konularak, bunlar yazılı formatta tüm insanlığa duyurum ve irdeleme boyutuna getirebilir. Bu yaklaşım da bir amaca hizmet eder ve bir sonuçtur.

What do you think the prospects for neuroethics are? Will the field grow, and how rapidly?

Neuroethics will grow. I don't think it's going to be the largest field in the world, but I think it's going to grow because of the advances in neuroscience, the growth in technology and the curiosity and concern of many people about what those portend for our future.

Yorum

Nörolojik bilimlerdeki gelişmelere göre Nöroetik kavramında da ilerleme olacağı varsayılmaktadır.

Problemler ve hastalara dayalı sorunlar, daha doğrusu "doğru nedir ve ne yapmalıyım" temelindeki etik sorgular, tüm felsefe bilimindeki temel gelişim nedeni olduğu gibi, nöroetik konusunda da gelişimlerin gerekçesi olacaktır.

YAYINLARDAN DERLEMELER

NÖROETİK: *Kaynak: http://faculty.washington.edu/chudler/neuroe.html*

(Kaynakta gösterilen sayfadan derlenerek hazırlanmıştır.)

Yeni kuşağın gençleri olarak bilimsel etik kelimesiyle en haşır neşir olduğumuz dönemler Dolly'nin klonlandığı zamanlara denk geldi. O

zamanlar ayağa kalkan bilim, din ve siyaset dünyası aylarca benzer bir klonlamanın insan için de gerçekleştirilmesinin ne kadar etik olacağını tartıştı. Oysa etik sorular yalnızca genetikte değil bilimin her yeni buluşunda, teknolojinin her adımında beliriyor. Bizler de beyinle ilgili olan bazı etik sorulara büyüteç uzatalım istedik.

Beyin Okuyan Makineler Olsaydı... Varolan beyin görüntüleme teknikleri araştırmacılara beynin yapısı ve işlevlerini anlayabilme yolunda geniş olanaklar sunuyor. Bu görüntüleme teknikleri sayesinde beyindeki hasarlar tespit edilip kimi nörolojik ve ruhsal hastalıkların tanısı gerçekleştirilebiliyor. Beyin görüntüleme aynı zamanda duygu, dil ve algı deneylerinde de kullanılıyor. Peki, tıpkı bu beyin görüntüleyen aletler gibi gelecekte daha da ileri bir teknolojiyle üretilmiş makineler düşüncelerimizi okuyup, belleğimizde neler sakladığımızı açığa çıkarabilir mi? Nitekim günümüzde bile buna yaklaşan makineler mevcut. Örneğin, yalan tespit makinesi, nam-ı diğer poligraf! Poligraf stres zamanlarında elimizde olmadan verdiğimiz fizyolojik tepkiler olan kalp atış hızı, kan basıncı, nefes alışveriş sıklığı ve terleme gibi ipuçlarını kullanarak kişinin yalan söyleyip söylemediğini açığa çıkarıyor. Ancak iyi bir hilekârın poligraf makinesini yalan söylemediğine iknâ etmesi hiç de zor değil. Bu nedenle de bu tekniğin ne kadar tkili olduğu konusunda halen soru işaretleri bulunuyor. Bu noktada sinirbilimcilerin akıllarındaki soru şu: Daha iyi bir yöntem arayışı içerisinde poligrafın yetersiz kaldığı zamanlarda beyin görüntüleme tekniğini devreye sokarak herhangi bir kişinin beyin aktivitesinden yalan söyleyip söylemediğini anlayabilir miyiz?

İşte olası bir yanıt: "Beyinsel Parmakizi" makinesinin mucitleri kişilerin olaylar hakkındaki bilgi birikimlerini açığa çıkarabileceklerini öne sürüyorlar. Bu makineler kafatasına yapıştırılmış elektrotlarla beyindeki elektriksel aktiviteyi okuyabiliyor. Kişiye sözcükler, resimler ve sesler içeren bir takım uyaranlar gösterilip bu uyaranlar verilen sinirsel yanıt ölçülüyor. Makinenin mucitleri bazı uyaranların işlenen bir suç varsa onunla ilişkili olarak belli yanıtları tetikleyebileceğine ve bu nedenle önemli olduklarına inanıyor. Bunun yanısıra beyindeki kan akışını görüntüleyen fMRI yöntemiyle kişinin yalan söyleme eylemiyle ilişkili beyin bölgelerinin aktive olup olmadığının da anlaşılabileceğini, bunun diğer verilerle beraber kullanılarak kişinin yalan söyleyip söylemediğine dair iyi bir tahminde bulunulabileceğini öne sürüyorlar. İyi ama gerçekten de düşüncelerimizi ya da duygularımızı okuyan bir

makine olsaydı hangi amaç için kullanılması gerekirdi?: - Bir suç işlediğinden şüphe edilen kişiler? (Örn. "Parayı sen mi çaldın?") - Şirket tarafından çalışanları üzerinde? (Örn. "Şirketin sırlarını açığa çıkarmayacak kadar güvenilir misin?) - Eşler tarafından birbirleri üzerinde? (Örn. "Dün akşam konserde miydin?) - Ahlak sorgulaması amacıyla? (Örn. "Elinde fırsatın olsa bankayı soyar mıydın?) - Kişileri müzik, matematik ya da edebiyat gibi belli mesleklere yöneltebilmek adına? Bu amaçların hangileri etik sınırlar içine dahil edilebilirdi? Makineler Olası Bir Nörolojik ya da Ruhsal Hastalığın Tanısını Yapabilselerdi... Bugün beyin görüntüleme teknikleri nörolojik ya da ruhsal hastalıklar barındıran bireylerle sağlıklı bireylerin beyinleri arasındaki yapısal farkı ortaya koyabiliyor. Örneğin, şizofrenik kişilerin sağlıklı kişilere göre daha küçük hipokampüslerinin olduğu, basal ganglia çekirdeklerinin büyüklüklerinde farklılık gözlendiği, prefrontal korteklerinde yapı değişiminin söz konusu olduğu biliniyor. Teknolojideki bu gelişimden yola çıkarak nasıl ki günümüzde bir takım hastalıkların olası tehlikesi genetik görüntüleme teknikleriyle ortaya konuyorsa benzer bir beyin görüntüleme aracılığıyla nörolojik ya da ruhsal hastalıkların tanısının yapılabileceğine inanmak da uçuk bir düşünce değil. - Eğer ki bir makine belirtileri daha kendilerini ele vermeden önce bir hastalığı tespit edebilseydi, bunu henüz bebek doğmadan önce de anlayabilir miydik? - Herhangi bir nörolojik ya da ruhsal hastalığa yakalanacağımızı cidden önceden bilmek ister miydik? - Sağlık sigorta şirketleri herhangi bir anlaşma öncesi beyin görüntülerimizi ister miydi? Bunu istemesi etik ilkeleri çiğnemez miydi? Bir Takım İlaçlarla Bellek ya da Zekâmızı Geliştirebilmek Mümkün Olsaydı... Aşamalı bir şekilde bellek kaybına, dil ve duygularla ilişkili sorunlara yol açan Alzheimer hastalığı ne yazık ki her yıl binlerce kişinin kabusu oluyor. Araştırmacılar bu hastalıktaki bellek kayıplarını yavaşlatıcı bir takım ilaçlar keşfetmiş durumda. Peki, bellek kaybını yavaşlatan bu ilaçlardan belleği güçlendiren bir takım kimyasalların üretimine de geçiş yapılabilir mi? Eğer yapılabilirse... - Bellek kuvvetlendiren ilaçlar hiçbir hastalığı olmayan sağlıklı bireylerin de bellek kapasitelerini güçlendirmek adına kullanılmalı mı? - Bu ilaçların yan etkileri neler olur? - Yüksek bellek ya da zekâ kişiyi cidden mutlu mu yoksa mutsuz mu kılar? - İnsanlığın ve bilimin hedeflerinden biri de doğa üstü zekâlar yaratmak mı olmalı?

Kötü Hatıralar Bellekten Silinebilseydi... Bu fikre ödüllü sorularımızdan birinde de sormuş olduğumuz "Sil Baştan" filminden tanıdık olanlarımız vardır mutlaka. Filmde aşk acısı çekenlere uyguladığı

bilişsel bir yöntemle belleklerini silen bir doktordan bahsediliyordu. Peki, cidden böylesi bir yöntemle zihnimizden tamamen silmek istediğimiz hatıralardan kurtulabilmemiz mümkün olabilir mi? Doğal afet, savaş gibi travmatik olayların bıraktığı zihinsel hatıraların silinmesine dair ilaç firmaları kolları sıvadı bile. Ancak kişiye en büyük mirasın deneyimleri olduğunu ve öğrenme mekanizmalarımızın başında deneyimlerin geldiğini düşündüğümüzde belleklerimizden hatıralarımızın silinmesi cidden etik mi sorusu geliyor akıllarımıza. Ne dersiniz? Tüm bu sorulara yanıt verebilmek cidden çok zor. İnsanoğlu beyni keşfetme yolunda büyük adımlar atarken daha sayamadığımız pek çok ciddi etik sorunla da yüzleşmek zorunda kalacağa benziyor.

Yorum

Yukarıdaki yaklaşım science-fiction (bilimsel kurgu) niteliğindedir. Dolayısıyla yapısını bilimsel esaslardan alıp, belirli varsayım ve sorgular üzerine yapılandırmakta ve fikirlerde karmaşaya neden olmaktadır. Dolayısıyla somut ve olası olmayan bir hayal ürünü şeklindedir. Etiksel olarak irdelemesini olanaksız kılmaktadır.

Tüm bu gerçeklere karşın, bu konuda felsefe geliştirilmesi ve insanların etik dışı çalışmalar ve yaklaşımlar yapmaması konusunda etik kurullar ve etik prensipler oluşturulmuştur. Bu açıdan insanlar ve toplum, etik dışı çalışmaların yapılamayacağı ve bireyin kişilik ve bedensel özerkliğini bozacak yaklaşımları hukuksal ve etiksel olarak mümkün olmadığı konusunda rahatlatılmaları gerekir.

Bilimde korkutmalar değil, gerçekler vardır. Bilimin yolunu hayaller, düşünceler açar, ama deneyler ve realiteler ve kanıtsal bulgular ve sorgular bilimi oluşturur.

Neuroscience For Kids

William Safire (quoted by R. Fischback and G. Fischback in Hard Science, Hard Choices by Sandra J. Ackerman, 2006

Aşağıda çocuklara yönelik olarak hazırlanan yazının, onları ne kadar korkutacağı ve telaşa düşüreceği dikkate alınmalıdır. Bir çocuğun yalan söyleyip söylemediğinin aletlerle ortaya çıkarabileceği durumu onları ruhsal sorunlar içine itecek ve tüm yaşamı boyunca özerklik kaybı yanında güvensizlik, sır saklama gibi duygu yitirimine de neden olacaktır. Çünkü, yalan ile gerçek çocuklarda yan yanadır, çocuklar hayal ile gerçeği tam ayırt edemeyebilriler. Erişkinlerin yalan olarak nitelendirdikleri, çocuklar için bir yanılsama olabilir. Bir çocuğa "yalan söylüyorsun" demeden önce çok düşünülmesi gerekir. Lütfen çocuklarımızı hırpalamayalım. Bu amaçla aşağıdaki yazının tercüme veya değerlendirmesi yapılmayacaktır. Sadece örnek olarak sunulmaktadır.

Ayrıca "Nöroetik Prensipleri" oluştururken eğitimin önemli yeri olduğu vurgusu da yapılmıştır.

Neuroethics

Neuroscience is making discoveries about the brain at an incredible pace. For example, new drugs and treatments for mental and neurological disorders are being developed rapidly and imaging methods can see the living, working brain. Is neuroscience moving too fast? What can and should be done with this new knowledge about the brain? These are questions that concern workers in the field called ***neuroethics****.*

Scientists, physicians, journalists, lawyers, politicians, philosophers, clergymen and teachers are people interested in neuroethics. But we should ***all*** *be interested in neuroethics because this field will impact many aspects of our daily lives. Some neuroethical issues sound like science fiction, but other issues deal with technology and drugs that are currently available. There is no turning back. Neuroscientific discoveries will continue to be made and it is best to discuss these issues before they become reality.*

Neuroethics - Some Questions

What if... machines could read your mind?

Existing brain imaging methods provide researchers and physicians with important tools to investigate the structure and function of the living brain. These powerful techniques help detect abnormalities in the brain and can assist in the diagnosis of neurological and mental disorders. Brain imaging is also used in experiments to study emotions, language and perception.

Could machines also read your thoughts, plans and memories? We currently have a machine called the polygraph (sometimes called a lie detector). The polygraph records involuntary physiological responses such as heart rate, blood pressure, respiratory rate and sweating to see if people are lying. However, the accuracy of the polygraph for detecting lies is controversial and some people can be trained to fool the machine. Could a machine that measures brain activity detect lying accurately?

Inventors of a "brain fingerprinting" machine think they have a device that can reveal a person's knowledge of events. Brain fingerprinting

measures the electrical activity of the brain through electrodes attached to the scalp. Specific stimuli (words, pictures or sounds) are presented to a person. Some of the stimuli are important to an investigation, such as a crime scene. These important stimuli are thought to produce a special brain response that indicates that the person knows something about the stimulus. Functional magnetic resonance imaging (fMRI), which measures brain blood flow, may also be able to detect areas of the brain that are active when a person lies. Two companies, No Lie MRI and Cephos Corp, are already marketing a service to detect lying.

If a device could accurately measure hidden knowledge and detect lies, how could and should it be used?

- *Should people suspected of committing a crime be forced to have a brain scan? ("Did you steal the money?")*
- *Should suspected terrorists be brain scanned? ("Do you belong to a terrorist group?")*
- *Would employers be within their rights to have their employees undergo a brain scan? ("Can you be trusted with our company secrets?")*
- *Should people use brain scans on their spouses and children? ("Were you at the game last night?")*
- *If brain imaging could measure morality or intent, should it be used? ("Do you plan to rob the store?")*
- *If a brain scan could measure talents such as musical or mathematical ability, should it be used to direct people toward or away from certain jobs?*

Memories are very fragile and can change over time. Would such a brain scan be able to detect "false memories" or memories that people believe to be true, but are not true? In specific experimental situations, some brain areas (the posterior medial temporal lobe) do respond differently to true memories and false memories.

What if... machines could predict a future neurological or mental disease?

Brain imaging can identify structural and functional differences in people with various neurological and mental disorders. For example, magnetic resonance imaging has shown that people with schizophrenia have larger than normal lateral ventricles, reduced

hippocampus size, changes in the size of basal ganglia nuclei, and abnormalities in the prefrontal cortex. Currently, genetic testing can be used to screen for particular illnesses, such as Huntington's disease. Perhaps a brain scan will enable detection of other neurological and mental disorders.

- *What if a machine or test could predict a disorder before any symptoms were present, perhaps even before a baby is born?*
- *Would you want to know if you were going to have a neurological or mental disorder?*
- *Should people be forced to get treatment to avoid problems of their condition?*
- *Should insurance companies require a brain scan before they issue a health policy?*

What if... drugs could alter your personality?

Drugs that alter mood are already available. Antidepressants and tranquilizers are used by millions of people every day: people with schizophrenia are treated with antipsychotics; children with attention deficit hyperactivity disorder (ADHD) are treated with stimulants. In the future, drugs might alter a specific personality characteristic. For example, perhaps a drug could be made to fight shyness.

- *If a drug could reduce aggression, should it be given to people convicted of violent crimes?*
- *Could and should a pill be developed to eliminate specific phobias, such as the fear of flying?*

What if... drugs, machines or genetic engineering could increase your memory and intelligence?

We now have drugs to slow memory problems associated with Alzheimer's disease. Many drug companies, including Memory Pharmaceuticals, a company set up by Nobel Prize winner Dr. Eric Kandel, are developing new chemicals to improve memory.

- *Should drugs be developed to increase the intellectual abilities of people without any illness or disorder?*
- *Would it be a good idea to take a pill to improve your memory and attention or would there be significant side effects?*
- *If such a "smart pill" existed, who should get it?*
- *Do we already have drugs, such as caffeine and nicotine, to improve performance? If so, are these any different than a new smart pill?*

- *Would smart pills make people happier or more depressed?*
- *In 1999, researchers genetically engineered a mouse that outperforms regular mice on learning and memory tasks. Should this technology be used in humans to produce people with superior mental abilities?*

  Technological advances already assist people with hearing and visual problems. For example, cochlear implants are used to improve hearing and the development of an artificial retina is progressing.

- *Could and should we develop a machine-brain implant to boost intelligence?*
- *If these methods existed, who would get them? Some people believe that these methods would be used only by those rich enough to buy them.*
- *If everyone took a smart pill, would "normal" intelligence have to be redefined? Would this change put pressure on people to take the pill?*
- *Is taking a pill to increase intelligence a form of cheating? Is taking a pill no different than enrolling in a study class or getting special tutoring?*
- *Does it matter how intelligence is improved?*

  What if... memories could be erased?

  Drugs to improve memory might sound like a good idea, but drugs to erase memories might also be useful. In fact, some drug companies are trying to develop chemicals to block the formation of memories. These drugs might be used to remove the memory of a traumatic event and help a victim recover. On the other hand, traumatic events can serve as a learning tool that emphasizes the danger of the event -- erasing memories may prevent a person from avoiding a traumatic situation in the future.

  What if... the brain could be controlled from a distance?

  Areas of the brain can be stimulated or suppressed by placing a transcranial magnetic stimulator (TMS) over the scalp. The TMS directs magnetic fields toward the brain and has been used to study movement, sensation and memory. Magnetic stimulation has also been used to treat depression and epilepsy.

- *What if magnetic fields could be directed at someone from a distance?*
- *How would magnetic fields affect behavior and thought?*
- *Could this technology be used without a person's knowledge?*
- *Would this be an invasion of privacy?*

- *Could this technology be used as a weapon?*

The Future

*Although new discoveries will likely lead to machines and drugs that can enhance the brain, the question becomes what **should** be done with these new drugs and new technology. Will people lose their sense of self if they take one of these new drugs? Will they become less human if they are implanted with a computer chip to aid their memory? What are the long-term effects of enhancing intelligence?*

These questions must be discussed and debated NOW!

They Said It!

"Neuroethics is the examination of what is right and wrong, good and bad about the treatment of, perfection of, and welcome invasion or worrisome manipulation of the human brain."

NÖROETİK

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Kendi içinde zaten çoğul disiplinli bir düşün, eğitim ve araştırma alanı bulunan "sinirbilim" veya "beyin bilimi", günümüzde, kendine özgü felsefi, etik, estetik, hukuksal ve politik açılımları ile sınırları zorlamakta ve iyice özgül bir etik alt disiplini olarak, "Nöroetik" kavramını önermektedir.

ABDde, özellikle beyin ve kanser araştırmalarını destekleyen saygın ve güçlü Dana Vakfı'nın daveti üzerine, yüzelliyi aşkın yetkin ve ünlü temel ve klinik sinirbilimci, biyoetikçi, psikiyatrist, psikolog, sosyolog, felsefeci, hukukçu ve kamu yöneticisi, Mayıs 2002de San Francisco kentinde buluşarak, ortak bir dil bulma ve nöroetik alanını betimleme çabasına giriştiler. Başlangıçta, nöroetik, "beyine ilişkin bilimsel gelişmelerin, tıp uygulamaları, hukuksal yorumlar, hatta yasal düzenlemeler ile sosyal ve sağlık politikalarına taşınması sonucu ortaya çıkan ve çıkabilecek olan etik, hukuksal ve toplumsal soru ve sorunları inceleyen bir bilim alanı" olarak görece yalın bir biçimde tanımlandı. Böylesi soru ve sorunların doğabileceği ilk akla gelen alanlar, kuşkusuz, genetikbilim, beyin görüntüleme, beyin hastalıklarının tanısı ve yönetimidir. Aynı yaklaşımla, hekim, biliminsanı, eğitimci, yargıç, hukukçu, sigorta yöneticisi ve yasa koyucular ile kamunun, bu soru ve sorunlara karşı tutum, uygulama ve çözümlemeleri, nöroetiğin temel konularını oluşturmalıdır.

Nöroetik sorunsalına somut ve didaktik ama aynı zamanda sansasyonel bir çıkış noktası örneği, en güzel anlatımını A. Damasio'nun "Descartes'ın Yanılgısı" adlı

yapıtında bulduğumuz, tarihsel Phineas Gage iş kazası olgusudur. Tüm sinirbilimcilere tanıdık olan bu demiryolu işçisi, beyin ön lobunun yaşamla bağdaşmayacak derecede zedelenmesine karşın, "yaşamış" (yaşatılmış), ancak, yaşamını, önceki kişiliğinden çok farklı biçimde, "ahlaki karar alma ve uygulama özürlü" olarak sürdürmek zorunda kalmıştır. Damasio, etik düşünce ve davranışı, evrimle ilişkilendirir ve biyodüzenlemenin bir yüzü olarak tanımlar; etiğin biyolojik temelleri için, frenolojiyi ve genlerin egemen rolünü red, çoğul sistemli nöronal örüntüleri, genlerin yatkınlaştırıcılığını, kültürün önemini, durumsal ve bağlamsal ögelerle beyin sağlığının belirleyiciliğini savunur.

Nörofelsefeci P.S. Churchland, davranışı beyin olaylarının sonucu olarak tanımlar. Ona göre, nöron ve nöron ağları düzeyinde beyin, nedensel bir makine olsa bile, ceza hukuku bağlamında bu "nedensellik", cezanın etkililiği, toplumun güvenliği ve affın toplumsal önemi gibi etkenlerin biçimlendirdiği sorumluluğu ortadan kaldırmaz. Churchland, "kendi" kavramını nörobiyolojik açıdan ele aldığında, mutlak çözümleme için, "özgür irade", "toplumsal uyumluluk" ve "kontrol-dışılık" halleri ve kişilikleri için nöral farklılıkların tanımlanması gereğini vurgular.

Biyofelsefeci K.F. Schaffner, özellikle, "aydınlatılmış ve özgür seçim ve onam" kavram ve uygulamalarına, "açık veya kapalı indirgemecilik" ve "açık veya kapalı determinizm" ölçüleri içinde yaklaşır. Hastalık yönetimine ilişkin klinik uygulamalar ve hukuksal düzenlemelerde, konu beyin sağlığı olduğunda, aydınlatılmış onamın, "seçimin anlaşılması, takdiri, akıla vurulması ve ifadesi" ögelerini içeren, "MacCat" ve benzeri ölçüm araçlarının ne denli yetersiz, uzak ve anlamsız kalabildiğini vurgular.

Biyoetikçi J.D. Moreno, "kendi kaderini belirleme" kavram ve uygulamalarını, nöroetik platformunda, beyin-beden sorunsalı çerçevesinde ele alır. Kararların, koşulluluk, bağlamsallık ve durumsallık nitelikleri nedeniyle, ne denli "özgür" olabileceğini sorgular ve bu konudaki Amerikan yaklaşımını "indirgemeci ve kolaycı" olarak niteler.

"Belleğin Yedi Günahı" adlı yapıtın yazarı, psikolog D.L. Schacter, özellikle dört bellek durumunu nöroetik ile ilişkilendirerek, beyine etkili ilaçların farklı kişilere uygulanmasının yaratabileceği sorunları vurgular. Ona göre, "anılara erişimi engelleyen" ilaçlar bir işyeri veya okulda eşitsizliğe yolaçabilir, "dalgınlık veya dikkat boşlukları" yasal sorunlar doğurabilir, "karıştırma" gerçek ve düzmece bellek birbirinden ayrılamadığından yanlış suçlamalara neden olur ve istenmedik anılara "takıntılar" da ilaçların yardımı ile yokedilebilir. Bu durumda, bir "şiddet mağduru" veya "felaket gönüllüsü"ne bu ilaçların uygulanması ne kadar doğru olacaktır.

Tıp felsefecisi ve hukukçu W.J. Winslade, travmatik beyin hasarı ve cezai ehliyet - yasal sorumluluk bağıntısına dikkat çeker. Ceza hukuku uygulamalarında, suçlanan kişinin beyin travması geçirmiş olması, hatta bunun tekrarı ve sıklığı ögelerinin hiç dikkate alınmamasını çok önemli bir evrensel kusur olarak ortaya koyar.

Hukukçu ve onursal genetikbilimci H. Greely, uzmanı olduğu insan genetiğinin etik, yasal ve toplumsal boyutları ile nöroetiği karşılaştırır ve özellikle, "sağkalım ve esenliğe ilişkin öngörü", "insan klonlama" ve "determinizm/özdecilik"

sorunsallarının nöroetik bağlamındaki önemini vurgular. Greely'ye göre, sinirbilimsel gelişmelerin hızı, öncül deneysel yaklaşımların yakında alınacak olan sonuçları ve karar vericilerin inanç sistemleri ile belirlenecek olan nöroetiği yakın gelecekte çok önemli ve zorunlu kılacaktır.

Beyin biliminin uygulamalarına bakıldığında, psikofarmakoloji araştırma ve uygulamaları, Alzheimer ve Huntington hasta ve yakınlarındaki genetik bilgilenmeler, bunların gizliliği, farklı paydaşlar tarafından farklı amaçlar doğrultusunda kullanılması, dikkat bozukluğu ve hiperaktivitenin "sağaltımı" konuları, nöroetiğin en ön saflarında yer almaktadır.

Teknoloji ve tıp felsefecisi E. Parens, Fukuyama'ya atıfta bulunarak, "İnsan-sonrası Gelecek" uzgörüsü ile "sağlıksızlıkta sağaltım ve koruyuculuk" ile "sağlıklılıkta süperleştirme" arasında çok kesin bir ayırım yapılması gereğine işaret etmekte ve bu iklemin özellikle nöroetik alanında çok önemli olacağını vurgulamaktadır.

- *Biyoetikçi P.R. Wolpe, "organik dünyayı teknolojize ederken, teknolojik dünyayı da organikleştirmekteyiz; bu yeniliklerin, bir parçamız durumuna gelerek, tüm yaşamımızı, hatta insan evrimini etkilemesi işten değildir" diyerek, "biyonik" teknolojilere, özellikle nöronal yongaları içeren "fizyoteknolojiler"e ve "siborglara" dikkat çekerken, "bilimi izlemek yerine, yönlendirmek ve yönetmek" farkındalığı ve bilinci uzerinde durmaktadır.*

Moleküler, genetik, hücresel ve elektronik bilimlerden çok önemli destek alan sinirbilim, son 20 yıldır giderek artan bir ivme ile önlenemeyen bir gelişme göstermektedir. Bu "sunum" (arz) bolluğu, elbette, kendi "pazarının" (talebinin) da mühendisliğine soyunmaktadır ve bunu daha da ileriye taşıyacaktır. "İnsan-sonrası" veya "insan-ötesi" bir döneme evrilmemek üzere, bilimi de dizginlemek ve denetleyebilmek gerekir. Bu önerme, şimdilerde çok septik ve aşağılayarak baktığımız, bir zamanların "yararcılığı"ndan (pragmatizm) farklı bir durumu irdelemektedir. Genelde, bilim ve bilimsel gelişmeler ve özelde sinirbilim, etik ve insancıl ögelerin dikkatle izlediği; yine özelde, nöroetiğin soluksuz peşinden koşturduğu ve denetlemeye çalıştığı bir süreçler bütünüdür.

Yukarıdaki yayında nöroetiğin genel bir değerlendirmesinin yapıldığı görülmektedir. Bu bir gelişim sürecini ortaya koymaktadır.

Nöroetik konusunda birçok görüşlerin konuyu olgunlaştırma için gerekli olduğunun bir kanıtıdır.

Prediction, Litigation, Privacy, and Property: Some Possible Legal and Social Implications of Advances in Neuroscience

remarks by Henry T. Greely* for the Regan Lecture on April 20, 2004

"There's no art to find the mind's construction in the face;

He was a gentleman on whom I built an absolute trust."[1]

The lament of Duncan, King of Scotland, for the treason of the Thane of Cawdor, his trusted nobleman, echoes through time as we continue to feel the sting of not knowing the minds of those people with whom we deal. From "we have a deal" to "will you still love me tomorrow?", we continue to live in fundamental uncertainty about the minds of others. Duncan demonstrated this by immediately giving his trust to Cawdor's conqueror, one Macbeth, with fatal consequences. But at least some of this uncertainty may be about to lift, for better or for worse.

Neuroscience is rapidly increasing our knowledge of the functioning, and malfunctioning, of that intricate three-pound organ, the human brain. When science expands our understanding of something so central to human existence, these advances will necessarily cause changes in both our society and its laws. This paper seeks to forecast and explore the social and legal changes that neuroscience might bring in four areas: prediction, litigation, confidentiality and privacy, and patents. It complements the paper in this volume written by Professor Stephen Morse, which covers issues of personhood and responsibility, informed consent, the reform of existing legal doctrines, enhancement of normal brain functions, and the admissibility of neuroscience evidence.

Two notes of caution are in order. First, this paper may appear to paint a gloomy picture of future threats and abuses. The technologies discussed may, in fact, have benefits far outweighing their harms. It is the job of people looking for ethical, legal, and social consequences of new technologies to look disproportionately for troublesome consequences — or, at least, that's the convention. Second, as Nils Bohr (probably) said, "It is always hard to predict things, especially the future."[2] *This paper builds on experience gained in studying the ethical, legal, and social implications of human genetics over the last decade. That experience, for me and for the whole field, has included both successes and failures. In neuroscience, as in genetics, accurately envisioning the future is particularly difficult as one must foresee successfully both what changes will occur in the science and how they will affect society. I am confident about only two things concerning this paper: first, it discusses at length some things that will never happen, and, second, it ignores what will prove to be some of the*

most important social and legal implications of neuroscience. Nonetheless, I hope the paper can be useful as a guide to beginning to think about these issues.

I. PREDICTION

Advances in neuroscience may well improve our ability to make predictions about an individual's future. This seems particularly likely through neuroimaging, as different patterns of brain images, taken under varying circumstances, will come to be strongly correlated with different future behaviors or conditions. The images may reveal the structure of the living brain, through technologies such as computer-assisted tomography (CAT) scans or magnetic resonance imaging (MRI), or they may show how different parts of the brain function, through positron emission tomography (PET) scans, single photon emission tomography (SPET) scans, or functional magnetic resonance imaging (fMRI).

Neuroscience might make many different kinds of predictions about people. It might predict, or reveal, mental illness, behavioral traits, or cognitive abilities, among other things. For the purposes of this paper, I have organized these predictive areas not by the nature of the prediction but by who might use the predictions: the health care system, the criminal justice system, schools, businesses, and parents.

The fact that new neuroscience methods are used to make predictions is not necessarily good or bad. Our society makes predictions about people all the time: from a doctor determining a patient's prognosis, to a judge (or a legislature) sentencing a criminal, to colleges using the Scholastic Aptitude Test, to automobile liability insurers setting rates. But although prediction is common, it is not always uncontroversial.

The Analogy to Genetic Predictions

The issues raised by predictions based on neuroscience are often similar to those raised by genetic predictions. Indeed, in some cases the two areas are the same — genetic analysis can powerfully predict several diseases of the brain, including Huntington disease and some cases of early-onset Alzheimer disease. Experience of genetic predictions teaches at least three important lessons.

First, a claimed ability to predict may not, in fact, exist. Many associations between genetic variations and various diseases have

been claimed, only to fail the test of replication. Interestingly, many of these failures have involved two mental illnesses, schizophrenia and bipolar disorder.

Second, and more important, the strength of the predictions can vary enormously. For some genetic diseases, prediction is overwhelmingly powerful. As far as we know, the only way a person with the genetic variation that causes Huntington disease can avoid dying of that disease is to die first from something else. On the other hand, the widely heralded "breast cancer genes," BRCA 1 and BRCA 2, though they substantially increase the likelihood that a woman will be diagnosed with breast or ovarian cancer, are not close to determinative. Somewhere between 50 and 85 percent of women born with a pathogenic mutation in either of those genes will get breast cancer; 20 to 30 percent (well under half) will get ovarian cancer. Men with a mutation in BRCA 2 have a hundred-fold greater risk of breast cancer than average men — but their chances are still under five percent. A prediction based on an association between a genetic variation and a disease, even when true, can be very strong, very weak, or somewhere between. The popular perception of genes as extremely powerful is probably a result of ascertainment bias: the diseases first found to be caused by genetic variations were very powerful — because powerful associations were the easiest to find. If, as seems likely, the same holds true for predictions from neuroscience, such predictions will need to be used very carefully.

Finally, the use of genetic predictions has proven controversial, both in medical practice and in social settings. Much of the debate about the uses of human genetics has concerned its use to predict the future health or traits of patients, insureds, employees, fetuses, or embryos. Neuroscience seems likely to raise many similar issues.

Health Care

Much of health care is about prediction — predicting the outcome of a disease, predicting the results of a treatment for a disease, predicting the risk of getting a disease. When medicine, through neuroscience, genetics, or other methods, makes an accurate prediction that leads to a useful intervention, the prediction is clearly valuable. But predictions also can cause problems when they are inaccurate (or are perceived inaccurately by patients). Even if the predictions are accurate, they still have uncertain value if no useful

interventions are possible. These problems may justify regulation of predictive neuroscientific medical testing.

Some predictive tests are inaccurate, either because the scientific understanding behind them is wrong or because the test is poorly performed. In other cases the test may be accurate in the sense that it gives an accurate assessment of the probability of a certain result, but any individual patient may not have the most likely outcome. In addition, patients or others may misinterpret the test results. In genetic testing, for example, a woman who tests positive for a BRCA 1 mutation may believe that a fatal breast cancer is inevitable, when, in fact, her lifetime risk of breast cancer is between 50 and 85 percent and her chance of dying from a breast cancer is roughly one-third of the risk of diagnosis. Alternatively, a woman who tests negative for the mutation may falsely believe that she has no risk for breast cancer and could stop breast self-examinations or mammograms to her harm. Even very accurate tests may not be very useful. Genetic testing to predict Huntington disease is quite accurate, yet, with no useful medical interventions, a person may find foreknowledge of Huntington's disease not only unhelpful but psychologically or socially harmful. These concerns have led to widespread calls for regulation of genetic testing.[3]

The same issues can easily arise through neuroscience. Neuroimaging, for example, might easily lead to predictions, with greater or lesser accuracy, of a variety of neurodegenerative diseases. Such imaging tests may be inaccurate, may present information patients find difficult to evaluate, and may provide information of dubious value and some harm. One might want to regulate some such tests along the lines proposed for genetic tests: proof that the test was effective at predicting the condition in question, assessment of the competency of those performing the tests, required informed consent so that patients appreciate the test's possible consequences, and assurance of post-test counseling to assure that patients understand the results.

The Food and Drug Administration (FDA) has statutory jurisdiction over the use of drugs, biologicals, or medical devices. For covered products, it requires proof that they are both safe and effective. FDA has asserted that it has jurisdiction over genetic tests as medical devices, but it has chosen only to impose significant regulation on genetic tests sold by manufacturers as kits to clinical laboratories,

physicians, or consumers. Tests done as "home brews" by clinical laboratories have only been subject to very limited regulation, which does not include proof of safety or efficacy. Neuroscience tests might well be subject to even less FDA regulation. If the test used an existing, approved medical device, such as an MRI machine, no FDA approval of this additional use would be necessary. The test would be part of the "practice of medicine," expressly not regulated by the FDA.

The FDA also implements the Clinical Laboratory Improvement Amendments Act (CLIA), along with the Center for Disease Prevention and Control and the Center for Medicare and Medicaid Services. CLIA sets standards for the training and working conditions of clinical laboratory personnel and requires periodic testing of laboratories' proficiency at different tests. Unless the tests were done in a clinical laboratory, through, for example, pathological examination of brain tissue samples or analysis of chemicals from the brain, neuroscience testing would also seem to avoid regulation under CLIA.

At present, neuroscience-based testing, particularly through neuroimaging using existing (approved) devices seems to be entirely unregulated except, to a very limited extent, by malpractice law. One important policy question should be whether to regulate such tests, through government action or by professional self-regulation.

Criminal Justice

The criminal justice system makes predictions about individuals' future behavior in sentencing, parole, and other decisions, such as civil commitment for sex offenders.[4] The trend in recent years has been to limit the discretion of judges and parole boards to use predictions by setting stronger sentencing guidelines or mandatory sentences. Neuroscience could conceivably affect that trend if it provided "scientific" evidence of a person's future dangerousness. Such evidence might be used to increase sentencing discretion - or it might provide yet another way to limit such discretion.[5]

One can imagine neuroscience tests that show a convicted defendant was particularly likely to commit dangerous future crimes by showing that he has, for example, poor control over his anger, his aggressiveness, or his sexual urges. This kind of evidence has been used in the past; neuroscience may come up with ways that either are more accurate or that appear more accurate (or more impressive). For

example, two different papers have already linked criminality to variations in the gene for monoamine oxidase A, a protein that plays an important role in the brain.[6] Genetic tests may seem more scientific and more impressive to a judge, jury, or parole board than a psychologist's report. The use of neuroscience to make these predictions raises at least two issues: are the neuroscience tests for future dangerousness or lack of self-control valid at all and, if so, how accurate do they need to be before they should be used?

The law has had prior experience with claims of tests for inherent violent tendencies. The XYY syndrome was widely discussed and , accepted, , in the literature though not by the courts[7], in the late 1960s and early 1970s. Men born with an additional copy of the Y chromosome were said to be much more likely to become violent criminals. Further research revealed, about a decade later, that XYY men were somewhat more likely to have low intelligence and to have long arrest records, typically for petty or property offenses. They did not have any higher than average predisposition to violence.

If, unlike XYY syndrome, a tested condition were shown reliably to predict future dangerousness or lack of control, the question would then become how accurate the test must be in order for it to be used. A test of dangerousness or lack of control that was only slightly better than flipping coins should not be given much weight; a perfect test could be. At what accuracy level should the line be set?

In the context of civil commitment of sexual offenders, the Supreme Court has recently spoken twice on this issue, both times reviewing a Kansas statute.[8] The Kansas act authorizes civil commitment of a "sexually violent predator," defined as "any person who has been convicted of or charged with a sexually violent offense and who suffers from a mental abnormality or personality disorder which makes the person likely to engage in repeat acts of sexual violence."[9] In Kansas v. Hendricks, the Court held the Act constitutional against a substantive due process claim because it required, in addition to proof of dangerousness, proof of the defendant's lack of control. "This admitted lack of volitional control, coupled with a prediction of future dangerousness, adequately distinguishes Hendricks from other dangerous persons who are perhaps more properly dealt with exclusively through criminal proceedings."[10] Id. at 360. It held Hendricks's commitment survived attack on ex post facto and double

jeopardy grounds because the commitment procedure was neither criminal nor punitive.[11]

Five years later, the Court revisited this statute in Kansas v. Crane.[12] *It held that the Kansas statute could only be applied constitutionally if there were a determination of the defendant's lack of control and not just proof of the existence of a relevant "mental abnormality or personality disorder":*

It is enough to say that there must be proof of serious difficulty in controlling behavior. And this, when viewed in light of such features of the case as the nature of the psychiatric diagnosis, and the severity of the mental abnormality itself, must be sufficient to distinguish the dangerous sexual offender whose serious mental illness, abnormality, or disorder subjects him to civil commitment from the dangerous but typical recidivist convicted in an ordinary criminal case.[13]

We know then that, at least in civil commitment cases related to prior sexually violent criminal offenses, proof that the particular defendant had limited power to control his actions is constitutionally necessary. There is no requirement that this evidence, or proof adduced in sentencing or parole hearings, convince the trier of fact beyond a reasonable doubt. The Court gives no indication of how strong that evidence must be or how its scientific basis would be established. Would any evidence that passed Daubert or Frye hearings be sufficient for civil commitment (or for enhancing sentencing or denying parole) or would some higher standard be required?

It is also interesting to speculate on how evidence of the accuracy of such tests would be collected. It is unlikely that a state or federal criminal justice system would allow a randomized double-blind trial, performing the neuroscientific dangerousness or volition tests on all convicted defendants at the time of their conviction and then releasing them to see which ones would commit future crimes. That judges, parole boards, or legislatures would insist on rigorous scientific proof of connections between neuroscience evidence and future mental states seems doubtful.

Schools

Schools commonly use predictions of individual cognitive abilities. Undergraduate and graduate admissions are powerfully influenced by applicants' scores on an alphabet's worth of tests: ACT, SAT, LSAT,

MCAT, and GRE among others. Even those tests, such as the MCAT, that claim to test knowledge rather than aptitude use the applicant's tested knowledge as a predictor of her ability to function well in school, either because she has that background knowledge or because her acquisition of the knowledge demonstrates her abilities. American primary and secondary education uses aptitude tests less frequently, although some tracking does go on. And almost all of those schools use grading (after a certain level), which others can use to make predictions within the school or by others — such as other schools, employers, and parents.

It is conceivable that neuroscience could provide other methods of testing ability or aptitude. Of course, the standard questions of the accuracy of those tests would apply. Tests that are highly inaccurate usually should not be used. But even assuming the tests are accurate, they would raise concerns. Those tests might be used only positively, as Dr. Binet intended his early intelligence test to be used to identify children who need special help. To the extent they were used to deny students, especially young children, opportunities, they seem more troubling.

It is not clear why a society that uses aptitude tests so commonly for admission into elite schools should worry about their neuroscience equivalents. The SAT and other similar aptitude tests claim that student preparation or effort will not substantially affect student results, just as, presumably, preparation (at least in the short term) seems at least as unlikely to alter neuroscience tests of aptitude. The existing aptitude tests, though widely used, remain controversial. Neuroscience tests, particularly if given and acted upon at an early age, are likely to exacerbate the discomfort we already feel with predictive uses of aptitude tests in education.

Businesses

Perhaps the most discussed social issue in human genetics has been the possible use — or abuse — of genetic data by businesses, particularly insurers and employers. Most, but not all, commentators have favored restrictions on the use of genetic information by health insurers and employers.[14] And legislators have largely agreed. Over 45 states and, to some extent, the federal government restrict the use of genetic information in health insurance. Eleven states impose limits on the use of genetic information by life insurers, but those

> *constraints are typically weak. About 30 states limit employer-ordered genetic testing or the use of genetic information in employment decisions, as does, to some very unclear extent, the federal government through the Americans with Disabilities Act.*[15] *And 2004 may well mark the year when broad federal legislation against "genetic discrimination" is finally passed.*

Bu makalede konunun biyoetik ve yasal yönü ile ele alındığı anlaşılmaktadır.

Neuroethics

Breaking a confidence. Going along to get along. Telling a “white lie” to protect a friend. Everyone facesethical dilemmas — in school, at home, and nearly everywhere in everyday life. This is no different for neuroscientists. With the tremendous advances in the field, scientists and nonscientists alike have sensed a critical turning point. Advancing knowledge about how the brain enables normal behavior; how injury, drugs, or disease affect it; and how diagnoses and treatments could change brain function raises serious and novel ethical questions.

For example, some recent brain imaging studies have sought to define areas responsible for phenomena such as deception. The post- 9/11 era has created much interest in lie detection for security purposes in screening immigrants. How should privacy be balanced with national security? Is the technology accurate enough to provide useful data upon which to base decisions? Pursuing these lines of scientific inquiry in a responsible way requires neuroscientists to examine how what they do affects the world beyond the laboratory or clinic.

This self-examination makes up a field known as *neuroethics*. Scientists and ethicists are beginning to reflect on the implications of neuroscience in areas of behavioral research such as moral reasoning and decision-making, as well as the implications of new neuroscience technologies such as brain scanning, brain stimulation, and pharmaceuticals to manipulate cognition. While many questions and methods within neuroethics are similar to those in biomedical ethics, neuroethics deals with brain-specific issues that touch no other area of science — our sense of self, our personalities, and our behavior. What’s more, brain science is developing interventions that can change the way our brains function. Neuroethics links the descriptive science — what *can* we do — with the question of what *should* we do, which is guided by individual and shared value systems.

Neuroethics is the subject of a growing body of literature and an increasing number of meetings and conferences that have attracted a wide range of thinkers, students, basic and clinical neuroscientists, economists, philosophers, journalists, sociologists, lawyers, judges, and others. Some major topics include the subjects listed below.

Personal responsibility and punishments Neuroscience is teaching us about the neural substrates of human characteristics, such as anger, impulse control, and conscience. It is also giving us insight into the brain mechanisms of conditions such as addiction and other

disorders that impair the control of behavior. These discoveries will place traditional questions of personal responsibility in a new light. Our understanding of the brain as the control center for all decisions and actions comes into direct contact with concepts of free will as the basis for personal responsibility. If the brain is the source of all action, when the brain is damaged, do we hold the person less responsible for his or her action? Does antisocial behavior itself provide evidence for a maladapted or miswired brain, or do we need physical evidence of trauma or disease? Neuroscience is interested in these questions about criminal behavior but also in the questions of how "normal" members of society create and enforce the laws that criminals violate. Some commentators think that increasing neuroscience knowledge may seriously challenge fundamental tenets of criminal law, while others foresee incremental changes that may lead to more just, accurate, and fair judgments. Neuroethics can help society think about how knowledge of the brain basis of behavior may affect our ideas of the way society *should* be.

Diagnosis, treatment, and enhancement Neuroscience already has given rise to drugs and devices, developed for the treatment of illness, that permit healthy people to improve their cognitive performance or alter their emotional states. In the future, drugs may be developed that enhance memory or alter social behaviors. It is critical that scientists engage policy-makers and society at large in discussions about the extension of treatments from the realm of illness to the realm of enhancement. Neuroethical issues in medicine arise where gaps exist between diagnosis and treatment, where treatments may offer tradeoffs in personality or cognitive changes, and where drugs or devices that can help unwell patients also can boost performance of normal people. When diagnostic tests exist for brain-based diseases that have no cure, such as Alzheimer's, how should this capability be used? Should emergency rooms administer memory-altering drugs to patients who have suffered a trauma and may be at risk for post-traumatic stress disorder? If drugs that are effective for treating attention deficit hyperactivity disorder also improve work or classroom performance of normal people, do we need to regulate access, and do we consider such use to be cheating?

Social behavior

The neurobiological basis of social interaction is now an exciting topic of research. While a major goal of such research is thetreatment of disabling conditions such as autism spectrum disorders, the knowledge gleaned may also permit us to delve into other kinds of social behavior. Already it is possible to use brain imaging to observe emotional responses to pictures of minority groups within a society. What are we to make of such information? Will it help us understand prejudice, or could it be used to influence decisions about individuals? It is critical that scientists explain the limitations of current technologies and help formulate policies to minimize the chances of misuse.

Prediction

Neuroimaging and genetic screening may enable us to predict behavior, personality, and disease with greater accuracy than ever before. Neuroimaging technology is also being researched and marketed for lie detection, with consumer targets including National security, employment screening, the legal system, and personal relationships. As individuals and members of groups, people have long been interested in predicting someone else's behavior or detecting whether or not they are truthful. Our approximately 20,000 genes are very distant from our behavior, however, and appear to act in extremely complex combinations in contributing to neural function. Neuroscience technologies that enable more accurate assessment also raise important concerns about privacy and fairness that go beyond those in bioethics. Will we be able to use imaging to measure intelligence? Empathy? Risk for violence? What degree of privacy do we expect to have over our thoughts? If someone has not yet

committed a crime but shows brain-based reactions to inappropriate stimuli, such as pictures of children, would we require further monitoring or even preventive detention? The neuroimaging Detection of lying has the potential for a major impact on society but will require careful controls and years of research. People lie for different reasons under different circumstances, not all lies cause harm, and even brain correlates of deception will never give us an Objective determination of "truth." Predicting individual behavior and determining truthfulness will be major areas of research in neuroimaging and behavioral neuroscience in the coming years, and Neuroethics will face many challenges as technologies evolve. Informed consent in research Special care must be taken when scientists seek consent to conduct research and throughout experiments, when individuals have thinking or emotional impairments that might affect their decision- making capacity. Consent is an ongoing process that should involve education of the potential research participant and, when appropriate, family members. Researchers are discussing potential needs to exercise greater scrutiny, ensure safeguards, and enhance participants' grasp of a study, including risks and benefits. Effective and ethical science communication and commercial enterprise Neuroethics will draw from the experience of bioethics in handling scientific communication with the media and responsible transfer of knowledge from basic science to profit-driven venture. A major concern for neuroethicists is the degree to which the media and the public fascination with neuroscience can lead to overstatements and inaccuracies in media communication. Early studies have shown that neuroscience information and pictures of brain images lend excessive credibility to scientific statements in the media, which may underscore "neurorealism" — the idea that anything neuroscientific must be definitive and true. The powerful allure of neuroscience may also entice commercialization of neurotechnologies before full understandings of the risks, benefits, and limitations of the science are in hand. Neuroethics has a critical role in protecting the integrity of neuroscience by Promoting responsible and accurate scientific communication in the media, appropriate oversight of commercialized neurotechnologies including accurate advertising, and proactive communication in the popular media to promote public discussion of ethical, social, and legal issues arising from neuroscience knowledge and technology.

At this stage, the field of neuroethics raises more questions than answers. It poses challenges to scientists, ethicists, lawyers, policy-makers, and the public to work through the social implications of new discoveries. The issues are too broad-based to expect that scientists alone will supply the answers. But neuroscientists are well positioned to help shape and contribute to the debate and discussion.

One of the hallmarks of neuroscience has been the drive toward integrating information from disparate fields and specializations to increase knowledge. Sorting through the complex issues captured under the umbrella of neuroethics provides an important opportunity for informed and rich discussions among scientists and with the public. Continuing study of neuroethics will help all segments of society deal with the challenges posed by emerging technologies that investigate the brain and how it works.

Yorum

Beyin tetkik olarak sağlıklı iken, nasıl patolojik davranışlar olabilir? Ayrıca, beyinde kanama varken, nasıl normal davranışlar içinde olur? Belirli lezyon saptanmamışken, neden epilepsi geçirilir? Bu verilerin beyin bulgu ile işlevlerinin farklı ele almasını gerekli kılmaktadır. Tanı, tedavi ve izlem bu açıdan önemli boyuttadır.

Kalıpsal ve bilgisel yaklaşım yerine, bireye bakılarak, onunla empati yapılarak yaklaşım yapılması gereklidir. Veri analizi bireye göre yapılmalı, bilimsel yaklaşım iinde olunmalıdır. Tedavi önünde tedbir ve izlem gelmelidir.