

Neuroscience in court. The criminal responsibility of the mentally ill

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I. Introduction

- Neuroscientific Revolution: “Neurolaw”

→ Civil law (end of life issues: evidence of consciousness, child custody cases: evidence of abusing, disability benefits: evidence of pain, selection of future employees)

→ Criminal law

Neuroscience and criminal law

- Investigation stage (Lie detection?)
- Ascribing responsibility
- Punishment – Evaluation of dangerousness
- Prediction of future criminal behavior

General Issues:

- “My brain made me do it”: The end of responsibility?
Threat for the traditional legal system (Green, Cohen 2004)
- Mad or Bad? Crime as a disease
Psychopathology of crime

Specific question:

→ In what way does neuroscience help us to assess the criminal responsibility of the mentally ill?

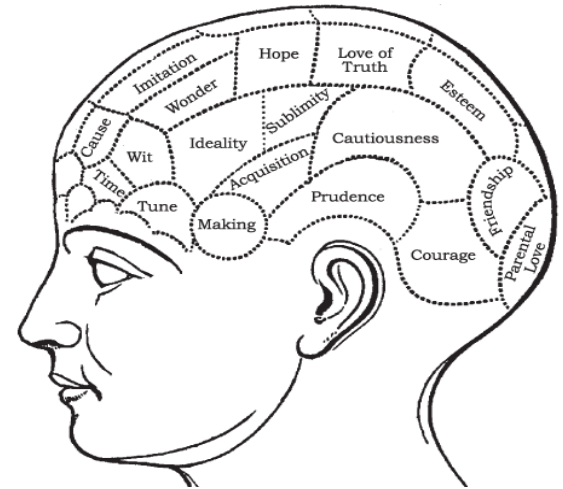
II. Brain sciences, Mental Illness and Criminal Law: An old story

Three movements in history of law and brain sciences

- 1. Phrenological studies**
- 2. Lombrosian Theory**
- 3. Psychointervention**

1. Phrenological studies of criminal behavior (late 18th and early 19th century)

Phrenology: study of the shape of the skull as indication of mental abilities and character traits



- Serious impact of phrenology on the criminal law in the US and Europe
 - Jurists used phrenology to separate the criminal from the insane
 - Expert phrenology testimony introduced in mitigation at sentencing

- Farrer v.State, 1853 murder case (2 Ohio St.54, 54 (1853)

Ohio Supreme Court turned to phrenology to prove that the defendant was not guilty of poisoning a young boy by reason of her insanity

“The housekeeper was remarkably ugly; such a shape of the skull was unfavorable to the usual presumption of sound mind and full capacity”

- Phrenology provided scientific explanations for insanity and criminality, previously interpreted as signs of sins.
- It offers the first manifestation of a neuropsychological theory in that it set out certain assumptions fundamental to present-day neuropsychology (Rafter, 2005).

2. Lombroso and Biological criminality (late 19th - early `20th century)

Cesare Lombroso (1835-1909): Interest in the physiognomical characteristics of the mentally disturbed

Concept of atavism: Criminals represent a reversion to a primitive type of man characterized by physical features reminiscent of apes, lower primates, and early man.

“Physical stigmata”: prognathism, sloping forehead, asymmetry of the head and of the cranium, ears of unusual size, excessive length of arms



Lombroso placed criminals into two categories, each of which had three subcategories (Fleming, 2000).

The first category includes the Born Criminal, the Insane Criminal and the Epileptic Criminal.

Although "Insane criminals" bore some stigmata, they were not "born criminals", but became criminals as a result "of an alteration of the brain, which completely upsets their moral nature" .

Lombroso suggested that the first category of criminals should not be held accountable for their actions, as they were prevented from exercising their free will. Accordingly, punishment should be imposed only on those who committed crime by choice and therefore could be deterred by punishment.

3. Psychointervention (20th century)

Psychointervention: any surgical procedure on the brain to relieve mental disorders, especially lobotomy and electrode implanting.

Criminal violence is caused by the perpetrator's disordered neurobiology. Brain function is an important determinant for abnormal and violent behavior.(Mark and Ervin, 1970)

→ people convicted of crimes should have psychosurgery in order to be cured

Violence is a public health problem, proposals for rehabilitating programs of “young but violent” prisoners.

In 1968, psychosurgery operations were performed on three violent prisoners, at the California Medical Faculty at Vacaville

In all three of these movements:

- Theory of cerebral localization. In all three of them. Idea that abnormal, asocial, or criminal behavior can be tracked down to a specific part of the brain and thus, eliminated when spotted.
- While these movements started in asylums, as theories of neurology and psychiatry, they soon made inroads to criminal law (Pustilnik, 2008) and were largely used in prisons and penitentiary facilities in order to “treat” violence and abnormal behavior:

III. Neuroscience, criminal responsibility and mentally ill offenders

The problem:

At present, courts rely largely on behavioral assessments to decide whether someone suffers from a mental disorder/diminished capacity to understand right or wrong etc

→ some criminals might deceive their psychologists.

The promise of Neuroscience:

to detect defects in rationality/mental state of the offender under which they committed the crime

The question:

→ In what way does neuroscience help us to answer a legal question, i.e how to assess the criminal responsibility of the mentally ill? “Hard evidence” of neuroscience v. “soft data” of psychiatry?

Law and Responsibility

❑ The law's view of responsibility

Law's view of the responsible person: a conscious creature capable of practical reason, an agent who acts on intentions that are the product of the person's desires and beliefs. Assumption that all acts are voluntary and that every man has sufficient mental capacity to be responsible for his crimes.

The law treats persons as intentional creatures and not as mechanical forces of nature.

❑ The exception of the mentally ill

Even if the agent is prima facie fully responsible, he may be not criminally responsible if an *excusing condition such as legal insanity* was present when they committed the crime

Two different assumptions/goals:

- Justice/Law : every adult is responsible for their acts – presupposes a certain kind of free will. Goal = justice and social safety
- Psychiatry: complexifies this logic - introduces a deterministic element. Goal = prevention and treatment of mental disorders.

Criteria for criminal responsibility

Criteria for criminal responsibility:

- a) Prohibited Act – Actus reus
- b) Mental states – Mens rea
- c) Absence of an affirmative defence:
 - Justification ,eg self-defence
 - Excuse→ eg legal insanity, coercion

All affirmative defences of justification and excuse involve an enquiry into the person's mental state.

The law holds most adults responsible for most of their conduct and genuine excusing conditions are limited. Insanity pleas were meant to be the exception, not the norm. They were meant to protect those very extreme cases where an individual truly has no conception of actions and consequences.

Facts we learn about brain could provide useful information about **mental states** and could be potentially helpful to resolving questions of criminal responsibility.

- -Assumption that brain states can tell us things about the mental states.

Criteria for the Excusing Condition/legal insanity: Various jurisdictions

M'Naghten Rule

Because of a *defect of reason*, attributable to a *disease of the mind*, (this has to be established), the defendant

- a) did not know the nature and quality of her act (eg insanity automatism pleas: unaware of the physical aspects of what they were doing)
- b) did not know that what she was doing was wrong (did not know that her actions were against the law)

❑ The example of the Swiss penal code

Art. 19: Absence of legal responsibility due to a mental disorder and diminished responsibility

1 If the person concerned was unable at the time of the act to *appreciate that his act was wrong* or to *act in accordance with this appreciation* of the act, he is not liable to prosecution.

2 If the person concerned was only partially able at the time of the act to appreciate that his act was wrong or to act in accordance with this appreciation of the act, the court shall reduce the sentence.

Two elements of the excusing condition:

- Lack of some cognitive capacities. They do not understand that what they did was wrong (rationality defect)
- Or they understand it but cannot resist against it (volitional factor)

→ No explicit reference to « mental disorder »

→ Concept of diminished responsibility

What room for neuroscience to intervene?

- Does not have to establish the existence of a mental disease
- Could be used as a mitigating reason resulting in diminished responsibility

Neuroscientific evidence as proof of the excusing condition.

Defense is bringing into court:

- neuroscientific data that depict a brain “abnormality”
- previous scientific researches according to which this abnormality is related to a deficit in rationality, the inability to control oneself, a reduced mental capacity, etc.

Goal: to prove irresponsibility or reduced responsibility (by reason of insanity)

Role of the Expert

Not an adversarial system → The expert is hired by the court, when there is:

Art. 20: Doubt as to legal responsibility

If there are serious grounds for believing that the accused may be legally responsible due to a mental disorder, the investigating authority or the court shall order a specialist report from an expert.

→ The expert has to express his opinion on:

a) Responsibility

i) evaluation of cognitive capacities (ability to reason)

ii) evaluation of volitional capacities (ability to control impulses, emotions and motivations)

a) Dangerousness and danger of recidivism

b) The kind of security or therapeutic measure, that should be imposed, if needed

→ The expert should not express his opinion on

a) Whether the defendant is guilty or not

b) The sentence to be imposed

2.Court Cases involving Neuroscience as evidence of diminished responsibility

The Brian Dugan case – Sentencing Hearing (2009)

- In 1983, Brian Dugan kidnaps, rapes and beats to death 10-year-old Jeanine Nicarico in Illinois.
 - In 2002, a DNA test linked him to the murder. Dugan was already serving two life sentences for the rape and murder of a 27-year-old nurse and a 7-year-old girl. He pleaded guilty in 2009 and was put to trial facing the death penalty.
 - Defence hires Kent Kiehl, a specialist on psychopathy, to do a psychiatric evaluation. Kiehl uses among other means, fMRI scans of brain activity for examining the brains of psychopaths.
- Dugan's case becomes the first in the world to admit fMRI as evidence

- **Kiehl's testimony:**

Kiehl: Psychopaths suffer from deficits in their paralimbic system, a network of brain structures associated with memory and the regulation of emotion

On a screen, Kiehl projected a brain diagram with X's marking the areas in the paralimbic system where Dugan's brain had the low-grey-matter density characteristic of the psychopaths he had studied.

The paralimbic system involves the orbital cortex above the eyes and the amygdala deep in the brain and it is related to decision making and ethical behavior.

This is what Kiehl calls the "emotional circuit", which puts a brake to amygdala which control fear, anger and violence.

“The brakes don't work”

→ impulsivity and inability to feel remorse or empathy, to make appropriate moral value judgments.

Defence:

Dugan was born with a mental illness — psychopathy— that should be considered a mitigating factor because it impaired his ability to control his behavior.

Dugan was able to distinguish right from wrong but was incapable of making the right choices.

“Someone should not be executed for a condition they were born with, because it’s not their fault”

Jury decided for the death penalty

The law does not excuse psychopaths, even those whose psychopathy is clear and severe. Psychopathy is not a legally sufficient basis to raise an insanity defense or any other excuse.

Psychopaths are not excused because they do possess many rational capacities. They usually know the facts and are generally in touch with reality, they understand that there are rules and consequences for violating them

Remarks:

- Timing: Kiehl scanned Dugan 26 years after he killed Nicarico. The scan does not necessarily indicate Dugan's mental state when he committed his crimes
- fMRI studies are small and compare differences in the average brain activity of groups, rather than individuals, making it difficult to interpret for single cases.
- How do the abnormalities in the brain translate to the psychopath being "less culpable"
- Translate this neuro-evidence into the legal criteria. How does the brain dysfunction translate into "he didn't know right and wrong" or "he couldn't form the intent to act?"

Stefania Albertani case (2011)

Stefania Albertani pled guilty in 2009 to having killed her sister, burned her corpse and attempted to kill her parents.

Albertani was initially sentenced to lifetime imprisonment

Psychiatric reports reached opposite conclusions, so the defense brought in a new team, that added neuroimaging and genetic analyses.

Experts:

- **Behavioral analysis and memory tests:** These tests revealed memory deficits, which suggested the presence of a dissociative identity disorder
- **Neuroscientific techniques:** EEG and VBM (VoxelBasedMorphometry). Albertani's grey matter volume in the imaging scans is different from that of a control group – 10 healthy women – in the Anterior Cingulate Gyrus and insula areas, among others. Changes in the ACG have been linked to reduced inhibition and to the processes that regulate truth-telling; insula changes have been linked with aggressive behaviour.
→ *“These alterations have to be considered in causal relation with the psychiatric symptomatology of the murderer”*
- **Genetic Tests:** Presence of a genotype related to the MAOA-uVNTR polymorphism. Persons that have this genetic pattern and are raised in antisocial contexts – prone to aggressiveness. Indicative of Albertani's predisposition to act aggressively and compulsively.

The Decision:

- The Court of Como found the accused guilty but only partially responsible, mitigating the sentence from 30 to 20 years imprisonment, of which at least 3 years are to be spent in a mental hospital.
 - The judge interestingly emphasizes modern psychiatry's difficulty in recognizing mental insanity, in defining precise diagnosis of mental pathologies, and in evaluating personal abilities to distinguish between right and wrong. The traditional psychiatric approach, based on behavioral studies, is not going to be replaced by neuroscience and genetics, but instead will be integrated with these fields.
 - This case does not introduce a new deterministic method of inferring direct conclusions about criminal behavior from brain morphology.
- “Brains are automatic, rule-governed, determined devices, while people are personally responsible agents, free to make their own decisions”

III. Neuroscience as a tool for Criminal Responsibility assessments: some problems

- **Scientific Difficulties:**

Admissibility of Neuroscience in court? A very young science.

- Theory of localization of basic brain function is not precise.
- fMRI scanning: Correlations and not causation proved between a brain area and cognitive actions. The latter activate broadly distributed regions of the brain, not a sharply demarcated area.
- Individual variation in brain structure is enormous. Research conducted in groups of people. We cannot generalize.
- “Seeing is believing”: Persuasive power of brain images themselves could lead scientifically untrained jurors to take biased decisions

Legal Difficulties:

- **Timing**: what is crucial for law is the mental state of the offender *at the time of the crime*. Brain scans take place long after the crime, like in Dugan's case.
- **Causation**: The brain lesion by itself does not prove anything. What needs to be proved is a causation between the lesion and the specific criminal behavior.
- **« To explain is not to excuse »** Even then, causation by abnormal biological variables does not create per se an excusing or mitigating condition. It provides only evidence as to whether an excuse existed. Any excusing condition must be established independently. :
- **«Brains do not commit crimes, people do»**. Criteria for legal responsibility are behavioural. Ascribing responsibility is a normative act, a social, moral and legal question .

- Assumption that mental states are nothing but your brain states,” Brain supposedly causes all behavior, but what kind of “causation”? Explanatory gap between brain states (described by neurosciences) and mental states (that interest the law). Consciousness and human experience cannot be fully explained just by identifying the corresponding physical neural processes.
- Mad or bad: The problem is conceptual not just epistemic. Whether we call something a disease or a mere difference is a norm setting rather than a fact-finding issue.
- Violence and crime are social and legal constructions and cannot be explained exclusively on the biological-neurological level.
- Use of neuroscience evidence in court: a double edged sword for mentally ill people. Not always exculpatory. Neuroimaging results used by defense as mitigating factors could also be used by prosecution to demonstrate future dangerousness and lead to convictions and long sentences.

Neuroscience as a double edged sword: An example from the swiss law

Two main categories of criminal sanctions:

Sentences and Measures

- Sentences: Imposed for a prescribed period of time. Presuppose responsibility
- Measures: their duration is not based on the fault of the offender, but on the intended purpose of the measure. In principle, measures should only last as long as is necessary to avert the risk of reoffending and only where there are strong prospects of success.
 - Therapeutic Measures: Intended to treat
 - Security Measures : primarily intended to ensure public safety

Two main categories of criminal sanctions: Sentences and Measures

A security measure: Life Incarceration Art. 64a

1bis The court shall order indefinite incarceration if the offender has committed murder, intentional homicide, serious assault, robbery, rape, indecent assault, false imprisonment or abduction, hostage-taking, trafficking in human beings, genocide, or a felony under the heading of crimes against humanity or war crimes and if the following requirements are met:

- a. the offender, by committing the offence, caused or intended to cause serious detriment to the physical, psychological or sexual integrity of another person.
- b. There is a high probability that the offender will commit one of these felonies again.
- c. The offender is assessed as being **permanently untreatable**, as the treatment offers no long-term prospect of success.

Art. 64c1: Consideration of release from indefinite incarceration and parole

¹ In cases of indefinite incarceration under Article 64 paragraph 1^{bis} the competent authority shall consider ex officio or on application **whether there are any new scientific findings that lead to the expectation that the offender can be treated so that he will no longer pose a risk to the public.** It shall decide on the basis of a report from the Federal Commission for the Assessment of the Treatability of Offenders subject to Indefinite Incarceration.

→ Solely on this proof will the case of the defendant be reevaluated – problems with ECHR, art 5.

“any new scientific findings that lead to the expectation that the offender can be treated so that he will no longer pose a risk to the public”

→Neuroscientific findings?

Could recent neuroscientific findings, techniques, knowledge suggest new ways of treatment and evaluate the dangerousness/risk of recidivism of an offender?

Neuroscience as a double edged sword

- ❑ Responsibility assessment stage: neuroscientific evidence = causes empathy, could be used as a mitigating circumstance which would result in diminished responsibility or even acquittal of the defendant.
- ❑ Sentencing phase: Neuroimaging results showing a malfunctioning brain could be used as an indicator of the dangerousness of the accused and could influence the criteria that courts use in imposing a sentence. Judges could be increasingly led to make their decisions in accordance with the moral correlates shown in the brain scans of the defendants, which could potentially result in long sentences, based on the assumption that some damaged brains will only force their owners to offend again..

Does Neuroscientific evidence constitute hard evidence (compared to the «soft data» of psychiatry), capable of proving mental illness and diminished responsibility / irresponsibility?

Not there yet.

For the time being, since law's criteria for criminal responsibility are mainly behavioral, the role of neuroscience is limited to supporting evidence from the behavioral level and confirm what behavioral science studies have already shown.

A constant work of translation is needed from scientific to legal language.

Neuroscience might press the rather loose and incoherent ideas of responsibility that courts employ.