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The Good, the Bad, and the Brain

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The Good, the Bad, and the Brain: Theory and History of the Neuroscience of Morality

PhD thesis

to obtain the degree of PhD at the
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Rector Magnificus Prof. E. Sterken
and in accordance with
the decision by the College of Deans.

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Introduction

See the psychopath. He lies motionless. His head is fixed. His feet protrude from a futuristic tube. Bursts of noise bang rhythmically. Stimuli flicker before his eyes. He responds by pressing a button in his hand. He is in a neuroimaging laboratory. His immoral behavior has brought him here. He is here because he is special – that is, because his brain is special... Brian Dugan was such a psychopath in a brain scanner – and a rapist and a murderer. During his trial in 2009, neuroscientist Kent Kiehl testified that Dugan’s neuronal activation patterns resembled those of other psychopaths. Was Dugan suffering from neurological disorder? Was this a mitigating factor? Did his brain make him commit his crimes? The prosecution’s rebuttal witness, psychiatrist Jonathan Brodie, disagreed, stating that the application of neuroimaging evidence in the courtroom was “a terrible leap” (Hughes, 2010 p. 342). The jury deliberated for ten hours and then decided unanimously: Dugan was found guilty and was sentenced to death. Yet Dugan’s defense attorney Steve Greenberg remarked that “[w]ithout the brain imaging stuff the jury would have been back in an hour” (G. Miller, 2012 p. 788). Commenting on the case, legal scholar Stephen Morse observed: “Brains don’t kill people. People kill people.” (Hughes, 2010 p. 342).

Modern neuroscientific methods and technologies offer new perspectives on an intriguing and elusive object of research: morality. Currently, neuroscientists scan psychopaths’ brains, study the effects of neurotransmitters on moral cognition, temporarily interrupt neuronal networks associated with moral decision-making, and research immoral conduct in patients with distinct brain lesions. Recently, a science that confidently calls itself *neuroscience of morality* has emerged. Neuroscience of morality integrates findings, methods, and theories from a range of disciplines and research fields in order to study the neurobiology of moral mind and behavior. Predicated on the rationale that good and evil are essentially functions of the brain, the insights offered by this nascent science are fascinating and puzzling at the same time. As the

controversy around Brian Dugan's trial suggests, neuroscience's implications for penal evaluation, criminal law, and legal policy could be momentous. Accordingly, new academic fields – such as neurolaw or neuroethics – sprouted, which aim to analyze the science's legal and ethical ramifications.

Perhaps because of its alleged revolutionary potential, the neuroscience of morality sparked extensive analysis and opposition – from within and without the discipline. Neuroscientists critically assess their colleagues' studies and relativize their claims. Philosophers, historians, jurists, anthropologists, and sociologists analyze neuroscience's inroads into moral territory. Harsh criticism is voiced against the neurobiologization of vice and virtue. The upshot is a heated debate about the potentials and limitations of neuroscience and its implications for normative discourses.

This controversy is of long standing. Though modern neuroscience of morality is comparatively young and its proponents often describe it as unprecedented, the scientific search for the somatic origin of good and evil has a long history. Phrenologists, brain anatomists, criminal anthropologists, social Darwinists, and biopsychiatrists explored the physiology of morality over the course of the last two centuries. Their science yielded descriptions of moral brain centers, murder cells, and postencephalitic moral insanity. These somatic understandings challenged established notions of morality and caused disputes in the academy, the courtroom, and society at large. The science of the moral brain ignited controversy – then and now.

The modern structure of the neuroscience of morality is built on old foundations. At times, the legacy of bygone eras is still visible: Ancient notions, old theories, and past scientists' arguments linger on. Current research sometimes capitalizes on this inheritance, sometimes ignores it, and sometimes rejects it. Constancy and change characterize the historical trajectory of the science of the moral brain. Understanding the continuation of the past in the present and knowing which

elements disappeared over time allows for valuable insights into the current science and its conflicts. In light of this, it is surprising that there has only been little historical research on the subject. Somatic morality appeared in the context of several historical works (e.g. Becker, 2002; Rafter, 2008; Richards, 1987; Wetzell, 2000), but the science of the moral brain has escaped historians' attention so far – with one noteworthy exception. Jan Verplaetse's (2009) seminal book "Localizing the moral sense: Neuroscience and the search for the cerebral seat of morality, 1800-1930" comprehensively covers the nineteenth century, but fades out in the 1930s.

Against this backdrop of an emerging neuroscience of morality, smoldering controversy, and a scarcity of historical research, this dissertation asks the following question: When, why, where, how, in which contexts, and with which consequences was morality in the brain researched? The dissertation consists of five independent scholarly discourses which have been published or were submitted for publication in scientific journals. The five chapters address different topics, contexts, and periods in theoretical and historical perspective. The chapters explore how the moral brain was known and made knowable, how it emerged and developed, and how it framed people and societies and was framed by them. The aim throughout is to elucidate the past in order to render the present intelligible.

Before elaborating on the structure of this dissertation, a few qualifications are necessary. First of all, the term morality is ambiguous. Its meaning is highly complicated, context-dependent, and subject to historical change. In the past and present, brain scientists used the term in a variety of ways, describing cunning, deceitfulness, disinhibition, aggression, criminality, promiscuity, alcoholism, and so on. These conceptualizations clarify that the search for cerebral morality proceeded most of the times by studying its opposite: immorality. For example, researchers observed immoral conduct in patients with distinct brain lesions and then inferred that the destroyed areas must be involved in upholding moral conduct in healthy

individuals. Only in recent years, neuroscientists turned to studying morality (or its aspects) per se. However, ambiguity persists. Accordingly the term morality is used in this dissertation in a broad sense – that is, as the experts used it themselves. Moreover, there is no such thing as a moral brain. Brain scientists researched constituents and facets of morality, rarely ascribing moral agency to their object of research, but rather focusing on intricate neurobiological phenomena (somehow) related to morality. The specific relation of – for example a moral brain center – to morality as such was frequently not elucidated. The interplay between the cerebral and the ethical often remained unclear. Hence, the moral brain is a notion representing a set of assumptions, methods, theories, practices, and research agendas. The moral brain embodies – and at times epitomizes – all of the above, however it is not a clear-cut scientific entity. Finally, research on said moral brain was scarce. In the past, scientific studies on the subject were a curiosity and speculations on it usually appeared in the context of other research questions. Experts who ventured to trace morality in the brain were frequently criticized by their colleagues. The critics' main argument was that investigating right and wrong lay beyond the capabilities and scope of brain science.

The first chapter picks up on this argument by providing an historical overview over when, where, and how the brain has been invoked in the study of morality. The chapter analyzes the epistemic and conceptual labor necessary in operationalizing morality for neuroscientific means. It shows how morality is located, translated, and defined in order to make it accessible and assessable in terms of the brain. Neuroscientific methods, technologies, and theories are not neutral tools, but make demands of their object of research. The historical and theoretical analysis clarifies that neuroscience shapes its object of research according to its needs, yielding a specific concept of morality.

The second chapter scrutinizes bio-psychiatric frames for immoral persons at the end of the nineteenth century. Five exemplary cases of immoral persons are described in the context of the respective bio-psychiatric theories. The chapter shows how these misdemeanants were rendered as immoral and insane due to a disordered brain and discusses the consequences of this framing in terms of moral agency and legal responsibility. Moreover, a current case is used to illustrate constancy and change in biological understandings of immoral persons.

The third chapter traces a specific localization of morality in its particular historical context. In the 1930s, the German neuropathologist Karl Kleist pinpointed what he called the *Gemeinschafts-Ich* (community-I) in the prefrontal cortex of the brain and claimed that this was the cerebral seat of morality. In doing so, Kleist made use of the localization doctrine – that is, the idea that the brain is divided into different functional units. Contemporaries launched scathing criticism at Kleist, among other things, for applying the outmoded localization doctrine. Nevertheless, the *Gemeinschafts-Ich* lived on over the following decades and was reshaped in accordance with theoretical shifts in brain science. The chapter clarifies the dependence of research on morality on general theories of brain functioning.

The fourth chapter analyzes the study of immorality through the eyes of a neuroscientific research tool: electroencephalography (EEG). It presents a history of early EEG research on psychopathy, delinquency, and immorality in Great Britain and the United States in the 1940s and 1950s. Then, uncertainty and dissension pervaded EEG research on misdemeanants. The analysis shows that knowledge production, calibration of the novel research tool, and the establishment of credibility for the new technology occurred simultaneously. The chapter concludes with a reflection on the past and present of the brain science of morality, arguing that persistent methodological and theoretical problems already inherent in early EEG research call the merit of modern neuroimaging technology into question.

This fifth chapter takes scientific knowledge on somatic immorality as a vantage point in order to assess its formative power on normative practices in historical and contemporary contexts. Several historical examples of acting on somatic immorality are discussed: Penal reform debates in Germany (1880s – 1940s), the British Mental Deficiency Act of 1913, and endocrinology and psychosurgery of criminality (USA 1930s and after). A focused analysis of the fertility of bio-criminological knowledge for therapeutic or punitive action and policy formation is provided, with the aim of understanding the mutual constitution of the epistemic and the normative in bio-criminological discourses. Moreover, the present discussion on biomarkers for criminality is put into historical perspective. The analysis suggests that the respective knowledge (that is, how it was framed) determined how somatic immorality was acted on: How immorality was deemed to be materialized in the body or brain partly predetermined attempts to control it. In the course of history, concepts for somatic immorality became more complex and elusive. Policies aimed at treating, policing, and legislating immoral bodies or brains mirrored this development. Subsequently, the chapter argues that in the past and present the political, economic, and social context co-determined whether or not somatic immorality was acted on. In closing, the chapter critically discusses the political potential of bio-criminology to function as a foundation for making and managing society by generating, rationalizing, and justifying interventions and policies.

The theme of the good, the bad, and the brain ties the five chapters together. In general, all of the chapters examine epistemological issues arising when experts turned to the brain to testify on morality. This focus on knowledge production and related discourses – that is, epistemic versions of reality and the corresponding normative practices (Cf. Smith, 1981 p. 10) – reflects my personal interests. Putting issues of epistemology in the center of the stage, selecting related plots, and choosing adequate protagonists entails leaving other actors and stories behind the curtain.

Accordingly, this dissertation offers a mere selection of different historical trajectories and possible modes of analysis. Multiple histories of the good, the bad, and the brain could be written.

This dissertation took inspiration from a mixture of methods and theories and from the works of several notable historians and theorists of science. Specifically, it draws on historical epistemology, historical ontology, as well as ideas from science and technology studies and the sociology of knowledge (Daston & Vidal, 2004; Hacking, 2002; Jasanoff, 2004; Rheinberger, 2007; N. Rose, 2007). The result is an informed historical narrative on the neuroscience of morality. After engaging for several years with the plethora of sources and the vast array of possible interpretations, I have come to realize that my historical account is but a mere approximation – or as one of the writer Julian Barnes’ (2011 p. 17) characters put it (perhaps somewhat hyperbolically): “History is that certainty produced at the point where the imperfections of memory meet the inadequacies of documentation.”

