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### The Good, the Bad, and the Brain

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## Chapter 5

### Acting on somatic immorality – Bio-criminological knowledge, action, and order in the past and present

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#### **Abstract**

By taking scientific knowledge on somatic immorality as a vantage point, this paper examines historical and contemporary contexts in which bio-criminology has been utilized for determining therapeutic and punitive action as well as socio-political order. Penal reform debates in Germany (1880s – 1940s), the British Mental Deficiency Act of 1913, endocrinology and psychosurgery of criminality (USA 1930s and after), and the present discussion on biomarkers for anti-sociality are discussed. Based on these examples, the analysis suggests that how immorality was deemed to be materialized in the body or brain partly predetermined attempts to control it. Moreover, 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. Finally, the paper analyzes the mutual constitution of epistemic and normative discourses and takes a stance against founding ethical and legal principles on bio-criminology.

## Introduction

“His counsel [...] requested that his client be permitted to enter a hospital to have a prefrontal lobotomy performed in an attempt to cure the prisoner of his criminal tendencies.” (Mayer, 1948 p. 576)

Millard Wright was a burglar. During his trial at the zenith of psychosurgery in the 1940s, a surgeon suggested an unusual measure: a brain operation to remedy his criminality (Koskoff & Goldhurst, 1968). The procedure was experimental. It lacked theoretical and empirical support. In fact, there were reports of patients turning immoral after similar surgery (Golla, 1946; Malone, 1947). Yet operating on the criminal's brain seemed promising: If criminality had a cerebral origin, then it must be amenable to surgical treatment. A prefrontal lobotomy was carried out, destroying parts of Wright's brain. He appeared unaltered after the operation, reoffended, and later killed himself while incarcerated. Psychosurgery for criminals was rare and highly controversial (Pressman, 1998; Valenstein, 1986). However, the intervention on Wright's putatively immoral brain is a case in point for acting on somatic immorality.

Conceptualizations of immorality as physiological dysfunction and attempts to govern it as such have a long past (Rafter, 2008; Verplaetse, 2009). In several historical contexts, neurobiological knowledge facilitated therapeutic or punitive procedures on immoral persons' bodies or brains and functioned as evidence-based justification in socio-political debates. Presently, a growing neuroscience of morality investigates vice and virtue, proclaims a revolution in understanding criminality, and calls for a major overhaul of the legal system. Recently reasoning based on developmental neuroscience featured in a US court ruling which repealed the death penalty for a juvenile offender (Snead, 2007). In other court cases, experts used neuroimaging evidence to explain criminal behavior as the result of brain dysfunction with the aim of exonerating the accused (Schirrmann 2013a; Farisco and Petrini 2014). Suggestions

for population-wide screening for biomarkers for anti-sociality and visions of eugenic futures surface (Raine, 2013). Proponents of neuroscience and bio-criminology welcome the application of neurobiological evidence, methods, and arguments in normative questions and assert that their sciences can (or will soon be able to) function as foundation for moral codes, criminal law, and the penal system (Gazzaniga, 2005; Sinnott-Armstrong, 2008). These ideas are met with strong opposition. In general, the growing impact of neuroscience on understanding being human and organizing society has been critically discussed and – at times – flatly rejected across disciplinary boundaries (Choudhury & Slaby, 2012; Ortega & Vidal, 2011; Pickersgill & van Keulen, 2011; N. Rose & Abi-Rached, 2013). Ethicists and legal scholars antagonize neuroscientists and bio-criminologists inroads into moral and legal territory. In particular, the founding of normative practices and principles on provisional scientific findings has generated dispute (Singh, Sinnott-Armstrong, & Savulescu, 2014). In light of this controversial interplay of what is and what ought to be, the potential of knowledge to function as fundament for action and order merits analysis.

Generally, the entanglement of knowledge, action, and order has been concisely described as follows: “The ways in which we know and represent the world (both nature and society) are inseparable from the ways in which we choose to live in it” (Jasanoff, 2004 p. 2). Scientific knowledge can constitute social worlds and justify actions in them. In short, knowledge orders: it arrays and it commands. It can be used and abused. It can pre-structure or frame phenomena idiosyncratically, suggesting or determining certain ways of dealing with them. Yet, knowledge can also be ignored; since it merely affords the “capacity for action” which “may remain unused and dormant” (Grundmann & Stehr, 2012 p. 114). Historical research repeatedly demonstrated that the acceptance of knowledge is contingent on social, political, and economic factors – and not solely on the quality of the science behind it (Alder, 2007;

Bunn, 2012). For example, knowledge – however provisional, contested or spurious it may have been or seem now – served as rationale for the oppression of women, the implementation of eugenics, and the reshaping of mental health law (Daston, 1992; Pickersgill, 2013; Weindling, 1989). Correspondingly, ideas on natural order, human nature, and socio-political organization have been found to be mutually constitutive and historically in flux. Often, the descriptive and the normative appeared inextricable (B. Barnes & Shapin, 1979; Daston & Vidal, 2004; Jasanoff, 2012; N. Rose, 2007).

Against this theoretical and historical backdrop and in view of the ongoing dispute, this paper asks the following question: How has knowledge on somatic immorality undergirded normative principles, practices, and policies in the past and present? While acknowledging the inextricability of knowledge, action, and order, this paper takes scientific knowledge as a vantage point to analyze its role as foundation for therapeutic and punitive action and legal and political order. The twofold meaning of *acting on* is used to conceptualize this dual function of knowledge: First, acting in the light of or according to somatic immorality – that is, as if immorality in the body or brain were real, true, and factual. This facet of *acting on* captures the utilization of knowledge to provide ostensibly evidence-based arguments for altering mental health and penal legislation. Second, impacting on or interfering with somatic immorality – that is, practices which police and intervene in putatively immoral bodies or brains. This refers to how scientific knowledge rendered immorality, delinquency, and anti-sociality as corporeal or cerebral dysfunction and thus laid the fundament for physiological interventions. In this context, the specific framing of somatic immorality is momentous because it suggested a specific locus for intervention (see Rosenberg & Golden, 1989 on framing). Thus, the double meaning of acting on somatic immorality aptly captures the fertility of knowledge, action based upon it, and order constructed in light of it. 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). The goal is not a meticulous reconstruction of the respective historical periods; rather the aim is to explore different structures and implications of frames of somatic immorality. Based on these sketches of the past, the epistemic foundations and normative implications of current biomarkers for criminality are put in historical perspective. The overall analysis suggests that the specific framing of somatic immorality determined how it 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. Attempts to treat, police, and govern immoral bodies or brains mirrored this development. Subsequently, the paper 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 paper critically discusses the political potential of biocriminology to function as a foundation for making and managing society by generating, rationalizing, and justifying interventions and policies.

### **Acting on somatic immorality – then and now**

The conviction that social order should be based on reason and a thorough understanding of human nature prospered during the Enlightenment (Carson, 2007). At the beginning of the nineteenth century, phrenologists suggested brain science as organizing principle for society and provided early notions of cerebral immorality (Hagner & Borck, 2001; Verplaetse, 2009). The idea that badness is rooted in the body developed in the course of the nineteenth century in Western Europe and North America. Against a backdrop of nascent naturalistic understandings of being human and medical views on vice, explanations of moral transgressions as results of bad heredity, degeneration, or neurological disorder surfaced (Jacyna, 1981; Rafter, 2008; Wetzell, 2000; Wiener, 1990). Medical experts devised mental disorder concepts for

immorality, assessed criminals, moved into the courtroom, and at times advocated legal reform. Moreover, penal evaluation changed its focus from the criminal act to the criminal actor, emphasizing the significance of criminals' character, upbringing, constitution, and milieu (Foucault, 1978; Schirrmann, 2013a; Smith, 1981).

### Bio-criminology and penal reform debates, Germany 1880s – 1940s

In 1896 the influential neurologist Paul Flechsig (1896 p. 34) argued that “it must be possible, to found ethics on physiology, [...] in order to possibly base legislation on it – thus current medical psychology is doubtlessly on the way to achieve this goal.” Scientific advances on moral questions were widely expected in late nineteenth century Germany. Continuing decades of industrialization and economic growth afforded a sense of progress. Developments in medicine, such as Robert Koch's groundbreaking discoveries in bacteriology, promised a nearing end to disease and hardship in the teeming cities. Rapid urbanization had come together with poor living conditions for large parts of the society. To remedy the most pressing social and health problems of the time, the state initiated top-down measures (e.g. sickness insurance). In the political field, science became to be seen as crucial resource for argumentation and administration. Darwinian theorizing pervaded socio-political discourses and suggested itself as organizing principle for society. Social and moral problems were redefined as medical and psychiatric issues. Among other voices, an influential strand in psychiatry insisted that mental disorder and deviancy had hereditary or neurological causes (Proctor, 1988; Weindling, 1989; Wetzell, 2009). Accordingly, medical men examined immoral persons for biological aberrations (Schirrmann, 2013a). Lombroso's notorious theory on born criminals which stated that criminality was congenital and manifested in distinct bodily features offered a theoretical framework for such investigations. However, Lombroso's ideas sparked admiration and disdain. The German experts discussed multiple causes for crime, such as atavism, bad heredity, brain defect, mental disorder, venereal disease, alcohol

abuse, false upbringing, or poor diet. Lombroso's notorious theory on born criminals sparked admiration and disdain. These new scientific insights on criminals amplified calls for a reorganization of penal policy. Moreover, the public felt a constant threat from criminals. In this climate, improving security became a matter of crime prevention (Becker, 2002; Gadebusch Bondio, 2006; C. Müller, 2004).

In his very first publication, Emil Kraepelin (1880), one of the founding fathers of psychiatry, postulated that the normative code of the law should be predicated on scientific facts. In unison with Kraepelin, the jurist Franz von Liszt (1948/1882) advocated the *scientification* and individualization of the penal system with the aid of bio-criminological expertise. Liszt claimed that the medico-legal evaluation of criminals should focus on their dangerousness and capability to improve. The introduction of these criteria signified a change in the rationale for detention – from punishment to prevention – and a shift in the assessment of offenders. Preventive detention was indicated especially for so-called habitual criminals. If their unchangeable bad constitution destined them to be incorrigible, then any form of punishment is pointless and their reoffending is likely. Thus, they should be indefinitely detained in order to protect society.

The ascertainment of incorrigibility often lay in the hands of biomedical experts who used diverse mental disorder labels (e.g. moral insanity, moral idiocy, moral imbecility, born criminals) for unalterable malefactors. For these cases, therapy was futile and would – as an extreme position emphasized – remain so until “the art of putting a new normally functioning brain in place of a weakened or damaged one has not been invented” (Trueper cited in E. Müller, 1899 p. 371). In Switzerland, Eugen Bleuler approved of the execution of incorrigible criminals especially since it prevented “the procreation of congeneric progeny” (Bleuler, 1896 p. 75). His pupil and later successor, Hans W. Maier (1908), also claimed that German law did not correspond with scientific facts: Individuals with congenital moral idiocy were not



exempted from punishment, though they clearly belonged in the class of the insane. During the Weimar Republic bio-criminological knowledge continued to fortify socio-political courses of action. Under the title “Crime as Destiny” Johannes Lange (1929) identified criminality as heritable in the first twin-study on the matter. Accordingly, it was imperative for society to avoid the “breeding of criminal predispositions” [Hochzucht verbrecherischer Anlagen] (Lange, 1929 p. 96). The possibility of biologically controlling crime by expunging lines of descent depended on information on criminals’ heredity. Correspondingly, Lange praised the bio-criminological examination in Bavaria whose goal was the establishment of an extensive data base on offenders’ ancestry (Liang, 2006). If criminality was heritable disease, then sterilizing criminals seemed expedient to control crime. Passed in 1933, the Law for the Prevention of Hereditarily Diseased Offspring [Gesetz zur Verhütung erbkranken Nachwuchs] legitimized this practice for feebleminded criminals. However, the differentiation between congenital transgressors and mentally ill persons proved complicated. Bio-criminology was not capable to provide definite hereditary evidence, which led to a legal conundrum. Scientific knowledge could not adjudicate on the issue of identifying suitable perpetrators for sterilization (Dubitscher, 1935). While a group of psychiatrists and jurists endorsed sterilization, others contested the underlying notion of somatic immorality and the penal action based on it. Even under the Nazi regime, the sterilization and execution of criminals was controversial. However, the hereditary examination of criminals was routine and ideas on a criminal disposition of entire races pervaded Nazi ideology (Becker, 2002; C. Müller, 2004; Proctor, 1988; Wetzell, 2000). Despite continuities after the fall of the Nazi regime, somatic views were in demise and eugenics vanished abruptly in the new political climate (Roelcke, 2005). Strikingly, the science of somatic immorality did not stand on firm ground during the late nineteenth century, the Weimar Republic, or the Nazi regime. There was neither incontrovertible evidence, nor scientific consensus.

Nevertheless, bio-criminological interpretative frameworks enabled specific actions for controlling crime and allowed for allegedly evidence-based arguments for the endorsement of penal reform.

### British Mental Deficiency Act of 1913

Another historical example from Great Britain documents how knowledge on somatic immorality influenced policy making. At the end of the nineteenth century, criminality and immorality became to be understood as amenable to scientific investigation. Misconduct no longer was the result of a lack of self-restraint – that is, a weakness of the will – rather it had diverse psychological, social, and biological causes (Garland, 1988; Smith, 1981; Wiener, 1990). Physicians debated the influence of nature and nurture in the genesis of badness. Nature had fervent advocates. For example, the influential British alienist, Henry Maudsley described mentally disordered criminals as “step-children of nature [who] groan under the worst of all tyrannies – the tyranny of bad constitution” (Maudsley, 1873 p. 43) and later asserted that “no mortal can transcend his nature; and it will ever be impossible to raise a stable superstructure of intellect and character on bad natural foundations” (Maudsley, 1874 p. 20). In this line of reasoning, bad biology destined individuals to be mentally disordered or criminal. This rationale influenced concepts for criminal insanity, verdicts and policies in later decades.

At the beginning of the twentieth century, a hope that science could contribute to better individuals and society was prevalent. Feeble-mindedness was perceived as a pressing social problem. Experts claimed that the depravity of the feeble-minded was a hereditary condition which was not susceptible to training, treatment, or punishment. Furthermore, their unregulated reproduction precipitated societal demise. Interpreting immorality as proliferating, incorrigible biology sparked suggestions for radical solutions: Eugenicists called for preventive detention and sterilization. Against this backdrop, the British authorities contemplated new mental health legislation to

manage the feeble-minded and criminal mental defectives (Simmons, 1978; Thomson, 1998).

Alfred Frank Tredgold, who functioned as an influential medical expert on the commission for the Act of 1913, held that *moral imbecility* was congenital neurological disorder: “I believe that this condition is practically incurable, and that the only safeguard lies in strict and permanent detention.” (Tredgold, 1908 p. 354). Obviously, Tredgold’s belief fed his suggestion for an adequate penal measure. Tredgold largely based his position on hereditary evidence, but “with regard to the brain, the results do not enable one to say that a special ‘criminal type’ exists but nearly all the inquirers are agreed that anatomical anomalies indicative of arrested development are of much more common occurrence than in the normal” (Tredgold, 1908 p. 296). The science substantiating Tredgold’s proposal for reform was tentative. Advocates and opponents utilized bio-criminological knowledge for and against the new policy. Yet, “the Royal Commission [...] was much impressed with the weight of evidence in favour of the biological explanation” (Wormald, 1913 p. 94).

The Act of 1913 stipulated moral imbecility as congenital mental defect with incorrigible criminal tendencies. The controversial statutory definition of moral imbecility shaped professionals’ discussions in the following decades (Tredgold, 1921). Some experts criticized the Act for stopping short of what the available neurobiological evidence had proven because it did not make reference to those moral defectives who suffered from an inborn absence of their brains’ “moral sense centre” (Steen, 1913 p. 484). Later, discontent with the type of somatic immorality codified in the Act grew (Verplaetse, 2009). The psychiatric community abandoned the category of moral imbecility (and its successor of 1927: *moral deficiency*), as well as the putative biological evidence in favor of such classifications. Moreover, the measure of sterilization never came to fruition in Great Britain (Penrose, 1947; Thomson, 1998).

With regard to acting on somatic immorality, it is noteworthy that disputable knowledge was sufficient to crystallize in legislation.

### Endocrinology and Psychosurgery of Criminality, USA 1930s and after

In various other contexts, bio-scientific knowledge led to speculations about morality's corporeal basis and triggered demands for restructuring socio-political organization. Despite being eagerly promoted by their champions, often these ideas were not translated into policies but were rebutted or simply ignored. For example, the discovery of several hormones and neurotransmitters at the beginning of the twentieth century (Finger, 2005) inspired novel perspectives on wickedness in the body. Although these biochemical agents were ill-understood at the time, their assumed potential incited revolutionary calls: "All our concepts of justice, punishment and crime must be revised and reconstructed in the light of these findings" (Berman, 1932 p. 235). Sometimes such ideas resulted in treatments. For example, the chief surgeon at San Quentin Prison injected ground-up testes of executed felons under the skin of inmates in order to cure their putative hormonal imbalance. Though small in number, advocates of the endocrinology of crime promoted evidence-based suggestions for new punishments, sterilization, and eugenics in connection with large-scale examinations of the population, data gathering, and preventive measures (Podolsky, 1955; Schlapp & Smith, 1928; Cf. Rafter, 2008). While biological views on individual depravity and societal degeneration as well as eugenic measures existed in the American context (Degler, 1991; Stubblefield, 2007), the hormonal version of immorality failed to gather political momentum.

Acting directly on the ostensibly immoral brain was another possibility to fight crime. At least it was an option worth exploring as the surgeon of Millard Wright, the lobotomized burglar, contended (Koskoff & Goldhurst, 1968). Even during the zenith of psychosurgery this was problematic, though the underlying rationale that criminality can be remedied via operating on the brain survived. In 1968, the prospect

of seminal breakthroughs led three Harvard researchers to suggest that the leaders of political uprisings in the US were suffering from brain disorder; a condition which could be cured surgically (Mark, Sweet, & Ervin, 1967). This suggestion caused an outrage in the scientific community and in the public (Breggin, 1975; Valenstein, 1980). Despite opposition and a dubious empirical basis, two of the originators of the proposal, Mark and Ervin (1970), operated on several aggressive patients and hailed the intervention as an efficient means to contain violence. Surgical interventions on criminals' and psychopaths' brains also took place (e.g. Andy, 1975) although the efficacy of psychosurgery as a remedy for anti-sociality was highly questionable and its empirical basis disputed (O'Callaghan & Carroll, 1987).

There is a series of other historical contexts in which somatic immorality has been acted on: phrenology, brain-based moral insanity, constitutional psychology, electroencephalography, pharmacological therapies, and genetics (Rafter, 2008; N. Rose & Abi-Rached, 2013; Schirmann, 2014a; Verplaetse, 2009; Wasserman & Wachbroit, 2001). Though all of them differ regarding the respective socio-political backgrounds, methods, and explanatory frameworks, the key point here is that all of these scientific approaches engendered specific lines of argument and modes for interference in light of what was taken to be somatic immorality.

### The new science of somatic immorality

Presently, modern neuroscience is unlocking new potentialities for rationalizing neurological interventions and structuring social worlds (Dunagan, 2010; Keiper, 2006; N. Rose & Abi-Rached, 2013). New technologies that image and stimulate the brain enable novel perspectives on somatic immorality. For example, functional magnetic resonance imaging allows for the study of misdemeanants' brain activation and transcranial magnetic stimulation excites or inhibits neuronal networks associated with morality. Propelled by these technologies, new epistemic gateways, new ontologies for building blocks of morality, and new versions of the immoral brain

emerged (Schirrmann, 2013b; A. Young, 2012). Recently a proposition to revitalize brain surgery for *moral dysfunction* has been made (De Ridder, Langguth, Plazier, & Menovsky, 2009). Moreover, a host of genes, neurotransmitters, hormones, brain areas, and neuronal networks appeared as candidates for housing, sustaining, or modifying moral mind and behavior. The amount of data in need of explanation and classification is increasing. Accordingly new interpretative frameworks evolve and novel concepts for somatic immorality originate. In particular, biomarkers for antisocial behavior currently capture the attention of science and society (Singh et al., 2014).

In general, a biomarker is defined as “a characteristic that is objectively measured and evaluated as an indicator of normal biological processes, pathogenic processes, or pharmacologic responses to a therapeutic intervention” (Biomarkers Definitions Working Group, 2001 p. 91). Biomarkers promise breakthroughs in diagnosis, prevention, and therapy. Yet there is an ongoing debate on the conceptualization, production, value, and meaning of biomarkers. Are they signs, indicators, proxies, or protodiseases (Boksa, 2013; Metzler, 2010; Rosenberg, 2002; Singh & Rose, 2009)? Just as their epistemic status, the medico-legal significance of biomarkers is controversial. Several candidate biomarkers for immorality or criminality are being discussed at the moment, such as low resting heart rate (Raine & Portnoy, 2012), the so-called *warrior gene* which encodes monoamine oxidase A (MAOA) (Caspi et al., 2002), as well as certain neuronal activation patterns (Nadelhoffer et al., 2012). Though none of the currently available biomarkers is reliable, they have been acted on occasionally. In several court cases, the warrior gene was used to buttress an insanity defense or to justify mitigating circumstances for a perpetrator (Bernet, Vnencak-Jones, Farahany, & Montgomery, 2007; Singh et al., 2014). Biological explanations of criminal behavior seem to have a special role with regard to sentencing as they increase judges’ tendency to consider mitigating factors

and appear to alter juries' evaluation of the accused. However, bad biology can also be seen as an aggravating factor which justifies indefinite preventive detention. There are voices that call for adaptations of legal systems in light of new scientific findings; yet no major reforms are currently under way (Farahany, 2009; Spranger, 2012). However, biomarkers enable new options for diagnosing and controlling immorality. As the first, provisional studies on neuroprediction of recidivism appear (Aharoni et al., 2013), moral judgment tendencies are rendered intelligible in terms of genes (Marsh et al., 2011), and proposals for population-wide screening for risk factors for criminality are launched (Raine, 2013), possibilities for crime control are increasingly becoming a matter of screening and intervening (N. Rose, 2010). However, the often hailed revolutionary potential of biomarkers for criminality stands in contrast to their poor reliability, validity and utility. Political and legal futures build around modern bio-criminology are met with fierce opposition. Increasingly, the hype is debunked as unfounded (Singh et al., 2014).

### **Framing, constituting, and ordering in perspective**

Approximately two centuries of bio-criminological thinking has yielded a host of frames for somatic immorality that have been acted on in a variety of ways. While all of the frames locate criminality in the body, there are distinct differences with regard to their structure, their socio-political utility, and the historical contexts in which they emerged. Accordingly, comparisons across the ages have to acknowledge disparities between past and present periods. However, a look back in time allows for understanding historical development and identifying similarities of argument. In broad historical perspective, it becomes clear that frames for somatic immorality were in flux. Bumps on the skull or conspicuous facial aberrations were superseded by deviant hereditary endowment, neurological differences, and later by sophisticated

biomarkers. This development is reflected in the historical cases discussed above. The search for outer bodily signs of badness by the followers of Lombroso in late nineteenth century Germany was replaced by a quest for less conspicuous bad hormones in the 1930s in the US. Over the years, immorality has retreated into the body, becoming less visible and more elusive. This development is an acknowledgment of complexity. The more research (as well as its methods and technologies) advanced, the more complicated somatic immorality became (Schirmann, 2013b; Walby & Carrier, 2010). Accordingly, bio-criminology is now rejecting the crudeness of its earlier approaches and refines its concepts, which is mirrored in the trades' adoption of biomarkers. Currently immorality does not have clearly or easily observable correspondents in the body or brain. Indeed biomarkers seemingly “increase[d] uncertainty and ambiguity” (Metzler, 2010 p. 407) regarding somatic immorality. Experts now know more – and know less. Along with this conceptual evolution, came another shift regarding the mode of action of somatic immorality. Often, the role of the diverse frames in constituting immoral mind and behavior was ambiguous: Were they signs, dispositions, determinants, or consequences of immorality? In the past, the frames emphasized invariability. Late nineteenth century hereditary criminality and early twentieth century congenital moral imbecility were unchangeable. Whereas past frames tended to render biology as destiny, biomarkers embody susceptibility. Accordingly, bio-criminological discourse has shifted from determination to risk and from causation to correlation (Pickersgill, 2009; Singh & Rose, 2009).

In different historical contexts, knowing somatic immorality has shaped decisions on how to organize social worlds. The mere availability of knowledge generated options for intervention and opened up evidence-based lines of argumentation. That is, the frames had constitutive qualities: By defining the problem, they pre-determined the solution (Cf. Grundmann & Stehr, 2012). To all-



encompassing heredity, eugenics is the answer. To malfunctioning brains, psychosurgery is the answer. To biochemical imbalance, hormone administration is the answer. Thus, how immorality was deemed to be materialized in the body or brain predetermined how it was acted on. In historical perspective, changing frames entailed changing possibilities for actions and orders. As present suggestions to screen for biomarkers for criminality document, the pattern of basing preventive measures on specific scientific representations continues.

In hindsight, it becomes clear that many of the putative facts about somatic immorality proved to be wrong. As the historical examples demonstrated, the acceptance and success of scientific knowledge also depended on the socio-political context and the consensus in a scientific community – and not solely on the soundness, veracity, or quality of a scientific claim. Presently, disputes on validity persist: Bio-criminology is indicted for being unsound and researchers, legislators, policy-makers, and other stakeholders challenge its significance and influence (Farahany, 2009; Singh et al., 2014). Put differently and with regard to potential policies founded on biomarkers: “While the validity of the scientific claim is quite important, ultimately the policy question is not whether the science is accurate, but whether it is *believed* to be accurate” (Wolpe, 2014 p. 120, emphasis in original). Hence, notions of somatic immorality appear to have a life of their own. Despite being invalid and lacking unanimous expert approval, bio-criminological knowledge can be generative, and – as history has shown – acting on it can have ramifications for understanding crime, penalizing individuals, and organizing societal control.

Importantly, the degree of acceptance of knowledge on somatic immorality differed considerably in the historical and contemporary contexts sketched above. Frames for somatic immorality were used, abused, challenged, criticized, dismissed, or ignored. Knowledge did not simply override established discourses, but it challenged them: Scientific knowledge is “*potential* power” (Grundmann & Stehr, 2012 p. 17,

emphasis in original). Knowledge on its own does not dictate politics. Yet, scientific ideas on somatic immorality provide epistemic rationalizations and justifications for establishing normative practices (e.g. screening) – that is, they allow for making arguments in the political arena. The adoption of these lines of argument is contingent upon cultural and political needs. Historical insight on when, why, how, with which consequences, and under which socio-political circumstances somatic immorality featured in the shaping of society can aid to comprehend the normative potential of bio-scientific etiologies for immorality. In hindsight it becomes clear that when bio-criminology prevailed in the past, it did so because it was accepted and encouraged by relevant stakeholders, institutions, and states. For example, the scientific status of the bio-criminological examination in Bavaria during the Weimar Republic was highly contested. Yet, the examination served the administrative purpose to reorganize the prison population and was thus put into practice. In a similar vein, the failures of bio-criminology can be attributed to public opposition, exemplified by the outcry at the proposed psychosurgery for riot leaders in the 1960s. The surrounding's endorsement or disapproval proved decisive. The persistence of lie-detectors in American society (Alder, 2007; Bunn, 2012), the boost in neuroimaging research on deceit after 9/11 (Littlefield, 2009), the establishment of therapeutic justice in drug courts (Vrecko, 2009), or the initial hype around the neuroscience of immorality testify to the paramount relevance of the context. Accordingly, understanding the appeal of bodies and brains– as explanatory resources and as loci for intervention – in current *brain cultures* partly renders the fascination with biomarkers for criminality intelligible (Littlefield & Johnson, 2012; Ortega & Vidal, 2011; Thornton, 2011).

## Conclusion

This paper discussed several examples of acting on somatic immorality in past and present contexts and analyzed the potential of bio-criminological knowledge to alter punitive or therapeutic actions and endorse policies. First, acting in the light of or according to somatic immorality yielded attempts to alter legislation which – when successful – constructed aspects of socio-legal order on bio-criminological rationales, such as the hereditary examination of criminals in Bavaria during the Weimar Republic. Second, impacting on or interfering with somatic immorality is exemplified by concrete physiological measures that aimed to eradicate immoral bodies or brains, such as sterilization. The instantiated policies and dire consequences for those deemed to be immoral persons testify to the general principle that certain ideas of human nature suggest corresponding ways to govern human beings (Chorover, 1979). Moreover, acting on somatic immorality is indicative of the tensions between scientific knowledge and individual rights (Cf. Thomson, 1998 p. 76). In different historical contexts, acting on (disputable) somatic immorality infringed personal rights and trumped established normative practices.

On a more abstract level, bio-criminological knowledge served as a fundament on which politics were built. The (putative) facts it provided were subject to interpretation and normative valorization by policy-makers. The science functioned as rationalization and legitimation in order to consolidate arguments, to authorize therapeutic and punitive practices, and to justify political procedures. Regarding this liaison between facts and politics, it has been observed that “knowledge and norms (*is* and *ought*) are not separable, as they are often taken to be, but are simultaneously defined through intertwined processes that put together new epistemic and social realities” (Jasanoff, 2012 p. 16, emphasis in original). As the historical examples discussed in this paper demonstrated, *new epistemic and social realities* emerged in relation with acting on somatic immorality. However, clearly tracing their genesis is bound to

fail as “causality remains murky” (Carson, 2007, xiii) in studies of the mutual constitution of the epistemic and the normative.

This mutual constitution of *what there is* and *what should be* is characteristic of bio-criminology since its object of study – the biological roots of crime – is situated by definition in the biological as well as the socio-normative. Its findings and evidence-based instructions are possibly relevant for understanding, treating, policing, and preventing immorality and crime - and ultimately for the organization of society at large. The politics lurking in bio-criminology are strikingly apparent in the political agendas advocated by some of its proponents, exemplified by their telling dystopias of biological crime control (Raine, 2013; Schlapp & Smith, 1928; Tancredi, 2005). The persistent political appeal of bio-criminology in the absence of scientific substantiation is remarkable; particularly, since the trade’s idiom evokes obsolete and controversial notions of immoral persons along with bad memories of horrendous practices. Unsurprisingly, the contestation of the quality and implications of bio-criminological research continues. Multifarious disputes arise when biological evidence coated in the objectivity of technology and the authority of science is hauled into moral affairs (Alder, 2007; Lynch, Cole, McNally, & Jordan, 2008; Singh et al., 2014). Validity is only one of the points at issue. However, validity plays a key role in bio-criminologists’ justification to participate in scientific and political debates on crime. In the discipline’s literature, acknowledgments of the science’s tentativeness are followed (and glossed over) with the promotion of the potential to solve intractable societal problems as well as promises of imminent research breakthroughs. Calls for more bio-criminological research often purport that it is only a matter of time until its theorems will be demonstrated empirically and the dissenters will be converted. Present inroads into moral territory are substantiated with possible future achievements. Other arguments (urgency in light of high crime rates, failure of other means to reduce crime, alleviation of the burden of crime on society, increased cost

efficacy, objective assessment and effective prevention of crime) similarly echo through the ages. As was argued above, this rhetoric is as old as notions of somatic immorality. Moreover, promotion and promises cannot gloss over bio-criminology's dubious evidentiary basis, its atrocious history, and its disputable politics. Accordingly, acting on somatic immorality remains controversial – for good reasons.